FINAL

MARINE CORPS BASE HAWAII INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN UPDATE (MCBH INRMP)

(2007 – 2011)

APPENDICES

Marine Corps Base Hawaii
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APPENDICES (THIS VOLUME)

Appendix A: Laws, Regulations and Guidelines
- A1. MCBH Planning Approaches and Guidelines
- A2. Laws, Regulations, and Other Directives
- A3. Sikes Act Improvement Act of 1997
- A4. Sikes Act of 1960
- A5. Sikes Act Guidance
- A6. Tripartite Memorandum of Understanding Between DOD, USFWS, AND IAFWA
- A7. Migratory Bird Treaty Act

Appendix B: Figures

Appendix C: Updated Species Inventory

Appendix D: Landscaping Improvements Following New Guidelines, Including Progress Documentation

Appendix E: Course of Action
- E1. MCBH INRMP Goals and Objectives
- E2. Past Implementation Progress
- E3. Active and Programmed Management Actions
- E4. Funding Description

Appendix F: Summary of Data Management Improvements
- F1. MCBH Natural Resources Bibliography
- F2. Spatial Data Management
- F3. Natural Resources Databases

Appendix G: Documentation of Stakeholder Involvement
- G1. MCBH Environmental Access/Outreach History (On and Off Site) CY1999-CY2005
- G2. Examples of Public Outreach
- G3. MCBH Review and Concurrence
- G4. Agency Correspondence and Concurrence
- G5. External Agency Review Comments

Appendix H: Glossary

Appendix I: References

INRMP TABLE OF CONTENTS (SEPARATE VOLUME)

MCBH CG Signature Page
Table of Contents
Acronyms
Section 1 Preface
Section 2 Executive Summary
Section 3 Introduction to INRMP and Planning Approach
Section 4 MCBH Mission, Vision and Management Setting
Section 5 National Natural Resources Management Mandates and Regulatory Context
Section 6 Existing Environmental Conditions
Section 7 Course of Action Components
COA Component Plan 7.0 Course of Action Organizational Framework
COA Component Plan 7.1 Fish and Wildlife Management
COA Component Plan 7.2 Wetland Management
COA Component Plan 7.3 Watershed Management
COA Component Plan 7.4 Coastal and Marine Resources Management
COA Component Plan 7.5 Grounds Maintenance and Landscaping Management
COA Component Plan 7.6 Quality of Life, Outdoor Recreation, and Outreach Management
COA Component Plan 7.7 Resource Information Management
Section 8 Relationship of Other Plans and Programs to INRMP
Section 9 Stakeholder Involvement
Section 10 List of Preparers

APPENDIX A
LAWS, REGULATIONS, AND GUIDELINES

This appendix includes information on laws, regulations and guidelines applicable to natural resources management and INRMP implementation.

A1. MCBH Planning Approaches and Guidelines

A2. Laws, Regulations, and Other Directives (summary text)

A3. Sikes Act Improvement Act of 1997

A4. Sikes Act of 1960

A5. Sikes Act Guidance

A6. Tripartite Memorandum Of Understanding Between DOD, USFWS, AND IAFWA

A7. Migratory Bird Treaty Act

- Migratory Bird Permits; Take of Migratory Birds by Department of Defense (proposed rule)
- Memorandum of Understanding Between the U.S. Department of Defense and the U.S. Fish and Wildlife Service To Promote the Conservation of Migratory Birds, effective July 31, 2006

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A1. MCBH PLANNING APPROACHES AND GUIDELINES

This text was included in Section 1 and Appendix A of the 2001 MCBH INRMP/EA to describe the foundations of the planning process used for natural resource management at MCBH. It is included here for reference.

PLANNING PROCESS USED

Integrated natural resources management planning for Department of Defense (DoD) facilities has as its foundation "ecosystem management principles" as described in DoD Instruction 4715.3 of May 3, 1996 and Marine Corps Order (MCO) P5090.2A of July 10, 1998. The planning process used also draws on administrative management principles described in the Code of Environmental Management Principles (CEMP) for Federal Agencies (61 FR 54062) developed by the Environmental Protection Agency (EPA) (1997), as recently in Part 4 of Executive Order 13148, Greening of the Government Through Leadership in Environmental Management, and Marine Corps Base Hawaii's Strategic Plan. It is important to review the evolution of this approach culminating in the requirement for this Integrated Natural Resource Management Plan (INRMP).

CODE OF ENVIRONMENTAL MANAGEMENT PRINCIPLES (CEMP)

Even before the Sikes Act Improvement Act – which Congressionally mandates INRMPs – there was a related CEMP requirement promulgated by EPA that contained "precursor" elements. By Executive Order (EO) 12856 (1993), EPA became the lead federal agency to develop and enforce compliance with principles and performance objectives that provide a common basis for federal agencies to move toward responsible environmental management. Among other things, EO 12856 required EPA to establish an "environmental challenge" program, in cooperation with federal agencies, including DoD. It required federal agencies to agree to a code of environmental principles emphasizing pollution prevention, sustainable development, and state-of-the-art environmental management programs. To address this challenge, the CEMP was developed, which contains several component parts. One of those components, "Enabling Systems," included "Measures of Merit" to support overall organizational objectives. In the Conservation area, HQ USMC adopted a Measure of Merit that INRMPs would be the primary vehicle through which the Marines would promulgate ecosystem management principles.

ECOSYSTEM APPROACH TO INTEGRATED NATURAL RESOURCE MANAGEMENT

In 1995 the DoD was one of fourteen federal land management agencies to sign an Interagency Memorandum of Understanding (MOU) to Foster the Ecosystem Approach.[1] The goal of Ecosystem Management as stated in the MOU is:

> …to restore and sustain the health, productivity, and biological diversity of ecosystems and their overall quality of life through a natural resource management approach that is fully integrated with social and economic goals.

The MOU further defined an ecosystem approach as:

> …a method for sustaining or restoring ecological systems and their functions and values. It is goal driven, and it is based on a collaboratively developed vision of desired future conditions that integrates ecological, economic, and social factors. It is applied within a geographic framework defined primarily by ecological boundaries.

Ecosystem Management emphasizes humans as part of the ecosystem, basing resource management decisions not only on "best science" but on associated cultural values, improved communication with the general public, and forming partnerships with government, non-governmental agencies, and other stakeholders.

DoD Instruction 4715.3 of May 3, 1996 defined the 'Goal of Ecosystem Management' and included ten "Ecosystem Management Principles and Guidelines" to be followed by all U.S.-based military installations with significant natural resources.

A. GOAL OF ECOSYSTEM MANAGEMENT

To ensure that military lands support present and future training and testing requirements while preserving, improving, and enhancing ecosystem integrity. Over the long term, that approach shall maintain and improve the sustainability and biological diversity of terrestrial and aquatic (including marine) ecosystems while supporting sustainable economies, human use, and the environment required for realistic military training operations.

B. PRINCIPLES AND GUIDELINES

1. **Maintain and Improve the Sustainability and Native Biodiversity of Ecosystems**. Ecosystem management involves conducting installation programs and activities in a manner that identifies, maintains, and restores the "composition, structure, and function of natural communities that comprise ecosystems," to ensure their sustainability and conservation of biodiversity at landscape and other relevant ecological scales to the maximum extent that mission needs allow.

[1] Memorandum of Understanding to Foster the Ecosystem Approach signed on December 15, 1995 by the President's Council of Environmental Quality and 14 federal land management agencies. Distributed within DoD in an attachment to Memorandum of the Undersecretary of Defense, Environmental Security (ES)/EQ-CO, Letter of January 23, 1996, prepared by Office of the Undersecretary of Defense, ES. Pentagon, Washington, D.C.

2. **Administer with Consideration of Ecological Units and Timeframes**. Ecosystem management requires consideration of the effects of installation programs and actions at spatial and temporal ecological scales that are relevant to natural processes. A larger geographic view and more appropriate ecological time frames assist in the analysis of cumulative effects on ecosystems that may not be apparent with smaller and shorter scales. Regional ecosystem management efforts are generally more appropriate than either national or installation-specific efforts. Consideration of sustainability under long-term environmental threats, such as climate change, is also important.

3. **Support Sustainable Human Activities**. People and their social, economic, and national security needs are an integral part of ecological systems, and management of ecosystems depends on sensitivity to those issues. Consistent with mission requirements, actions should support multiple use (e.g., outdoor recreation, hunting, fishing, forest timber products, and agricultural outleasing) and sustainable development by meeting the needs of the present without compromising the ability of future generations to meet their own needs.

4. **Develop a Vision of Ecosystem Health**. All interested parties (Federal, State, tribal, and local governments, nongovernmental organizations, private organizations, and the public) should collaborate in developing a shared vision of what constitutes desirable future ecosystem conditions for the region of concern. Existing social and economic conditions should be factored into the vision, as well as methods by which all parties may contribute to the achievement of desirable ecosystem goals.

5. **Develop Priorities and Reconcile Conflicts**. Successful approaches should include mechanisms for establishing priorities among the objectives and for conflict resolution during both the selection of the ecosystem management objectives and the methods for meeting those objectives. Identifying "local installation objectives" and "urban development trends" are especially important to determine compatibility with ecosystem objectives. Regional workshops should be convened periodically to ensure that efforts are focused and coordinated.

6. **Develop Coordinated Approaches to Work Toward Ecosystem Health**. Ecosystems rarely coincide with ownership and political boundaries so cooperation across ownerships is an important component of ecosystem management. To develop the collaborative approach necessary for successful ecosystem management, installations should:

    a. Involve the military operational community early in the planning process. Work with military trainers and others to find ways to accomplish the military mission in a manner consistent with ecosystem management.

    b. Develop a detailed ecosystem management implementation strategy for installation lands and other programs based on the vision developed in subsection B.4., above, and those principles and guidelines;

    c. Meet regularly with regional stakeholders (e.g., State, tribal, and local governments; nongovernmental entities; private landowners; and the public) to discuss issues and to work towards common goals.

    d. Incorporate ecosystem management goals into strategic, financial, and program planning and design budgets to meet the goals and objectives of the ecosystem management implementation strategy.

    e. Seek to prevent undesirable duplication of effort, minimize inconsistencies, and create efficiencies in programs affecting ecosystems.

7. **Rely on the Best Science and Data Available**. Ecosystem management is based on scientific understanding of ecosystem composition, structure, and function. It requires more and better research and data collection, as well as better coordination and use of existing data and technologies. Information should be accessible, consistent, and commensurable. Standards should be established for the collection, taxonomy, distribution, exchange, update, and format of ecological, socioeconomic, cartographic, and managerial data.

8. **Use Benchmarks to Monitor and Evaluate Outcomes**. Accountability measurements are vital to effective ecosystem management. Implementation strategies should include specific and measurable objectives and criteria with which to evaluate activities in the ecosystem. Efficiencies gained through cooperation and streamlining should be included in those objectives.

9. **Use Adaptive Management**. Ecosystems are recognized as open, changing, and complex systems. Management practices should be flexible to accommodate the evolution of scientific understanding of ecosystems. Based on periodic reviews of implementation, adjustments to the standards and guidelines applicable to management activities affecting the ecosystem should be made.

10. **Implement Through Installation Plans and Programs**. An ecosystem's desirable range of future conditions should be achieved through linkages with other stakeholders. "Specific DoD activities" should be identified, as appropriate, in installation INRMPs and ICRMPs and in other planning and budgeting documents.

Marine Corps compliance with an ecosystem approach to integrated natural resource management was further reinforced in MCO P5090.2A, Environmental Compliance and Protection Manual of July 10, 1998. As summarized in Section 11105.13 of MCO P5090.2A, Ecosystem Management is:

> A goal-driven approach to managing natural and cultural resources that supports present and future mission requirements; preserves ecosystem integrity; is at a scale compatible with natural processes; is cognizant of natural processes' time scales; recognizes social and economic viability within functioning ecosystems; is adaptable to complex, changing requirements; and is realized through effective partnerships among private, local, state, tribal, and Federal interests. Ecosystem management is a process that considers the environment as a complex system functioning as a whole, not as a collection of parts, and recognizes that people and their social and economic needs are a part of the whole.

For emphasis, Ecosystem Management differs from conventional natural resources management in at least three important ways. First, it stresses collaborative learning and a participatory approach that involves base resource managers, the internal and external stakeholder communities, and other subject-specific expertise, as appropriate. To be fully collaborative includes recognizing differences in held values pertaining to natural resources and their uses (e.g., Marines may look at a coral reef as an environmental impediment to assault of a beach during amphibious landing maneuvers while a fisherman may look at the same reef as a source of subsistence; a scuba diver as a source of recreation; and a marine biologist as a source of valued biological diversity). Second, Ecosystem Management involves multiple disciplines, addressing multiple resources, and is systems oriented. It treats all resources (e.g., soil, wetlands, watersheds, fish and wildlife) as inter-related components of a single system. Third, it views human systems – the economy, community, society, and culture – as part of the ecosystem, rather than seeing human systems as an external factor impacting the environment.

INTEGRATED NATURAL RESOURCE MANAGEMENT PLAN (INRMP)

As defined in MCO P5090.2A, Section 11105.24, an Integrated Natural Resources Management Plan (INRMP) is:

> an integrated ecosystem management plan showing the interrelationships of individual components of natural resources management (fish and wildlife, forestry, land management, and public access) to mission requirements and other land use activities affecting an installation's natural resources.

Preparing and implementing such a plan addresses the overarching Marine Corps Natural Resources Management Goals as stated in Section 11200.3 of MCO P5090.2A:

a. Preserve our mission access to air, land, and sea resources;

b. Strengthen national security by strengthening conservation aspects of environmental security; and

c. Preserve the opportunity for a high quality of life for present and future generations of Americans.

WATERSHED APPROACH

Federal regulations and DoD and USMC directives mandate that MCBH take an "ecosystem perspective" while engaging in land and natural resource management actions. This means looking "beyond base borders" to entire ecosystems of which MCBH is a part and working with all stakeholders concerned about shared natural resources in that region. In Hawaii, a "watershed" is one of the functional units of ecosystem-level concern most useful for land use and resource managers. A watershed is "an area where rain and other water drains to a common location such as a river, lake, or wetland. This collection of water may occur naturally (as with rain running down a hillside) or with the influence of drainage infrastructure such as ditches and storm sewers" (USEPA 1997). Watershed assessment, planning, and actions have become an essential component of integrated natural resources management. The "watershed approach" to resource planning and management is recognized as highly advantageous as a means to accelerate Federal progress towards achieving Clean Water Act compliance. A watershed approach includes a set of methodologies to assess and restore the condition of a watershed. As described in the Unified Federal Policy (UFP) for a Watershed Approach to Federal Land and Resource Management, Notice of Final Policy, (October 18, 2000, 65 FR 62566), it is "a framework to guide watershed management that: (1) uses watershed assessments to determine existing and reference conditions; (2) incorporates assessment results into resource management planning; and (3) fosters collaboration with all landowners in the watershed."

The watershed approach is inherently integrative, has clearly defined procedural components, allows for identification of distinct land and water resource management units, and is complementary with ecosystem management principles. It is viewed as an effective and efficient means of addressing multiple compliance requirements bearing on environmental and natural resources components of watersheds: water quality, inland water bodies (streams, lakes, reservoirs, estuaries, and wetlands), riparian habitat, water resources, and others.

A foundation of the watershed approach is a watershed assessment, which in its most comprehensive sense is a continuous process of information gathering, analysis, stakeholder interaction, action, and response evaluation. As defined in the UFP for a Watershed Approach to Federal Land and Resource Management, a watershed assessment is “an analysis and interpretation of the physical and landscape characteristics of a watershed using scientific principles to describe watershed conditions as they affect water quality and aquatic resources.” Watershed condition is “the state of the watershed based on physical and biogeochemical characteristics and processes (e.g., hydrologic, geomorphic, landscape, topographic, vegetative cover, and aquatic habitat, water flow characteristics and processes (e.g., chemical, physical, and biological) as it affects water quality and water resources.” The UFP states that federal agencies “will develop a science-based approach to watershed assessment for Federal lands. Watershed assessment information will become part of the basis for identifying management opportunities and priorities and for developing alternatives to protect or restore watersheds” in so far as existing “missions, funding, and fiscal and budgetary authorities permit” (see II. Agency Objectives section of UFP).

A2. LAWS, REGULATIONS, AND OTHER DIRECTIVES

Included in this appendix is a summary table of laws and regulations applicable to natural resources management at MCBH, along with brief descriptions of some of the principal Federal and State laws, Executive Orders and other directives that influence MCBH's INRMP. The primary source for their descriptions and relevance to natural resource management is the Federal Register, MCO 5090.2A, or the directive itself. Full text of codified laws can be found through the Legal Information Institute at http://www.law.cornell.edu/wex/index.php/Environmental_law. Full text of Executive Orders can be found by searching http://www.archives.gov/federal-register/executive-orders/.

Natural Resource Laws, Regulations, and Other Directives and their Expected Influence on Natural Resource Management at Marine Corps Base Hawaii

	Influence		
	Direct	**Indirect**	**Not Applicable**
LAWS – FEDERAL			
Abandoned Shipwreck Act of 1987, PL 100-298 (43 U.S.C. §§ 2101- 2106)			X
Act To Prevent Pollution From Ships, PL 96-478, as amended (33 U.S.C. §§ 1901-1912)	X		
Alternative Motor Fuel Act of 1988, PL 100-494, as amended		X	
American Indian Religious Freedom Act of 1978, PL 95-341, as amended (42 U.S.C. §§ 1996-1996a)			X
Anadromous Fish Conservation Act of 1965, as amended (16 U.S.C. §§ 757a-757f)			X
Antiquities Act of 1906, PL 59-209 (16 U.S.C. §§ 431-433)	X		
Archaeological and Historic Preservation Act (Moss-Bennett Act) of 1974, PL 86-532 (16 U.S.C. §§ 469-469c)		X	
Archaeological Resources Protection Act of 1979, PL 96-95 (16 U.S.C. §§ 470aa-470mm)		X	
Atomic Energy Act of 1954, as amended (42 U.S.C. §§ 2011 *et seq*.)			X
Base Closure and Realignment Act (BRAC) of 1988, PL 100-526		X	
Clean Air Act of 1955, 69 Stat. 322, as amended (42 U.S.C. §§ 7401-7671q)		X	
Clean Air Act of 1970, as amended (42 U.S.C. §§ 7401 *et seq*.)		X	
Coastal Zone Management Act of 1972, PL 92-583 (16 U.S.C. §§ 1451-1465)	X		
Community Environmental Response Facilitation Act of 1992, PL 102-426		X	

Natural Resource Laws, Regulations, and Other Directives and their Expected Influence on Natural Resource Management at Marine Corps Base Hawaii			
	Influence		
	Direct	**Indirect**	**Not Applicable**
Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA; Superfund), as amended (42 U.S.C. §§ 9601 *et seq*.)		X	
Emergency Planning and Community Right-to-Know Act of 1986 (42 U.S.C. §§ 11001 *et seq*.)		X	
Emergency Wetlands Resources Act of 1986, PL 99-645, as amended (16 U.S.C. §§ 3901- 3932)		X	
Endangered Species Act of 1973, PL 93-205, as amended (16 U.S.C. §§ 1531-1534)	X		
Energy Policy Act of 1992, PL 102-486		X	
Energy Policy and Conservation Act of 1975, as amended (42 U.S.C. §§ 6201 *et seq*.)		X	
Erosion Protection Act, PL 86-645 as amended (33 U.S.C. §§ 426-426-3)	X		
Estuary Protection Act of 1968, PL 90-454 (16 U.S.C. §§ 1221- 1226)	X		
Estuaries and Clean Waters Act of 2000, PL 106-457 (33 U.S.C. §§ 2901)	X		
Farmland Protection Policy Act of 1981, PL 97-98, as amended (7 U.S.C. §§ 4201- 4209)			X
Federal Cave Resources Protection Act of 1988, PL 100-691, as amended (16 U.S.C. §§ 4301-4310)			X
Federal Facility Compliance Act of 1992, PL 102-386 (42 U.S.C. 6901 note, 6908)		X	
Federal Insecticide, Fungicide and Rodenticide Act of 1947, PL 92-516, as amended (7 U.S.C. §§ 136-136y)		X	
Federal Land Policy and Management Act of 1976, PL 94-579, as amended (43 U.S.C. §§ 1701-1785)		X	
Federal Property and Administrative Services Act of 1949 (10 U.S.C. §§ 484 *et seq*.)		X	
Federal Tort Claims Act of 1946, as amended (28 U.S.C. §§ 2671 *et seq*.)		X	
Federal Water Pollution Control Act of 1972, PL 92-500, as amended by Clean Water Act of 1977, PL 95-217 (33 U.S.C. §§ 1251 *et seq.*)	X		
Fish and Wildlife Conservation Act of 1980, PL 96-366 (16 U.S.C. §§ 2901-2912)	X		
Fish and Wildlife Coordination Act of 1934, PL 85-624, as amended (16 U.S.C. §§ 661-666c)	X		
Food, Agricultural, Conservation and Trade Act of 1990 (Pesticide Recordkeeping), PL 101-624, as amended (7 U.S.C. § 138i-1)		X	
Forest Rangeland Renewable Resource Planning Act of 1974, PL 93-378 (16 U.S.C. §§ 1600-1624)			X

Natural Resource Laws, Regulations, and Other Directives and their Expected Influence on Natural Resource Management at Marine Corps Base Hawaii			
	Influence		
	Direct	**Indirect**	**Not Applicable**
Freedom of Information Act of 1966, as amended (5 U.S.C. §§ 552 *et seq*.)		X	
Hazardous and Solid Waste Amendments of 1984, PL 98-616		X	
Hazardous Materials Transportation Act of 1975 (49 U.S.C. §§ 5101 *et seq*.)		X	
Hazardous Materials Transportation Uniform Safety Act of 1990, PL 101-615		X	
Historic Sites, Buildings and Antiquities Act of 1935, as amended by PL 74-292, PL 100-17 (16 U.S.C. §§ 461- 467)		X	
Lacey Act of 1900, 31 Stat. 187, as amended (16 U.S.C. §§ 667e, 701)	X		
Low-Level Radioactive Waste Policy Act of 1980, as amended (42 U.S.C. §§ 2021 *et seq*.)		X	
Magnuson-Stevens Fishery Conservation and Management Act of 1976 (16 U.S.C. §§ 1801 *et seq*.)	X		
Marine Mammal Protection Act of 1972, PL 92-522, as amended (16 U.S.C. §§ 1361-1421h)	X		
Marine Protection, Research and Sanctuaries Act of 1972, as amended (33 U.S.C. §§ 1401 *et seq*. and 16 U.S.C. §§ 1431 *et seq*.)	X		
Migratory Bird Treaty Act of 1918, 40 Stat. 755, as amended (16 U.S.C. §§ 703-712)	X		
Military Construction Authorization Act, Passed Annually		X	
Military Construction Codification Act of 1982, PL 97-214		X	
Military Reservation and Facilities: Hunting, Fishing and Trapping Act of 1958, PL 85-337 (10 U.S.C. §§ 2671)	X		
Multiple-Use Sustained Yield Act of 1960, PL 86-517 (16 U.S.C. §§ 528-531)		X	
National Defense Authorization Act (NDAA) for Fiscal Year 2004	X		
National Energy Conservation Policy Act of 1968, PL 95-619		X	
National Environmental Policy Act of 1969, PL 91-190 (42 U.S.C. §§ 4321-4370d)	X		
National Historic Preservation Act of 1966, PL 89-665, as amended (16 U.S.C. §§ 470- 470x-6)		X	
National Invasive Species Act Of 1996 (16 U.S.C. §§ 4701-4751)	X		
Native American Graves Protection and Repatriation Act of 1990, PL 101-601 (25 U.S.C. §§ 3001-3013)		X	
Noise Control Act of 1972 (42 U.S.C. §§ 4901 *et seq*.)		X	
Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, as amended, PL 101-646 (16 U.S.C. 4701)	X		

Natural Resource Laws, Regulations, and Other Directives and their Expected Influence on Natural Resource Management at Marine Corps Base Hawaii	Influence		
	Direct	**Indirect**	**Not Applicable**
North American Wetlands Conservation Act, PL 101-233 (16 U.S.C. §§ 4401-4414)	X		
Noxious Plant Control Act of 1968, PL 90-583 (43 U.S.C. §§ 1241 *et seq*.)	X		
Noxious Weed Control and Eradication Act of 2004, PL 108-412 (U.S.C. §§ 7781-7786)	X		
Occupational Safety and Health Act of 1970, PL 91-596, (29 U.S.C. §§ 651 *et seq*.)		X	
Oceans Act of 2000, PL 106-256, (33 U.S.C. §§857-19)		X	
Oil Pollution Act of 1990, PL 101-380 (33 U.S.C. §§ 2701 *et seq*.)		X	
Outdoor Recreation – Federal/State Program Act (16 U.S.C. §§ 460 (L) *et seq*.)	X		
Outleasing for Grazing and Agriculture on Military Lands (10 U.S.C. § 2667)		X	
Plant Protection Act, PL 106-224, as amended (7 U.S.C. §§ 7701-7772)	X		
Pollution Prevention Act of 1990 (42 U.S.C. §§ 13101 *et seq*.)		X	
Resource Conservation and Recovery Act of 1976, PL 94-580, as amended (42 U.S.C. §§ 6901 *et seq*.)	X		
Rivers and Harbors Appropriations Act of 1899, 30 Stat. 1151, as amended (33 U.S.C. §§ 401-403)		X	
Safe Drinking Water Act of 1974, PL 93-523, as amended (42 U.S.C. §§ 300f-300j-26)		X	
Sikes Act (Conservation Programs on Military Reservations of 1960), PL 86-797, as amended by Sikes Act Improvement Amendments, PL 93-452 (16 U.S.C. §§ 670-670f)	X		
Soil Conservation Act of 1938 (16 U.S.C. §§ 5901 *et seq*.)	X		
Soil and Water Resources Conservation Act of 1977, PL 95-192, as amended (16 U.S.C. §§ 2001-2009)	X		
Solid Waste Disposal Act of 1965, PL 89-272, as amended (42 U.S.C. §§ 3251 *et seq*.)		X	
Superfund Amendments and Reauthorization Act (SARA) of 1986, PL 99-499		X	
Sustainable Fisheries Act, PL 104-297 (16 U.S.C. §§ 1801)	X		
Taylor Grazing Act of 1934, PL 73-482 (43 U.S.C. §§ 315-315o-2)			X
Timber Sales on Military Lands (10 U.S.C. § 2665)			X
Toxic Substances Control Act of 1976 (15 U.S.C. §§ 2601 *et seq*.)		X	
Used Oil Recycling Act of 1980, PL 96-463, as amended		X	
Water Resources Planning Act, PL 89-80, as amended (42 U.S.C. §§ 1962-1962d-20)		X	

Natural Resource Laws, Regulations, and Other Directives and their Expected Influence on Natural Resource Management at Marine Corps Base Hawaii			
	Influence		
	Direct	Indirect	Not Applicable
Water Quality Act of 1965, PL 89-234		X	
Water Quality Improvement Act of 1970, PL 91-224		X	
Watershed Protection and Flood Prevention Act, PL 92-419 (16 U.S.C. §§ 1001-1011, 33 U.S.C. 701)	X		
Wild and Scenic Rivers Act of 1968, PL 90-542, as amended (16 U.S.C. §§ 1271-1287)			X
RULES – STATE OF HAWAII			
Administrative Rules of the Department of Agriculture (HAR Title 4)		X	
Administrative Rules of the Department of Health (HAR Title 11)		X	
Administrative Rules of the Department of Land and Natural Resources (HAR Title 13)		X	
Coastal Zone Management Program (HRS Section 205A)	X		
Hawaii State Planning Act (HRS Section 226)		X	
Noxious Weed Control (HRS Chapter 152)		X	
Plant and Non-Domestic Animal Quarantine (HRS Chapter 150A)		X	
EXECUTIVE ORDERS/MEMORANDUMS OF UNDERSTANDING			
Executive Order 11514, Protection and Enhancement of Environmental Quality, March 5, 1970 (35 FR 4247), as amended by Executive Orders 11541 and 11991	X		
Executive Order 11593, Protection and Enhancement of the Cultural Environment, May 13, 1971 (36 FR 8921)		X	
Executive Order 11644, Use of Off-Road Vehicles on Public Lands, February 8, 1972 (37 FR 2877), as amended by Executive Order 12608		X	
Executive Order 11988, Floodplain Management, May 24, 1977 (42 FR 26951) , as amended by Executive Order 12148	X		
Executive Order 11990, Protection of Wetlands, May 24, 1977 (42 FR 26961), as amended by Executive Order 12608	X		
Executive Order 12088, Federal Compliance with Pollution Control Standards, October 13, 1978 (43 FR 47707), revoked in part by Executive Order 13148		X	
Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, January 4, 1979 (44 FR 1957)		X	
Executive Order 12580, National Oil and Hazardous Substances Pollution Contingency Plan, January 23, 1987 (52 FR 2923)		X	
Executive Order 12856, Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements, August 3, 1993 (58 FR 41981)	X		

Natural Resource Laws, Regulations, and Other Directives and their Expected Influence on Natural Resource Management at Marine Corps Base Hawaii	Influence		
	Direct	Indirect	Not Applicable
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations, February 11, 1994 (59 FR 7629)	X		
Executive Order 12906, Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure, April 11, 1994 (59 FR 17671)	X		
Executive Order 12962, Recreational Fisheries, June 7, 1995 (60 FR 30769)	X		
Executive Order 13007, Indian Sacred Sites, May 24, 1996 (61 FR 26771)		X	
Executive Order 13045, Protection of Children From Environmental Health Risks and Safety Risks, April 21, 1997 (62 FR 19885)	X		
Executive Order 13089, Coral Reef Protection, June 11, 1998 (63 FR 32701)	X		
Executive Order 13112, Invasive Species, February 3, 1999 (64 FR 6183)	X		
Executive Order 13148, Greening the Government Through Leadership in Environmental Management, April 21, 2000 (65 FR 24595)	X		
Executive Order 13158, Marine Protected Areas, May 26, 2000 (65 FR 34909)		X	
Executive Order 13186, Responsibilities of Federal Agencies To Protect Migratory Birds, January 10, 2001 (66 FR 3853)	X		
Executive Order 13308, Further Amendment to Executive Order 12580, as Amended, Superfund Implementation, June 24, 3003 (68 FR 37691)		X	
Executive Order. 13352, Facilitation of Cooperative Conservation, August 26, 2004 (69 FR 52989)	X		
Executive Order. 13366, Establishing Committee on Ocean Policy (as part of the Council on Environmental Quality), December 17, 2004 (69 FR 76591)		X	
Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds (60 FR 40837 of August 10, 1995)	X		
Memorandum on Environmentally Beneficial Landscaping: Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds (April 26, 1994)	X		
Memorandum of Understanding between the Department of Defense and the US Fish and Wildlife Service for the Ecosystem-Based Management of Fish, Wildlife and Plant Resources on Military Lands (May 1999)	X		
Memorandum of Understanding (MOU) to Foster the Ecosystem Approach, December 15, 1995	X		

Natural Resource Laws, Regulations, and Other Directives and their Expected Influence on Natural Resource Management at Marine Corps Base Hawaii			
	Influence		
	Direct	Indirect	Not Applicable
NOTICES, POLICIES, AND REGULATIONS			
Code of Environmental Management Principles for Federal Agencies (61 FR 54062)	X		
Code of Federal Regulations, Title 40: Protection of Environment	X		
Curation of Federally Owned and Administered Archaeological Collections (36 CFR § 79)		X	
Determination of Eligibility for Inclusion in the National Register of Historic Places (36 CFR. § 63)		X	
Environmental Protection and Enhancement: Subpart H Historic Preservation (32 CFR § 650)		X	
Federal Wildland Fire Management Policy (1995)	X		
Final Notice of Issuance and Modification of Nationwide Permits March 9, 2000 (65 FR 12818)	X		
Fish and Wildlife Service List of Endangered and Threatened Wildlife and Plants (50 CFR 17.11 and 17.12)	X		
Historic Preservation Certificates (36 CFR § 67)		X	
Hunting and Fishing Permits (32 CFR §§ 552.19)	X		
National Historic Landmarks Program (36 CFR § 65)		X	
National Register of Historic Places (36 CFR § 60)		X	
Native American Graves Protection and Repatriation Act Regulations (43 CFR § 1O)		X	
Preservation of American Antiquities (Antiquities Act regulations) (43 CFR § 3)		X	
Protection of Archaeological Resources: Department of Defense Uniform Regulations (32 CFR § 229)		X	
Protection of Historic and Cultural Properties (3 CFR § 800)		X	
Regulations for Implementing NEPA (Council on Environmental Quality. 40 CFR § 1500)	X		
The Secretary of Interior's Standards for Historic Preservation Projects (36 CFR § 68)		X	
Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management, Notice of Final Policy, October 18, 2000 (65 FR 62566)	X		
Waiver of Federal Agency Responsibility under Section 110 of the National Historic Preservation Act (36 CFR § 78)		X	
MILITARY DIRECTIVES			
Archaeological and Historic Resources Management, DoD Directive 4710.1 (June 21, 1984)		X	

Natural Resource Laws, Regulations, and Other Directives and their Expected Influence on Natural Resource Management at Marine Corps Base Hawaii			
	Influence		
	Direct	**Indirect**	**Not Applicable**
Base Order P1500.9: Standing Operation Procedures for Marine Corps Base Hawaii Training Areas, Courses, and Facilities (Short Title: SOP for Ranges and Training Areas) (May 12, 2000)	X		
Base Order 3574.6: Standing Operation Procedures for the Range Training Facility (September 24, 1997)	X		
Base Order 5355: Prohibition on the Possession and or Use of *Salvia Divinorum*	X		
Base Order 5420.1: Environmental Impact Review Procedures	X		
Base Order P5500.15B: Base Regulations	X		
Base Order 11014.20A: Grounds Maintenance and Police: Standards and Responsibilities (March 26, 2004)	X		
Environmental Compliance and Protection Manual, Marine Corps Order P5090.2A (July 10, 1998)[1]	X		
Conservation Law Enforcement Program, Marine Corps Order 5090.4A, (October 6, 2003)	X		
Pest Management Program, DoD Instruction 4150.7 (April 22, 1996)	X		
Natural Resources Management Program, DoD Directive 4700.4 (January 24, 1989)	X		
Environmental Security, DoD Directive 4715.1 (February 24, 1996)	X		
Environmental Conservation Program, DoD Instruction 4715.3 (May 3, 1996)	X		
Environmental Compliance, DoD Instruction 4715.5 (April 24, 1996)	X		
Environmental Restoration Program, DoD Instruction 4715.7 (April 22, 1996)	X		
Environmental Planning and Analysis, DoD Instruction 4715.9 (May 3, 1996)	X		
Environmental Effects in the United States of Environmental Actions, DOD Directive 6050.1 (July 30, 1979)	X		
Policy letter preventing feral cat and dog populations on Navy property.(CNO Memorandum, 10 January 2002)	X		
Use of Ecological Risk Assessments (Department of the Navy Environmental Policy Memorandum 97-04 (CMC Ltr 5090 LFL/KK-140 of March 23, 1997))	X		

[1] Natural Resource Chapter 11 and NEPA Chapter 12 of MCO P5090.2A have been updated by HQ USMC. They will be undergoing review and incorporation into the main document in 2006.

LAWS

CLEAN AIR ACT OF 1970, AS AMENDED (42 U.S.C. 7401 *ET SEQ.*)

This Act, the major Federal legislation concerning the control of the Nation's air quality, requires the setting of National Ambient Air Quality Standards and the development of Federal and State programs to achieve these standards through the control of air pollution sources. The Act also provides for the EPA's delegation of authority to states to conduct air pollution control programs. The 1990 amendments (Public Law 101-549) stress pollution control and prevention. (*MCO P5090.2A*).

CLEAN WATER ACT 1977, AS AMENDED (PL 95-217, TITLE 33 U.S.C. 1251 *ET SEQ.*)

This Act is a compilation of decades of Federal water pollution control legislation. The Act amended the Federal Water Pollution Control Act (FWPCA) and requires Federal agency consistency with State nonpoint source pollution abatement plans. The CWA is the major Federal legislation concerning improvement of the Nation's water resources. The Act was amended in 1987 to strengthen enforcement mechanisms and to regulate storm water runoff. The Act provides for the development of municipal and industrial wastewater treatment standards and a permitting system to control wastewater discharges to surface waters. The CWA contains specific provisions for the regulation of dredge soil disposal within navigable waters and for the placement of material into wetlands. Permits are required under sections 401, 402, and 404 for proposed actions which involve wastewater discharges and/or dredging/placement of fill in wetlands or navigable waters. These permits are required prior to the initiation of proposed actions. (*MCO P5090.2A*).

COASTAL ZONE MANAGEMENT ACT (CZMA) OF 1972 (16 U.S.C. 1451 *ET SEQ.*)

This Act requires that, to the maximum extent practicable, Federal action affecting any land/water use, or coastal zone natural resource, be implemented consistent with the enforceable policies of an approved State management program. The Act authorizes states to administer approved coastal nonpoint pollution programs. Advance concurrence from the State Coastal Commission is required prior to taking an action affecting the use of land, water, or natural resources of the coastal zone. Excluded from the coastal zone are lands solely subject to or held in trust by the Federal Government, its officers, or its agents. (*MCO P5090.2A*).

ENDANGERED SPECIES ACT (ESA) OF 1973 (19 U.S.C. 1531 *ET SEQ.*)

Implemented by 50 CFR 402 and 50 CFR 17, this Act requires all Federal agencies to carry out programs to conserve Federally listed endangered and threatened plants and wildlife. Development and implementation of these programs must be carried out with the consultation and assistance of the Departments of the Interior and Commerce. A biological assessment may be required to determine whether formal consultation with the USFWS/NOAA Fisheries is necessary and/or may serve as a basis for a USFWS/NOAA Fisheries biological opinion. (*MCO P5090.2A*).

ESTUARIES AND CLEAN WATERS ACT OF 2000 (PL 106-457, 33 U.S.C. 2901)

This Act encourages the restoration of estuary habitat through more efficient project financing and enhanced coordination of Federal and non-Federal restoration programs, and for other purposes. Title 1 of this Act, the ''Estuary Restoration Act of 2000'' states that the purposes of this title are: (1) to promote the restoration of estuary habitat; (2) to develop a national estuary habitat restoration strategy for creating and maintaining effective estuary habitat restoration partnerships among public agencies at all levels of government and to establish new partnerships between the public and private sectors; (3) to provide Federal assistance for estuary habitat restoration projects and to promote efficient financing of such projects; and (4) to develop and enhance monitoring and research capabilities through the use of the environmental technology innovation program associated with the National Estuarine Research Reserve System established by section 315 of the Coastal Zone Management Act of 1972 (16 U.S.C. 1461) to ensure that estuary habitat restoration efforts are based on sound scientific understanding and innovative technologies. (*Federal Register*)

FISH AND WILDLIFE CONSERVATION ACT OF 1980 (16 U.S.C. 2901 *ET SEQ*.)

This Act promotes State programs for the purpose of conserving, restoring, or otherwise benefiting nongame fish and wildlife, its habitats, or its uses. (*MCO P5090.2A*).

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT OF 1976 (16 U.S.C. 1801 *ET SEQ*.)

This Act halts overfishing by foreign fleets and aids the development of the domestic fishing industry. The Act gives the United States sole management authority over living resources within its jurisdictional waters. Essential Fish Habitat (EFH) coordination and consultation requirements were established by the 1996 reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act and the Department of Commerce's EFH consultation regulations (50 CFR 600.905-930). That status includes a mandate that Federal agencies must consult with the Secretary of Commerce on all activities, proposed activities, authorized, funded, or undertaken by the agency that may adversely affect EFH. (*MCO P5090.2A*)

MARINE MAMMAL PROTECTION ACT (MMPA) OF 1972, AS AMENDED (16 U.S.C. 1361 *ET SEQ*.)

Implemented by 50 CFR 18, 215, and 228, this Act mandates a moratorium on the killing, capturing, harming, and importing of marine mammals and marine mammal products. This Act also prohibits the taking of any marine mammal by any person, vessel, or conveyance subject to the jurisdiction of the United States on the high seas or the taking of any marine mammal by a person, vessel, or conveyance in waters or lands under the jurisdiction of the United States. Taking means to harass, hunt, capture, collect, or kill any marine mammal, and includes without limitation any of the following: collection of dead animals or their parts, restraint or detention of a marine mammal, tagging a marine mammal, the negligent or intentional operation of an aircraft or vessel, or doing of any other negligent or intentional act which results in the disturbing or molesting of a marine mammal. (*MCO P5090.2A*).

MARINE PROTECTION, RESEARCH, AND SANCTUARIES ACT OF 1972, AS AMENDED (33 U.S.C. 1401 *ET SEQ*. AND 16 U.S.C. 1431 *ET SEQ*.)

This Act establishes regulations relating to dumping specific materials into open waters and establishes a program for the designation and regulation of national marine sanctuaries. *(MCO P5090.2A*).

MIGRATORY BIRD TREATY ACT, AS AMENDED (16 U.S.C. 703 *ET SEQ*.)

This Act protects migratory birds and establishes a permitting process for legal taking. See Section 5.1.1 for updated details related to DoD compliance. (*MCO P5090.2A*).

MILITARY RESERVATION AND FACILITIES: HUNTING, FISHING, AND TRAPPING ACT OF 1958 (PL 85-337, 10 U.S.C. 2671)

This Act requires that all hunting, fishing, and trapping activities on military installations be conducted in accordance with the State fish and game laws in which the installation is located. Appropriate State licenses must be obtained for these activities on the installation. (*MCO P5090.2A*).

NATIONAL DEFENSE AUTHORIZATION ACT (NDAA) FOR FISCAL YEAR 2004

The National Defense Authorization Act (NDAA) for Fiscal Year 2004 made important changes in the ESA regarding INRMPs. Under new Section 4(a)(3)(B)(i) of the ESA, the Secretary of Interior or the Secretary of Commerce, as appropriate, is precluded from designating critical habitat on any areas owned, controlled, or designated for use by the DoD where an INRMP has been developed that, as determined by the DOI or DOC Secretary, provides a benefit to the species subject to critical habitat designation.

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (PL 91-190, 42 U.S.C. 4321 *ET SEQ*.)

This Act requires consideration of environmental concerns during project planning and execution. The Act requires Federal agencies to prepare an Environmental Assessment or Environmental Impact Statement for Federal actions that have the potential to significantly affect the quality of the human environment, including both natural and cultural resources. The Act is implemented by regulations issued by the Council on Environmental Quality (40 CFR 1500). The Act establishes Federal agency procedures for preserving important natural aspects of the national heritage and enhancing the quality of renewable resources. (*MCO P5090.2A*).

NATIONAL INVASIVE SPECIES ACT OF 1996 (PL 104-332, 16 U.S.C. §§ 4701-4751)

The National Invasive Species Act (NISA) reauthorizes and amends the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 to prevent and control the unintentional introduction of aquatic nuisance species into waters of the United States through ballast water management and other control methods. Section 4713 of the NISA also established the Armed Forces Ballast Water Management Program, which requires DoD to implement a ballast water management program for DoD vessels in order to minimize the risk of introduction of non- indigenous species from ballast water releases.

OUTDOOR RECREATION – FEDERAL/STATE PROGRAM ACT (16 U.S.C. 460(L) *ET SEQ*.)

This Act requires consultations with the United States National Park Service (NPS) regarding management for outdoor recreation. (*MCO P5090.2A*).

PLANT PROTECTION ACT (7 U.S.C. 7701-7772)

This act became law as part of the Agricultural Risk Protection Act. The Plant Protection Act (PPA) gives the Secretary of Agriculture, and through delegated authority, USDA's Animal and Plant Health Inspection Service (APHIS), the ability to prohibit or restrict the importation, exportation, and the interstate movement of plants, plant products, certain biological control organisms, noxious weeds, and plant pests. The PPA consolidates all or part of 10 existing USDA plant health laws into one comprehensive law, including the authority to regulate plants, plant products, certain biological control organisms, noxious weeds, and plant pests. The Plant Quarantine Act, the Federal Pest Act, and the Federal Noxious Weed Act are among the 10 statutes the new Act replaces. The PPA was amended to include the Noxious Weed Control and Eradication Act of 2004 which requires the Secretary of Agriculture to establish a program to provide assistance to eligible weed management entities to control or eradicate noxious weeds on public and private land.

SIKES ACT OF 1960: CONSERVATION PROGRAMS ON MILITARY RESERVATIONS ACT, AS AMENDED (PL 86-7987, 16 U.S.C. 670(A) *ET SE*Q.)

This Act requires that each military installation manage natural resources for multipurpose uses and public access appropriate for those uses, consistent with the military department's mission. The Act also requires that each military department provide professional services necessary for fish and wildlife resource management on each installation (per a tripartite cooperative plan agreed to by the military department, USFWS, and State wildlife agency). Additionally, the Act requires that each military department provide professional training in fish and wildlife management for resource management personnel and give priority to contracting work with Federal and State agencies responsible for conserving or managing fish and wildlife. (*MCO P5090.2A*).

SIKES ACT IMPROVEMENT ACT AMENDMENTS OF 1997

The Sikes Act Improvement Act (SAIA) Amendments were passed on 18 November 1997. SAIA mandates that the Secretary of each military department shall prepare and implement an integrated natural resources management plan for each military installation in the United States under the jurisdiction of the Secretary, unless the Secretary determines that the absence of significant natural resources on a particular installation makes preparation of such a plan inappropriate. The Secretary of a military department shall prepare each integrated natural resources management plan for which the Secretary is responsible in cooperation with the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service, and the head of each appropriate State fish and wildlife agency for the State in which the military installation concerned is located. This program shall be required to provide for the conservation and rehabilitation of natural resources on military installations; the sustainable multipurpose use of the resources, which shall include hunting, fishing, trapping, and nonconsumptive uses; and subject to safety requirements and military security, public access to military installations to facilitate the use. (*Naval Facilities Engineering Service Center*).

SOIL CONSERVATION ACT (PL 84-566, 16 U.S.C. 5901 *ET SEQ*.)

This Act provides for the application of soil conservation practices on Federal lands. (*MCO P5090.2A*).

EXECUTIVE ORDERS AND MEMORANDUMS OF UNDERSTANDING

EXECUTIVE ORDER 11988, FLOODPLAIN MANAGEMENT (42 FR 26951), AS AMENDED BY EXECUTIVE ORDER 12148

Signed on May 24, 1977. Directs all Federal agencies to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. Each agency shall provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains. Each agency has a responsibility to evaluate the potential effects of any actions it may take in a floodplain; to ensure that its planning programs and budget request reflect consideration of flood hazards and floodplain management. Each agency shall take floodplain management into account when formulating or evaluating any water and land use plans. (*Federal Register*).

EXECUTIVE ORDER 11990, PROTECTION OF WETLANDS (42 FR 26961), AS AMENDED BY EXECUTIVE ORDER 12608

Signed on May 24, 1977. Directs Federal agencies to address the need to avoid, to the extent possible, the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; and (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. (*Federal Register*).

EXECUTIVE ORDER 13089, CORAL REEF PROTECTION (63 FR 32701)

Signed on June 11, 1998. Mandates that all Federal agencies whose actions may affect US coral reef ecosystems shall: (a) identify their actions that may affect US coral reef ecosystems; (b) utilize their programs and authorities to protect and enhance the conditions of such ecosystems; and (c) to the extent permitted by law, ensure that any actions they authorize, fund, or carry out will not degrade the conditions of such ecosystems. (*Federal Register*).

EXECUTIVE ORDER 13112, INVASIVE SPECIES (64 FR 6183)

Signed on February 3, 1999. Seeks to prevent the introduction of invasive species into habitats and ecosystems, provide for their control and to minimize the economic, ecological and human health impacts that invasive species cause. Defines "Invasive species" as an alien species whose introduction does or is

likely to cause economic or environmental harm or harm to human health. Mandates that each Federal agency whose actions may affect the status of invasive species shall: (1) identify such actions; (2) subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: (i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; (iii) monitor invasive species populations accurately and reliably; (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded; (v) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; and (vi) promote public education on invasive species and the means to address them; and (3) not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere. (*Federal Register*).

EXECUTIVE ORDER 13148, GREENING THE GOVERNMENT THROUGH LEADERSHIP IN ENVIRONMENTAL MANAGEMENT (65 FR 24595)

Signed on April 22, 2000. Seeks to establish Federal Environmental Leadership. This is to be accomplished by assigning the head of each Federal agency the responsibility for ensuring that all necessary actions are taken to integrate environmental accountability into agency day-to-day decision making and long-term planning processes, across all agency missions, activities and functions. Goals include: Environmental Management; Environmental Compliance; Right-to-Know and Pollution Prevention; Release Reduction: Toxic Chemicals; Use Reduction: Toxic Chemicals and Hazardous Substances and Other Pollutants; Reductions in Ozone-Depleting Substances; and Environmentally and Economically Beneficial Landscaping. (*Federal Register*).

EXECUTIVE ORDER 13186, RESPONSIBILITIES OF FEDERAL AGENCIES TO PROTECT MIGRATORY BIRDS (66 FR 3853)

Signed on January 10, 2001. Directs executive departments and agencies to take certain actions to further implement the Migratory Bird Treaty Act. This act has implemented international, bilateral conventions for the conservation of migratory birds and their habitats with respect to the United States. Each Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement, within two years, a Memorandum of Understanding (MOU) with the US Fish and Wildlife Service that shall promote the conservation of migratory bird populations. DoD and USFWS have cooperatively developed and signed an MOU that outlines a collaborative approach to promote the conservation of migratory bird populations (July 2006). (*Federal Register*).

EXECUTIVE ORDER 13352, FACILITATION OF COOPERATIVE CONSERVATION

Signed on August 26, 2004. Purpose of the order is to “ensure that the Department of Interior, Agriculture, Commerce, and Defense and the [EPA] implement laws relating to the environment and natural resources in a manner that promotes cooperative conservation, with an emphasis on appropriate inclusion of local participation in Federal decision making, in accordance with their respective agency missions, policies, and regulations.” Cooperative conservation is defined as “actions that relate to use, enhancement, and enjoyment of natural resources, protection of the environment, or both, and that involve collaborative activity among Federal, State, local, and tribal governments, private for profit and non-profit institutions, other nongovernmental entities, and individuals.” (*Federal Register*).

MEMORANDUM OF UNDERSTANDING (DEPARTMENT OF DEFENSE, U.S. FISH AND WILDLIFE SERVICE AND INTERNATIONAL ASSOCIATION OF FISH AND WILDLIFE AGENCIES)

Signed on January 31, 2006. The Department of Defense, the U.S. Fish and Wildlife Service and the International Association of Fish and Wildlife Agencies signed a Memorandum of Understanding that will help manage natural resources on military installations, under provisions of the Sikes Act. The signatories developed the document, which encourages additional coordination and discusses cooperative elements of the Sikes Act, as well as calling for establishment of INRMP implementation teams. The MOU further describes the roles, responsibilities and operating authorities of the parties to the agreement; includes a provision that formalizes the Sikes Act Core Group, which consists of representatives from the three agencies who will meet at least quarterly and contains provisions that encourage the development of Sikes Act partnership teams and cooperative funding agreements.

NOTICES, POLICIES, AND REGULATIONS

GUIDANCE FOR PRESIDENTIAL MEMORANDUM ON ENVIRONMENTALLY AND ECONOMICALLY BENEFICIAL LANDSCAPE PRACTICES OF FEDERAL GROUNDS (60 FR 154)

August 10, 1995. Federal guidance principles are contained to assist federal agencies in the implementation of environmentally and economically beneficial landscape practices in all grounds management practices on federal lands. The principles include (1) Use regionally native plants for landscaping; (2) Design, use or promote construction practices that minimize adverse effects on their natural habitat; (3) Seek to prevent pollution; (4) Implement water and energy efficient practices; (5) Create outdoor demonstration projects. (*Federal Register*).

UNIFIED FEDERAL POLICY FOR A WATERSHED APPROACH TO FEDERAL LAND AND RESOURCE MANAGEMENT (65 FR 62566)

October 18, 2000. Federal agencies manage large amounts of public lands throughout the country. To protect water quality and aquatic ecosystems on these public lands, Federal agencies have developed the following policy to reduce water pollution from Federal activities and foster a unified, watershed-based approach to Federal land and resource management. This policy is intended to accelerate Federal progress towards achieving the goals of the Clean Water Act (Federal Water Pollution Control Act of 1972, 33 U.S.C. 1251 et seq.). This policy applies only to Federal lands and resources and does not affect water rights laws, procedures, or regulations. This policy does not supersede or otherwise affect existing State or Tribal authority under the Clean Water Act. The Federal agencies also acknowledge that, in international waters, the watershed approach is subject to the international treaties and agreements affecting those waters. (*Federal Register*).

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A3. SIKES ACT IMPROVEMENT ACT OF 1997

H.R.1119

National Defense Authorization Act for Fiscal Year 1998 (Enrolled Bill (Sent to President))

TITLE XXIX--SIKES ACT IMPROVEMENT

Sec.2901.Short title.

Sec.2902.Definition of Sikes Act for purposes of amendments.

Sec.2903.Codification of short title of Act.

Sec.2904.Preparation of integrated natural resources management plans.

Sec.2905.Review for preparation of integrated natural resources management plans.

Sec.2906.Transfer of wildlife conservation fees from closed military installations.

Sec.2907.Annual reviews and reports.

Sec.2908.Cooperative agreements.

Sec.2909.Federal enforcement.

Sec.2910.Natural resources management services.

Sec.2911.Definitions.

Sec.2912.Repeal of superseded provision.

Sec.2913.Technical amendments.

Sec.2914.Authorizations of appropriations.

SEC. 2901. SHORT TITLE.

This title may be cited as the 'Sikes Act Improvement Act of 1997'.

SEC. 2902. DEFINITION OF SIKES ACT FOR PURPOSES OF AMENDMENTS.

In this title, the term `Sikes Act' means the Act entitled `An Act to promote effectual planning, development, maintenance, and coordination of wildlife, fish, and game conservation and rehabilitation in military reservations', approved September 15, 1960 (16 U.S.C. 670a et seq.), commonly referred to as the `Sikes Act'.

SEC. 2903. CODIFICATION OF SHORT TITLE OF ACT.

The Sikes Act (16 U.S.C. 670a et seq.) is amended by inserting before title I the following new section:

`SECTION 1. SHORT TITLE.

`This Act may be cited as the `Sikes Act'.'.

SEC. 2904. PREPARATION OF INTEGRATED NATURAL RESOURCES MANAGEMENT

PLANS.

(a) IN GENERAL- Section 101 of the Sikes Act (16 U.S.C. 670a(a)) is amended by striking out subsection (a) and inserting in lieu thereof the following new subsection:

`(a) AUTHORITY OF SECRETARY OF DEFENSE-

`(1) PROGRAM-

`(A) IN GENERAL- The Secretary of Defense shall carry out a program to provide for the conservation rehabilitation of natural resources on military installations.

`(B) INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN- To facilitate the program, the Secretary of each military department shall prepare and implement an integrated natural resources management plan for each military installation in the United States under the jurisdiction of the Secretary, unless the Secretary determines that the absence of significant natural resources on a particular installation makes preparation of such a plan inappropriate.

`(2) COOPERATIVE PREPARATION- The Secretary of a military department shall prepare each integrated natural resources management plan for which the Secretary is responsible in cooperation with the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service, and the head of each appropriate State fish and wildlife agency for the State in which the military installation concerned is located. Consistent with paragraph (4), the resulting plan for the military installation shall reflect the mutual agreement of the parties concerning conservation, protection, and management of fish and wildlife resources.

`(3) PURPOSES OF PROGRAM- Consistent with the use of military installations to ensure the preparedness of the Armed Forces, the Secretaries of the military departments shall carry out the program required by this subsection to provide for--

`(A) the conservation and rehabilitation of natural resources on military installations;

`(B) the sustainable multipurpose use of the resources, which shall include hunting, fishing, trapping, and nonconsumptive uses; and

`(C) subject to safety requirements and military security, public access to military installations to facilitate the use.

`(4) EFFECT ON OTHER LAW- Nothing in this title--

`(A)(i) affects any provision of a Federal law governing the conservation or protection of fish and wildlife resources; or

`(ii) enlarges or diminishes the responsibility and authority of any State for the protection and management of fish and resident wildlife; or

`(B) except as specifically provided in the other provisions of this section and in section 102, authorizes the Secretary of a military department to require a Federal license or permit to hunt, fish, or trap on a military installation.'.

(b) CONFORMING AMENDMENTS- Title I of the Sikes Act is amended--

(1) in section 101(b)(4) (16 U.S.C. 670a(b)(4)), by striking out `cooperative plan' each place it appears and inserting in lieu thereof `integrated natural resources management plan';

(2) in section 101(c) (16 U.S.C. 670a(c)), in the matter preceding paragraph (1), by striking out `a cooperative plan' and inserting in lieu thereof `an integrated natural resources management plan';

(3) in section 101(d) (16 U.S.C. 670a(d)), in the matter preceding paragraph (1), by striking out `cooperative plans' and inserting in lieu thereof `integrated natural resources management plans';

(4) in section 101(e) (16 U.S.C. 670a(e)), by striking out `Cooperative plans' and inserting in lieu thereof `Integrated natural resources management plans';

(5) in section 102 (16 U.S.C. 670b), by striking out `a cooperative plan' and inserting in lieu thereof `an integrated natural resources management plan';

(6) in section 103 (16 U.S.C. 670c), by striking out `a cooperative plan' and inserting in lieu thereof `an integrated natural resources management plan';

(7) in section 106(a) (16 U.S.C. 670f(a)), by striking out `cooperative plans' and inserting in lieu thereof `integrated natural resources management plans'; and (8) in section 106(c) (16 U.S.C. 670f(c)), by striking out `cooperative plans' and inserting in lieu thereof `integrated natural resources management plans'.

(c) REQUIRED ELEMENTS OF PLANS- Section 101(b) of the Sikes Act (16 U.S.C. 670a(b)) is amended--

(1) by striking out `(b) Each cooperative' and all that follows through the end of paragraph (1) and inserting in lieu thereof the following:

`(b) REQUIRED ELEMENTS OF PLANS- Consistent with the use of military

installations to ensure the preparedness of the Armed Forces, each integrated natural resources management plan prepared under subsection (a)--

`(1) shall, to the extent appropriate and applicable, provide for--

`(A) fish and wildlife management, land management, forest management, and fish- and wildlife-oriented recreation;

`(B) fish and wildlife habitat enhancement or modifications;

`(C) wetland protection, enhancement, and restoration, where necessary for support of fish, wildlife, or plants;

`(D) integration of, and consistency among, the various activities conducted under the plan;

`(E) establishment of specific natural resource management goals and objectives and time frames for proposed action;

`(F) sustainable use by the public of natural resources to the extent that the use is not inconsistent with the needs of fish and wildlife resources;

`(G) public access to the military installation that is necessary or appropriate for the use described in subparagraph (F), subject to requirements necessary to ensure safety and military security;

`(H) enforcement of applicable natural resource laws (including regulations);

`(I) no net loss in the capability of military installation lands to support the military mission of the installation; and

`(J) such other activities as the Secretary of the military department determines appropriate;'

(2) in paragraph (2), by adding `and' at the end;

(3) by striking out paragraph (3);

(4) by redesignating paragraph (4) as paragraph (3); and

(5) in paragraph (3)(A) (as so redesignated), by striking out `collect the fees therefor,' and inserting in lieu thereof `collect, spend, administer, and account for fees for the permits,'.

SEC. 2905. REVIEW FOR PREPARATION OF INTEGRATED NATURAL RESOURCES

MANAGEMENT PLANS.

(a) DEFINITIONS- In this section, the terms `military installation' and `United States' have the meanings provided in section 100 of the Sikes Act (as added by section 2911).

(b) REVIEW OF MILITARY INSTALLATIONS-

(1) REVIEW- Not later than 270 days after the date of enactment of this Act, the Secretary of each military department shall--

(A) review each military installation in the United States that is under the jurisdiction of that Secretary to determine the military installations for which the preparation of an integrated natural resources management plan under section 101 of the Sikes Act (as amended by this title) is appropriate; and

(B) submit to the Secretary of Defense a report on the determinations.

(2) REPORT TO CONGRESS- Not later than one year after the date of enactment of this Act, the Secretary of Defense shall submit to Congress a report on the reviews conducted under paragraph (1). The report shall include--

(A) a list of the military installations reviewed under paragraph (1) for which the Secretary of the appropriate military department determines that the preparation of an integrated natural resources management plan is not appropriate; and

(B) for each of the military installations listed under subparagraph (A), an explanation of each reason such a plan is not appropriate.

(c) DEADLINE FOR INTEGRATED NATURAL RESOURCES MANAGEMENT PLANS- Not later than three years after the date of the submission of the report required under subsection (b)(2), the Secretary of each military department shall, for each military installation with respect to which the Secretary has not determined under subsection (b)(2)(A) that preparation of an integrated natural resources management plan is not appropriate--

(1) prepare and begin implementing such a plan in accordance with section 101 (a) of the Sikes Act (as amended by this title); or

(2) in the case of a military installation for which there is in effect a cooperative plan under section 101(a) of the Sikes Act on the day before the date of enactment of this Act, complete negotiations with the Secretary of the Interior and the heads of the appropriate State agencies regarding changes to the plan that are necessary for the plan to constitute an integrated natural resources management plan that complies with that section, as amended by this title.

(d) PUBLIC COMMENT- The Secretary of each military department shall provide an opportunity for the submission of public comments on--

(1) integrated natural resources management plans proposed under subsection (c)(1); and

(2) changes to cooperative plans proposed under subsection (c)(2).

SEC. 2906. TRANSFER OF WILDLIFE CONSERVATION FEES FROM CLOSED MILITARY INSTALLATIONS.

Section 101(b)(3)(B) of the Sikes Act (16 U.S.C. 670a(b)) (as redesignated by section 2904(c)(4)) is amended by inserting before the period at the end the following: `, unless the military installation is subsequently closed, in which case the fees may be transferred to another military installation to be used for the same purposes'.

SEC. 2907. ANNUAL REVIEWS AND REPORTS.

Section 101 of the Sikes Act (16 U.S.C. 670a) is amended by adding at the end the following new subsection:

`(f) REVIEWS AND REPORTS-

`(1) SECRETARY OF DEFENSE- Not later than March 1 of each year, the Secretary of Defense shall review the extent to which integrated natural resources management plans were prepared or were in effect and implemented in accordance with this title in the preceding year, and submit a report on the findings of the review to the committees. Each report shall include--

`(A) the number of integrated natural resources management plans in effect in the year covered by the report, including the date on which each plan was issued in final form or most recently revised;

`(B) the amounts expended on conservation activities conducted pursuant to the plans in the year covered by the report; and

`(C) an assessment of the extent to which the plans comply with this title.

`(2) SECRETARY OF THE INTERIOR- Not later than March 1 of each year and in consultation with the heads of State fish and wildlife agencies, the Secretary of the Interior shall submit a report to the committees on the amounts expended by the Department of the Interior and the State fish and wildlife agencies in the year covered by the report on conservation activities conducted pursuant to integrated natural resources management plans.

`(3) DEFINITION OF COMMITTEES- In this subsection, the term `committees' means--

`(A) the Committee on Resources and the Committee on National Security of the House of Representatives; and

`(B) the Committee on Armed Services and the Committee on Environment and Public Works of the Senate.'.

SEC. 2908 COOPERATIVE AGREEMENTS.

Section 103a of the Sikes Act (16 U.S.C. 670c-1) is amended--

(1) in subsection (a), by striking out `Secretary of Defense' and inserting in lieu thereof `Secretary of a military department';

(2) by striking out subsection (b) and inserting in lieu thereof the following new subsection:

`(b) MULTIYEAR AGREEMENTS- Funds appropriated to the Department of Defense for a fiscal year may be obligated to cover the cost of goods and services provided under a cooperative agreement entered into under subsection(a) or through an agency agreement under section 1535 of title 31, United States Code, during any 18-month period beginning in that fiscal year, without regard to whether the agreement crosses fiscal years.'

SEC. 2909. FEDERAL ENFORCEMENT.

Title I of the Sikes Act is amended--

(1) by redesignating section 106 (16 U.S.C. 670f) as section 108; and

(2) by inserting after section 105 (16 U.S.C. 670e) the following new section:

`SEC. 106. FEDERAL ENFORCEMENT OF OTHER LAWS.

`All Federal laws relating to the management of natural resources on Federal land may be enforced by the Secretary of Defense with respect to violations of the laws that occur on military installations within the United States.'.

SEC. 2910. NATURAL RESOURCES MANAGEMENT SERVICES.

Title I of the Sikes Act is amended by inserting after section 106 (as added by section 2909) the following new section:

`SEC. 107. NATURAL RESOURCES MANAGEMENT SERVICES.

`To the extent practicable using available resources, the Secretary of each military department shall ensure that sufficient numbers of professionally trained natural resources management personnel and natural resources law enforcement personnel are available and assigned responsibility to perform tasks necessary to carry out this title, including the preparation and implementation of integrated natural resources management plans.'.

SEC. 2911. DEFINITIONS.

Title I of the Sikes Act is amended by inserting before section 101 (16 U.S.C. 670a) the following new section:

`SEC. 100. DEFINITIONS.

`In this title:

`(1) MILITARY INSTALLATION- The term `military installation'--

`(A) means any land or interest in land owned by the United States and

administered by the Secretary of Defense or the Secretary of a military department, except land under the jurisdiction of the Assistant Secretary of the Army having responsibility for civil works;

`(B) includes all public lands withdrawn from all forms of appropriation under public land laws and reserved for use by the Secretary of Defense or the Secretary of a military department; and

`(C) does not include any land described in subparagraph (A) or (B) that is subject to an approved recommendation for closure under the Defense Base Closure and Realignment Act of 1990 (part A of title XXIX of Public Law 101-510; 10 U.S.C. 2687 note).

`(2) STATE FISH AND WILDLIFE AGENCY- The term `State fish and wildlife agency' means the one or more agencies of State government that are responsible under State law for managing fish or wildlife resources.

`(3) UNITED STATES- The term `United States' means the States, the District of Columbia, and the territories and possessions of the United States.'.

SEC. 2912. REPEAL OF SUPERSEDED PROVISION.

Section 2 of the Act of October 27, 1986 (Public Law 99-561; 16 U.S.C. 670a-1), is repealed.

SEC. 2913. TECHNICAL AMENDMENTS.

Title I of the Sikes Act, as amended by this title, is amended--

(1) in the heading for the title, by striking out `MILITARY RESERVATIONS' and inserting in lieu thereof `MILITARY INSTALLATIONS';

(2) in section 101(b)(3) (16 U.S.C. 670a(b)(3)), as redesignated by section 2904(c)(4)--

(A) in subparagraph (A), by striking out `the reservation' and inserting in lieu thereof `the installation'; and

(B) in subparagraph (B), by striking out `the military reservation' and inserting in lieu thereof `the military installation';

(3) in section 101(c) (16 U.S.C. 670a(c))--

(A) in paragraph (1), by striking out `a military reservation' and inserting in lieu thereof `a military installation'; and

(B) in paragraph (2), by striking out `the reservation' and inserting in lieu thereof `the installation';

(4) in section 101(e) (16 U.S.C. 670a(e)), by striking `the Federal Grant and Cooperative Agreement Act of 1977 (41 U.S.C. 501 et seq.)' and inserting `chapter 63 of title 31, United States Code';

(5) in section 102 (16 U.S.C. 670b), by striking out `military reservations' and inserting in lieu thereof `military installations'; and

(6) in section 103 (16 U.S.C. 670c)--

(A) by striking out `military reservations' and inserting in lieu thereof `military installations'; and

(B) by striking out `such reservations' and inserting in lieu thereof `the installations'.

SEC. 2914. AUTHORIZATIONS OF APPROPRIATIONS.

(a) CONSERVATION PROGRAMS ON MILITARY INSTALLATIONS- Subsections (b) and (c) of section 108 of the Sikes Act (as redesignated by section 2909(1)) are each amended by striking out `1983' and all that follows through `1993,' and inserting in lieu thereof `1998 through 2003,'.

(b) CONSERVATION PROGRAMS ON PUBLIC LANDS- Section 209 of the Sikes Act (16 U.S.C. 670o) is amended--

(1) in subsection (a), by striking out `the sum of $10,000,000' and all that follows through `to enable the Secretary of the Interior' and inserting in lieu thereof `$4,000,000 for each of fiscal years 1998 through 2003, to enable the Secretary of the Interior'; and

(2) in subsection (b), by striking out `the sum of $12,000,000' and all that follows through `to enable the Secretary of Agriculture' and inserting in lieu thereof `$5,000,000 for each of fiscal years 1998 through 2003, to enable the Secretary of Agriculture'.

A4. SIKES ACT OF 1960

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TITLE 16--CONSERVATION

CHAPTER 5C--CONSERVATION PROGRAMS ON GOVERNMENT LANDS

SUBCHAPTER I--CONSERVATION PROGRAMS ON MILITARY RESERVATIONS

Sec. 670a. Cooperative plan for wildlife conservation and rehabilitation

(a) Authority of Secretary of Defense

The Secretary of Defense is authorized to carry out a program of planning for, and the development, maintenance, and coordination of, wildlife, fish, and game conservation and rehabilitation in each military reservation in accordance with a cooperative plan mutually agreed upon by the Secretary of Defense, the Secretary of the Interior, and the appropriate State agency designated by the State in which the reservation is located.

(b) Contents of plan; review; exclusive component of a multiuse natural resources management plan; special hunting and fishing permits

Each cooperative plan entered into under subsection (a) of this section--

(1) shall provide for--

(A) fish and wildlife habitat improvements or modifications,

(B) range rehabilitation where necessary for support of wildlife,

(C) control of off-road vehicle traffic, and

(D) specific habitat improvement projects and related activities and adequate protection for species of fish, wildlife, and plants considered threatened or endangered;

(2) must be reviewed as to operation and effect by the parties thereto on a regular basis, but not less often than every 5 years;

(3) shall, if a multiuse natural resources management plan is applicable to the military reservation, be treated as the exclusive component of that management plan with respect to wildlife, fish, and game conservation and rehabilitation; and

(4) may stipulate the issuance of special State hunting and fishing permits to individuals and require payment of nominal fees therefor, which fees shall be utilized for the protection, conservation, and management of fish and wildlife, including habitat improvement and related activities in accordance with the cooperative plan; except that--

(A) the Commanding Officer of the reservation or persons designated by that Officer are authorized to enforce such special hunting and fishing permits and to collect the fees therefor, acting as agent or agents for the State if the cooperative plan so provides, and

(B) the fees collected under this paragraph may not be expended with respect to other than the military reservation on which collected.

(c) Prohibitions on sale and lease of lands unless effects compatible with plan

After a cooperative plan is agreed to under subsection (a) of this section--

(1) no sale of land, or forest products from land, that is within a military reservation covered by that plan may be made under section 2665(a) or (b) of title 10; and

(2) no leasing of land that is within the reservation may be made under section 2667 of such title 10;

unless the effects of that sale or leasing are compatible with the purposes of the plan.

(d) Implementation and enforcement of cooperative plans

With regard to the implementation and enforcement of cooperative plans agreed to under subsection (a) of this section--

(1) neither Office of Management and Budget Circular A-76 nor any successor circular thereto applies to the procurement of services that are necessary for that implementation and enforcement; and

(2) priority shall be given to the entering into of contracts for the procurement of such implementation and enforcement services with Federal and State agencies having responsibility for the conservation or management of fish or wildlife.

(e) Applicability of other laws

Cooperative plans agreed to under the authority of this section and section 670b of this title shall not be deemed to be, nor treated as, cooperative agreements to which chapter 63 of title 31 applies.

(Pub. L. 86-797, title I, Sec. 101, formerly Sec. 1, Sept. 15, 1960, 74 Stat. 1052; renumbered title I, Sec. 101, and amended Pub. L. 93-452, Secs. 1(1), 3(1), (2), Oct. 18, 1974, 88 Stat. 1369, 1375; Pub. L. 97-396, Sec. 1, Dec. 31, 1982, 96 Stat. 2005; Pub. L. 99-561, Sec. 3(a)(1), Oct. 27, 1986, 100 Stat. 3150.)

Codification

``Chapter 63 of title 31'' substituted in subsec. (e) for ``the Federal Grant and Cooperative Agreement Act of 1977 (41 U.S.C. 501 et seq.)'' on authority of Pub. L. 97-258, Sec. 4(b), Sept. 13, 1982, 96 Stat. 1067, the first section of which enacted Title 31, Money and Finance.

Amendments

1986--Pub. L. 99-561 amended section generally. Prior to amendment, section read as follows: ``The Secretary of Defense is hereby authorized to carry out a program of planning, development, maintenance and coordination of wildlife, fish and game conservation and rehabilitation in military reservations in accordance with a cooperative plan mutually agreed upon by the Secretary of Defense, the Secretary of Interior and the appropriate State agency designated by the State in which the reservation is located. Such cooperative plan shall provide for (1) fish and wildlife habitat improvements or modifications, (2) range rehabilitation where necessary for support of wildlife, (3) control of off-road vehicle traffic, and (4) specific habitat improvement projects and related activities and adequate protection for species of fish, wildlife, and plants considered threatened or endangered. Such

cooperative plan may stipulate the issuance of special State hunting and fishing permits to individuals and require this payment of a nominal fee therefor, which fees shall be utilized for the protection, conservation and management of fish and wildlife, including habitat improvement and related activities in accordance with the cooperative plan: Provided, That the Commanding Officer of the reservation or persons designated by him are authorized to enforce such special hunting and fishing permits and to collect the fees therefor, acting as agent or agents for the State if the cooperative plan so provides. Cooperative plans agreed to under the authority of this section and section 670b of this title shall not be deemed to be, nor treated as, cooperative agreements to which chapter 63 of title 31 applies.''

1982--Pub. L. 97-396, Sec. 1(1), added cl. (4).

Pub. L. 97-396, Sec. 1(2), inserted provision that cooperative plans agreed to under the authority of this section and section 670b of this title shall not be deemed to be, nor treated as, cooperative agreements to which chapter 63 of title 31 applies.

1974--Pub. L. 93-452, Secs. 1(1), 3(2), inserted provisions requiring the cooperative plan to provide for fish and wildlife habitat improvements, range rehabilitation, and off-road vehicle traffic control.

Short Title of 1978 Amendment

Pub. L. 95-420, Sec. 1, Oct. 5, 1978, 92 Stat. 921, provided: ``That this Act [amending sections 670f and 670o of this title] may be cited as the `Sikes Act Amendments of 1978'.''

Short Title

Pub. L. 86-797, Sept. 15, 1960, 74 Stat. 1052, as amended, which is classified generally to this chapter, is popularly known as the ``Sikes Act''.

Applicability of 1986 Amendments to Existing Contracts

Section 3(a)(2) of Pub. L. 99-561 provided that: ``Subsection (d)(1) of such section 101 (as added by paragraph (1) [16 U.S.C. 670a(d)(1)]) shall not affect any contract entered into before the date of the enactment of this Act [October 27, 1986] for the provision of services to implement or enforce a cooperative plan under this Act [enacting section 670a-1 of this title and amending this section and sections 670f and 670o of this title and section 2665 of Title 10, Armed Forces] on any military installation; but shall apply to the renewal, after such date of enactment, of any such contract.''

Section Referred to in Other Sections

This section is referred to in section 670f of this title.

Sec. 670b. Migratory game birds; permits; fees; Stamp Act and State law requirements

The Secretary of Defense in cooperation with the Secretary of the Interior and the appropriate State agency is authorized to carry out a program for the conservation, restoration and management of migratory game birds on military reservations, including the issuance of special hunting permits and the collection of fees therefor, in accordance with a cooperative plan mutually agreed upon by the Secretary of Defense, the Secretary of the Interior and the appropriate State agency: Provided,

That possession of a special permit for hunting migratory game birds issued pursuant to this subchapter shall not relieve the permittee of the requirements of the Migratory Bird Hunting Stamp Act as amended [16 U.S.C. 718 et seq.] nor of the requirements pertaining to State law set forth in Public Law 85-337.

(Pub. L. 86-797, title I, Sec. 102, formerly Sec. 2, Sept. 15, 1960, 74 Stat. 1053; renumbered title I, Sec. 102, and amended Pub. L. 93-452, Sec. 3(1), (3), Oct. 18, 1974, 88 Stat. 1375.)

References in Text

The Migratory Bird Hunting Stamp Act, referred to in text, is act Mar. 16, 1934, ch. 71, 48 Stat. 452, as amended, which is classified generally to subchapter IV (Sec. 718 et seq.) of chapter 7 of this title. For complete classification of this Act to the Code, see Short Title note set out under section 718 of this title and Tables.

Public Law 85-337, referred to in text, is Pub. L. 85-337, Feb. 28, 1958, 72 Stat. 28, which is classified to section 2671 of Title 10, Armed Forces, section 472 of Title 40, Public Buildings, Property, and Works, and sections 155 to 158 of Title 43, Public Lands. For complete classification of this Act to the Code, see Tables.

Amendments

1974--Pub. L. 93-452, Sec. 3(3), substituted ``title'' for ``Act'' which for purposes of codification was translated as ``subchapter''.

Section Referred to in Other Sections

This section is referred to in sections 670a, 670f of this title.

Sec. 670c. Public outdoor recreation resources; cooperative plan between Secretary of Defense, Secretary of the Interior, and State agencies

The Secretary of Defense is also authorized to carry out a program for the development, enhancement, operation, and maintenance of public outdoor recreation resources at military reservations in accordance with a cooperative plan mutually agreed upon by the Secretary of Defense and the Secretary of the Interior, in consultation with the appropriate State agency designated by the State in which such reservations are located.

(Pub. L. 86-797, title I, Sec. 103, formerly Sec. 3, Sept. 15, 1960, 74 Stat. 1053; Pub. L. 90-465, Sec. 1, Aug. 8, 1968, 82 Stat. 661; renumbered title I, Sec. 103, Pub. L. 93-452, Sec. 3(1), Oct. 18, 1974, 88 Stat. 1375.)

Amendments

1968--Pub. L. 90-465 authorized the carrying out of a public outdoor recreation resources program under a cooperative plan between Secretary of Defense, Secretary of the Interior, and State agencies, and struck out provisions for expenditure of funds collected and purposes therefor, now incorporated in section 670f(a) of this title.

Sec. 670d. Liability for funds; accounting to Comptroller General

The Department of Defense is held free from any liability to pay into the Treasury of the United States upon the operation of the program or programs authorized by this subchapter any funds which may have been or may hereafter be collected, received or expended pursuant to, and for the purposes of, this subchapter, and which collections, receipts and expenditures have been properly accounted for to the Comptroller General of the United States.

(Pub. L. 86-797, title I, Sec. 104, formerly Sec. 4, Sept. 15, 1960, 74 Stat. 1053; renumbered title I, Sec. 104, and amended Pub. L. 93-452, Sec. 3(1), (4), Oct. 18, 1974, 88 Stat. 1375.)

Amendments

1974--Pub. L. 93-452, Sec. 3(4), substituted ``title'' for ``Act'' wherever appearing, which for purposes of codification was translated as ``subchapter''.

Sec. 670e. Applicability to other laws; national forest lands

Nothing herein contained shall be construed to modify, amend or repeal any provision of Public Law 85-337, nor as applying to national forest lands administered pursuant to the provisions of section 9 of the Act of June 7, 1924 (43 Stat. 655), nor section 315m of title 43.

(Pub. L. 86-797, title I, Sec. 105, formerly Sec. 5, Sept. 15, 1960, 74 Stat. 1053; renumbered title I, Sec. 105, Pub. L. 93-452, Sec. 3(1), Oct. 18, 1974, 88 Stat. 1375.)

References in Text

Public Law 85-337, referred to in text, is Pub. L. 85-337, Feb. 28, 1958, 72 Stat. 28, which is classified to section 2671 of Title 10, Armed Forces; section 472 of Title 40, Public Buildings, Property, and Works; and sections 155 to 158 of Title 43, Public Lands. For complete classification of this Act to the Code, see Tables.

Section 9 of the Act of June 7, 1924 [ch. 348, 43 Stat. 655], referred to in text, was classified to the code as follows: The first and fifth sentences were classified to section 471(b) of this title, which was repealed by section 704(a) of Pub. L. 94-579; the second and third sentences were classified to section 505 of this title; and the fourth sentence was classified to section 499 of this title.

Sec. 670f. Appropriations and expenditures

(a) Expenditures exclusively under cooperative plans; availability of funds until expended

The Secretary of Defense shall expend such funds as may be collected in accordance with the cooperative plans agreed to under sections 670a and 670b of this title and cooperative agreements agreed to under section 670c-1 of this title and for no other purpose. All funds that are so collected shall remain available until expended.

(b) Authorization of appropriations to Secretary of Defense

There are authorized to be appropriated to the Secretary of Defense not to exceed $1,500,000 for each of the fiscal years 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, and 1993, to carry out this

subchapter, including the enhancement of fish and wildlife habitat and the development of public recreation and other facilities, and to carry out such functions and responsibilities as the Secretary may have under cooperative agreements entered into under section 670c-1 of this title. The Secretary of Defense shall, to the greatest extent practicable, enter into agreements to utilize the services, personnel, equipment, and facilities, with or without reimbursement, of the Secretary of the Interior in carrying out the provisions of this section.

(c) Authorization of appropriations to Secretary of the Interior

There are authorized to be appropriated to the Secretary of the Interior not to exceed $3,000,000 for each of the fiscal years 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, and 1993, to carry out such functions and responsibilities as the Secretary may have under cooperative plans to which such Secretary is a party under this section, including those for the enhancement of fish and wildlife habitat and the development of public recreation and other facilities.

(d) Use of other conservation or rehabilitation authorities

The Secretary of Defense and the Secretary of the Interior may each use any authority available to him under other laws relating to fish, wildlife, or plant conservation or rehabilitation for purposes of carrying out the provisions of this subchapter.

(Pub. L. 86-797, title I, Sec. 106, formerly Sec. 6, as added Pub. L. 90-465, Sec. 2, Aug. 8, 1968, 82 Stat. 661; renumbered title I, Sec. 106, and amended Pub. L. 93-452, Secs. 1(2), 3(1), (4), (5), Oct. 18, 1974, 88 Stat. 1369, 1375; Pub. L. 95-420, Sec. 2, Oct. 5, 1978, 92 Stat. 921; Pub. L. 97-396, Sec. 2, Dec. 31, 1982, 96 Stat. 2005; Pub. L. 99-561, Secs. 1(a), 3(b), Oct. 27, 1986, 100 Stat. 3149, 3151; Pub. L. 100-653, title II, Sec. 202(a), Nov. 14, 1988, 102 Stat. 3827; Pub. L. 101-189, div. B, title XXVIII, Sec. 2845(b), Nov. 29, 1989, 103 Stat. 1664.)

Amendments

1989--Subsec. (a). Pub. L. 101-189, Sec. 2845(b)(1), inserted ``and cooperative agreements agreed to under section 670c-1 of this title'' after ``sections 670a and 670b of this title''.

Subsec. (b). Pub. L. 101-189, Sec. 2845(b)(2), inserted ``, and to carry out such functions and responsibilities as the Secretary may have under cooperative agreements entered into under section 670c-1 of this title'' before period at end of first sentence.

1988--Subsecs. (b), (c). Pub. L. 100-653 substituted ``1988, 1989, 1990, 1991, 1992, and 1993'' for ``and 1988''.

1986--Subsec. (a). Pub. L. 99-561, Sec. 3(b), inserted provision that all funds collected remain available until expended.

Subsecs. (b), (c). Pub. L. 99-561, Sec. 1(a), substituted ``1985, 1986, 1987, and 1988'' for ``and 1985''.

1982--Subsecs. (b), (c). Pub. L. 97-396, Sec. 2(1), substituted ``1983, 1984, and 1985,'' for ``ending September 30, 1979, September 30, 1980, and September 30, 1981,'' wherever appearing.

Subsec. (d). Pub. L. 97-396, Sec. 2(2), added subsec. (d).

1978--Subsec. (b). Pub. L. 95-420 substituted provisions authorizing the appropriation of not to exceed $1,500,000 for each of the fiscal years ending Sept. 30, 1979, 1980 and 1981 for provisions authorizing the appropriation of not to exceed $500,000 per fiscal year for fiscal years beginning July 1, 1969, 1970, and 1971 and not to exceed $1,500,000 for fiscal year beginning July 1, 1972 and for each of the next five fiscal years thereafter and struck out provisions relating to

the authorization of appropriations to the Secretary of the Interior not to exceed $2,000,000 for the fiscal year beginning July 1, 1973 and for each of the next four fiscal years thereafter to enable the Secretary to carry out the functions and responsibilities under cooperative plans, sums appropriated under this subchapter to be available until expended.

Subsec. (c). Pub. L. 95-420 added subsec. (c).

1974--Subsec. (a). Pub. L. 93-452, Sec. 3(5), substituted ``sections 101 and 102'' for ``sections 1 and 2'' which for purposes of codification was translated as ``sections 670a and 670b'', therefore requiring no change in text because of redesignation of former sections 1 and 2 of Pub. L. 86-797 by section 3(1) of Pub. L. 93-452.

Subsec. (b). Pub. L. 93-452, Secs. 1(2), 3(4), inserted provisions authorizing appropriations of not to exceed $1,500,000 for the fiscal year beginning July 1, 1972, and for each of the next five fiscal years thereafter, and authorizing appropriations to the Secretary of the Interior not to exceed $2,000,000 for the fiscal year beginning July 1, 1973, and for each of the next four fiscal years thereafter, and substituted ``title'' for ``Act'' wherever appearing, which for purposes of codification was translated as ``subchapter''.

Sec. 670g. Wildlife, fish, and game conservation and rehabilitation programs; cooperation between Secretary of the Interior, Secretary of Agriculture, and State agencies in planning, etc., in accordance with comprehensive plans; scope and implementation of programs

(a) Conservation and rehabilitation programs

The Secretary of the Interior and the Secretary of Agriculture shall each, in cooperation with the State agencies and in accordance with comprehensive plans developed pursuant to section 670h of this title, plan, develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish, and game. Such conservation and rehabilitation programs shall include, but not be limited to, specific habitat improvement projects and related activities and adequate protection for species of fish, wildlife, and plants considered threatened or endangered.

(b) Implementation of programs

The Secretary of the Interior shall implement the conservation and rehabilitation programs required under subsection (a) of this section on public land under his jurisdiction. The Secretary of the Interior shall adopt, modify, and implement the conservation and rehabilitation programs required under subsection (a) of this section on public land under the jurisdiction of the Chairman, but only with the prior written approval of the Atomic Energy Commission, and on public land under the jurisdiction of the Administrator, but only with the prior written approval of the Administrator. The Secretary of Agriculture shall implement such conservation and rehabilitation programs on public land under his jurisdiction.

(Pub. L. 86-797, title II, Sec. 201, as added Pub. L. 93-452, Sec. 2, Oct. 18, 1974, 88 Stat. 1369; amended Pub. L. 97-396, Sec. 3, Dec. 31, 1982, 96 Stat. 2005.)

Amendments

1982--Subsec. (a). Pub. L. 97-396 inserted ``of fish, wildlife, and plants'' after ``species''.

Transfer of Functions

Atomic Energy Commission abolished and functions transferred by sections 5814 and 5841 of Title 42, The Public Health and Welfare. See, also, Transfer of Functions notes set out under those sections.

Desert Tortoise Plan

Pub. L. 100-275, Sec. 12, Mar. 31, 1988, 102 Stat. 60, directed Secretary of the Interior to review status of populations of desert tortoises on lands in Nevada and other States managed by Secretary, other than lands conveyed or leased pursuant to Pub. L. 100-275, assess nature and extent of threats to continued health or stability of such populations on such lands, and prepare a comprehensive plan to address such threats, with Secretary to consult with State officials, other Federal agencies responsible for management of lands where desert tortoise populations are located, the Desert Tortoise Council, and other persons or groups identified by Secretary as having expertise relevant to requirements of this section; such review and assessment to be completed and results to be made available to the public and transmitted to certain committees of Congress no later than two years after Mar. 31, 1988, and such plan to be developed and transmitted to such committees no later than three years after Mar. 31, 1988; with a failure by Secretary to transmit such report within such three-year period not to relieve the Secretary from requirement to prepare such plan.

Sec. 670h. Comprehensive plans for conservation and rehabilitation programs

(a) Development by Secretary of the Interior and Secretary of Agriculture; consultation with State agencies; prior written approval of concerned Federal agencies

(1) The Secretary of the Interior shall develop, in consultation with the State agencies, a comprehensive plan for conservation and rehabilitation programs to be implemented on public land under his jurisdiction and the Secretary of Agriculture shall do the same in connection with public land under his jurisdiction.

(2) The Secretary of the Interior shall develop, with the prior written approval of the Atomic Energy Commission, a comprehensive plan for conservation and rehabilitation programs to be implemented on public land under the jurisdiction of the Chairman and develop, with the prior written approval of the Administrator, a comprehensive plan for such programs to be implemented on public land under the jurisdiction of the Administrator. Each such plan shall be developed after the Secretary of the Interior makes, with the prior written approval of the Chairman or the Administrator, as the case may be, and in consultation with the State agencies, necessary studies and surveys of the land concerned to determine where conservation and rehabilitation programs are most needed.

(b) Development consistent with overall land use and management plans; hunting, trapping, and fishing authorized in accordance with applicable State laws and regulations

Each comprehensive plan developed pursuant to this section shall be consistent with any overall land use and management plans for the lands involved. In any case in which hunting, trapping, or fishing (or any combination thereof) of resident fish and wildlife is to be permitted on public land under a comprehensive plan, such hunting, trapping, and

fishing shall be conducted in accordance with applicable laws and regulations of the State in which such land is located.

(c) Cooperative agreements by State agencies for implementation of programs; modifications; contents; hunting, trapping and fishing authorized in accordance with applicable State laws and regulations; regulations

(1) Each State agency may enter into a cooperative agreement with--

(A) the Secretary of the Interior with respect to those conservation and rehabilitation programs to be implemented under this subchapter within the State on public land which is under his jurisdiction;

(B) the Secretary of Agriculture with respect to those conservation and rehabilitation programs to be implemented under this subchapter within the State on public land which is under his jurisdiction; and

(C) the Secretary of the Interior and the Chairman or the Administrator, as the case may be, with respect to those conservation and rehabilitation programs to be implemented under this subchapter within the State on public land under the jurisdiction of the Chairman or the Administrator; except that before entering into any cooperative agreement which affects public land under the jurisdiction of the Chairman, the Secretary of the Interior shall obtain the prior written approval of the Atomic Energy Commission and before entering into any cooperative agreement which affects public lands under the jurisdiction of the Administrator, the Secretary of the Interior shall obtain the prior written approval of the Administrator.

Conservation and rehabilitation programs developed and implemented pursuant to this subchapter shall be deemed as supplemental to wildlife, fish, and game-related programs conducted by the Secretary of the Interior and the Secretary of Agriculture pursuant to other provisions of law. Nothing in this subchapter shall be construed as limiting the authority of the Secretary of the Interior or the Secretary of Agriculture, as the case may be, to manage the national forests or other public lands for wildlife and fish and other purposes in accordance with the Multiple-Use Sustained-Yield Act of 1960 (74 Stat. 215; 16 U.S.C. 528-531) or other applicable authority.

(2) Any conservation and rehabilitation program included within a cooperative agreement entered into under this subsection may be modified in a manner mutually agreeable to the State agency and the Secretary concerned (and the Chairman or the Administrator, as the case may be, if public land under his jurisdiction is involved). Before modifying any cooperative agreement which affects public land under the jurisdiction of the Chairman, the Secretary of the Interior shall obtain the prior written approval of the Atomic Energy Commission and before modifying any cooperative agreement which affects public land under the jurisdiction of the Administrator, the Secretary of the Interior shall obtain the prior written approval of the Administrator.

(3) Each cooperative agreement entered into under this subsection shall--

(A) specify those areas of public land within the State on which conservation and rehabilitation programs will be implemented;

(B) provide for fish and wildlife habitat improvements or modifications, or both;

(C) provide for range rehabilitation where necessary for support of wildlife;

(D) provide adequate protection for fish and wildlife officially classified as threatened or endangered pursuant to section 1533 of this title or considered to be threatened, rare, or endangered by the State agency;

(E) require the control of off-road vehicle traffic;

(F) if the issuance of public land area management stamps is agreed to pursuant to section 670i(a) of this title--

(i) contain such terms and conditions as are required under section 670i(b) of this title;

(ii) require the maintenance of accurate records and the filing of annual reports by the State agency to the Secretary of the Interior or the Secretary of Agriculture, or both, as the case may be, setting forth the amount and disposition of the fees collected for such stamps; and

(iii) authorize the Secretary concerned and the Comptroller General of the United States, or their authorized representatives, to have access to such records for purposes of audit and examination; and

(G) contain such other terms and conditions as the Secretary concerned and the State agency deem necessary and appropriate to carry out the purposes of this subchapter.

A cooperative agreement may also provide for arrangements under which the Secretary concerned may authorize officers and employees of the State agency to enforce, or to assist in the enforcement of, section 670j(a) of this title.

(4) Except where limited under a comprehensive plan or pursuant to cooperate agreement, hunting, fishing, and trapping shall be permitted with respect to resident fish and wildlife in accordance with applicable laws and regulations of the State in which such land is located on public land which is the subject of a conservation and rehabilitation program implemented under this subchapter.

(5) The Secretary of the Interior and the Secretary of Agriculture, as the case may be, shall prescribe such regulations as are deemed necessary to control, in a manner consistent with the applicable comprehensive plan and cooperative agreement, the public use of public land which is the subject of any conservation and rehabilitation program implemented by him under this subchapter.

(d) State agency agreements not cooperative agreements under other provisions

Agreements entered into by State agencies under the authority of this section shall not be deemed to be, or treated as, cooperative agreements to which chapter 63 of title 31 applies.

(Pub. L. 86-797, title II, Sec. 202, as added Pub. L. 93-452, Sec. 2, Oct. 18, 1974, 88 Stat. 1369; amended Pub. L. 97-396, Sec. 4, Dec. 31, 1982, 96 Stat. 2005.)

References in Text

The Multiple-Use Sustained-Yield Act of 1960, referred to in subsec. (c)(1), is Pub. L. 86-517, June 12, 1960, 74 Stat. 215, as amended, which is classified to sections 528 to 531 of this title. For complete classification of this Act to the Code, see Short Title note set out under section 528 of this title and Tables.

Codification

In subsec. (d), ``chapter 63 of title 31'' substituted for ``the Federal Grant and Cooperative Agreement Act of 1977 (41 U.S.C. 501 et seq.)'' on authority of Pub. L. 97-258, Sec. 4(b), Sept. 13, 1982, 96 Stat. 1067, the first section of which enacted Title 31, Money and Finance.

Amendments

1982--Subsec. (d). Pub. L. 97-396 added subsec. (d).

Transfer of Functions

Atomic Energy Commission abolished and functions transferred by sections 5814 and 5841 of Title 42, The Public Health and Welfare. See, also, Transfer of Functions notes set out under those sections.

Section Referred to in Other Sections

This section is referred to in sections 670g, 670j, 670o of this title.

Sec. 670i. Public land management area stamps; agreement between State agencies and Secretary of the Interior and Secretary of Agriculture requiring stamps for hunting, trapping, and fishing on public lands subject to programs; conditions of agreement

(a) Any State agency may agree with the Secretary of the Interior and the Secretary of Agriculture (or with the Secretary of the Interior or the Secretary of Agriculture, as the case may be, if within the State concerned all conservation and rehabilitation programs under this subchapter will be implemented by him) that no individual will be permitted to hunt, trap, or fish on any public land within the State which is subject to a conservation and rehabilitation program implemented under this subchapter unless at the time such individual is engaged in such activity he has on his person a valid public land management area stamp issued pursuant to this section.

(b) Any agreement made pursuant to subsection (a) of this section to require the issuance of public land management area stamps shall be subject to the following conditions:

(1) Such stamps shall be issued, sold, and the fees therefor collected, by the State agency or by the authorized agents of such agency.

(2) Notice of the requirement to possess such stamps shall be displayed prominently in all places where State hunting, trapping, or fishing licenses are sold. To the maximum extent practicable, the sale of such stamps shall be combined with the sale of such State hunting, trapping, and fishing licenses.

(3) Except for expenses incurred in the printing, issuing, or selling of such stamps, the fees collected for such stamps by the State agency shall be utilized in carrying out conservation and rehabilitation programs implemented under this subchapter in the State concerned. Such fees may be used by the State agency to acquire lands or interests therein from willing sellers or donors to provide public access to program lands that have no existing public access for enhancement of outdoor recreation and wildlife conservation: Provided, That the Secretary of Agriculture and the Secretary of the Interior maintain such access, or ensure that maintenance is provided for such access, through or to lands within their respective jurisdiction.

(4) The purchase of any such stamp shall entitle the purchaser thereof to hunt, trap, and fish on any public land within such State which is the subject of a conservation or rehabilitation program implemented under this subchapter except to the extent that the public use of such land is limited pursuant to a comprehensive plan or cooperative agreement; but the purchase of any such stamp shall not be construed as (A) eliminating the requirement for the purchase of a migratory bird hunting stamp as set forth in section 718a of

this title, or (B) relieving the purchaser from compliance with any applicable State game and fish laws and regulations.

(5) The amount of the fee to be charged for such stamps, the age at which the individual is required to acquire such a stamp, and the expiration date for such stamps shall be mutually agreed upon by the State agency and the Secretary or Secretaries concerned; except that each such stamp shall be void not later than one year after the date of issuance.

(6) Each such stamp must be validated by the purchaser thereof by signing his name across the face of the stamp.

(7) Any individual to whom a stamp is sold pursuant to this section shall upon request exhibit such stamp for inspection to any officer or employee of the Department of the Interior or the Department of Agriculture, or to any other person who is authorized to enforce section 670j(a) of this title.

(Pub. L. 86-797, title II, Sec. 203, as added Pub. L. 93-452, Sec. 2, Oct. 18, 1974, 88 Stat. 1371; amended Pub. L. 100-653, title II, Sec. 201, Nov. 14, 1988, 102 Stat. 3826.)

Amendments

1988--Subsec. (b)(3). Pub. L. 100-653 amended par. (3) generally. Prior to amendment, par. (3) read as follows: ``Except for expenses incurred in the printing, issuing, or selling of such stamps, the fees collected for such stamps by the State agency shall be utilized in carrying out conservation and rehabilitation programs implemented under this subchapter in the State concerned and for no other purpose. If such programs are implemented by both the Secretary of the Interior and the Secretary of Agriculture in the State, the Secretaries shall mutually agree, on such basis as they deem reasonable, on the proportion of such fees that shall be applied by the State agency to their respective programs.''

Section Referred to in Other Sections

This section is referred to in sections 670h, 670l of this title.

Sec. 670j. Enforcement provisions

(a) Violations and penalties

(1) Any person who hunts, traps, or fishes on any public land which is subject to a conservation and rehabilitation program implemented under this subchapter without having on his person a valid public land management area stamp, if the possession of such a stamp is required, shall be fined not more than $1,000, or imprisoned for not more than six months, or both.

(2) Any person who knowingly violates or fails to comply with any regulations prescribed under section 670h(c)(5) of this title shall be fined not more than $500, or imprisoned not more than six months, or both.

(b) Designation of enforcement personnel powers; issuance of arrest warrants; trial and sentencing by United States magistrate judges

(1) For the purpose of enforcing subsection (a) of this section, the Secretary of the Interior and the Secretary of Agriculture may designate any employee of their respective departments, and any State officer or

employee authorized under a cooperative agreement to enforce subsection (a) of this section to (i) carry firearms; (ii) execute and serve any warrant or other process issued by a court or officer of competent jurisdiction; (iii) make arrests without warrant or process for a misdemeanor he has reasonable grounds to believe is being committed in his presence or view; (iv) search without warrant or process any person, place, or conveyance as provided by law; and (v) seize without warrant or process any evidentiary item as provided by law.

(2) Upon the sworn information by a competent person, any United States magistrate judge or court of competent jurisdiction may issue process for the arrest of any person charged with committing any offense under subsection (a) of this section.

(3) Any person charged with committing any offense under subsection (a) of this section may be tried and sentenced by any United States magistrate judge designated for that purpose by the court by which he was appointed, in the same manner and subject to the same conditions as provided for in section 3401 of title 18.

(c) Seizure and forfeiture of equipment and vessels

All guns, traps, nets, and other equipment, vessels, vehicles, and other means of transportation used by any person when engaged in committing an offense under subsection (a) of this section shall be subject to forfeiture to the United States and may be seized and held pending the prosecution of any person arrested for committing such offense. Upon conviction for such offense, such forfeiture may be adjudicated as a penalty in addition to any other provided for committing such offense.

(d) Applicability of customs laws to seizures and forfeitures; exceptions

All provisions of law relating to the seizure, forfeiture, and condemnation of a vessel for violation of the customs laws, the disposition of such vessel or the proceeds from the sale thereof, and the remission or mitigation of such forfeitures, shall apply to the seizures and forfeitures incurred, or alleged to have been incurred, under the provisions of this section, insofar as such provisions of law are applicable and not inconsistent with the provisions of this section; except that all powers, rights, and duties conferred or imposed by the customs laws upon any officer or employee of the Department of the Treasury shall, for the purposes of this section, be exercised or performed by the Secretary of the Interior or the Secretary of Agriculture, as the case may be, or by such persons as he may designate.

(Pub. L. 86-797, title II, Sec. 204, as added Pub. L. 93-452, Sec. 2, Oct. 18, 1974, 88 Stat. 1372; amended Pub. L. 101-650, title III, Sec. 321, Dec. 1, 1990, 104 Stat. 5117.)

References in Text

The customs laws, referred to in subsec. (d), are classified generally to Title 19, Customs Duties.

Change of Name

``United States magistrate judge'' substituted for ``United States magistrate'' in subsec. (b)(2), (3) pursuant to section 321 of Pub. L. 101-650, set out as a note under section 631 of Title 28, Judiciary and Judicial Procedure.

Section Referred to in Other Sections

This section is referred to in sections 670h, 670i of this title.

Sec. 670k. Definitions

As used in this subchapter--

(1) The term ``Administrator'' means the Administrator of the National Aeronautics and Space Administration.

(2) The term ``Chairman'' means the Chairman of the Atomic Energy Commission.

(3) The term ``off-road vehicle'' means any motorized vehicle designed for, or capable of, cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain; but such term does not include--

(A) any registered motorboat at the option of each State;

(B) any military, fire, emergency, or law enforcement vehicle when used for emergency purposes; and

(C) any vehicle the use of which is expressly authorized by the Secretary of the Interior or the Secretary of Agriculture under a permit, lease, license, or contract.

(4) The term ``public land'' means all lands, under the respective jurisdiction of the Secretary of the Interior, the Secretary of Agriculture, the Chairman, and the Administrator, except land which is, or hereafter may be, within or designated as--

(A) a military reservation;

(B) a unit of the National Park System;

(C) an area within the national wildlife refuge system;

(D) an Indian reservation; or

(E) an area within an Indian reservation or land held in trust by the United States for an Indian or Indian tribe.

(5) The term ``State agency'' means the agency or agencies of a State responsible for the administration of the fish and game laws of the State.

(6) The term ``conservation and rehabilitation programs'' means to utilize those methods and procedures which are necessary to protect, conserve, and enhance wildlife, fish, and game resources to the maximum extent practicable on public lands subject to this subchapter consistent with any overall land use and management plans for the lands involved. Such methods and procedures shall include, but shall not be limited to, all activities associated with scientific resources management such as protection, research, census, law enforcement, habitat management, propagation, live trapping and transplantation, and regulated taking in conformance with the provisions of this subchapter. Nothing in this term shall be construed as diminishing the authority or jurisdiction of the States with respect to the management of resident species of fish, wildlife, or game, except as otherwise provided by law.

(Pub. L. 86-797, title II, Sec. 205, as added Pub. L. 93-452, Sec. 2, Oct. 18, 1974, 88 Stat. 1373.)

Transfer of Functions

Atomic Energy Commission abolished and functions transferred by sections 5814 and 5841 of Title 42, The Public Health and Welfare. See, also, Transfer of Functions notes set out under those sections.

Sec. 670l. Applicability to Forest Service and Bureau of Land Management lands of public land management area stamp requirements; authorized fees

Notwithstanding any other provision in this subchapter, section 670i of this title shall not apply to land which is, or hereafter may be, within or designated as Forest Service land or as Bureau of Land Management land of any State in which all Federal lands therein comprise 60 percent or more of the total area of such State; except that in any such State, any appropriate State agency may agree with the Secretary of Agriculture or the Secretary of the Interior, or both, as the case may be, to collect a fee as specified in such agreement at the point of sale of regular licenses to hunt, trap, or fish in such State, the proceeds of which shall be utilized in carrying out conservation and rehabilitation programs implemented under this subchapter in the State concerned and for no other purpose.

(Pub. L. 86-797, title II, Sec. 206, as added Pub. L. 93-452, Sec. 2, Oct. 18, 1974, 88 Stat. 1374.)

Sec. 670m. Indian rights unaffected; State or Federal jurisdiction regulating Indian rights preserved

Nothing in this subchapter shall enlarge or diminish or in any way affect (1) the rights of Indians or Indian tribes to the use of water or natural resources or their rights to fish, trap, or hunt wildlife as secured by statute, agreement, treaty, Executive order, or court decree; or (2) existing State or Federal jurisdiction to regulate those rights either on or off reservations.

(Pub. L. 86-797, title II, Sec. 207, as added Pub. L. 93-452, Sec. 2, Oct. 18, 1974, 88 Stat. 1374.)

Sec. 670n. Omitted

Codification

Section, Pub. L. 86-797, title II, Sec. 208, as added Pub. L. 93-452, Sec. 2, Oct. 18, 1974, 88 Stat. 1374, which provided that nothing in this chapter in any way affect the jurisdiction, authority, duties, or activities of the Joint Federal-State Land Use Planning Commission established pursuant to section 1616 of Title 43, Public Lands, and that during the development of any cooperative plan for Alaska which may be agreed to under subchapter I of this chapter after the effective date of this section and of any comprehensive program for Alaska under this subchapter, such Commission shall be given an opportunity to submit its comments on such plan or program, was omitted in view of the termination of the Joint Federal-State Land Use Planning Commission on June 30, 1979.

Sec. 670o. Authorization of appropriations

(a) Functions and responsibilities of Secretary of the Interior

There are authorized to be appropriated the sum of $10,000,000 for each of the fiscal years 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, and 1993, to enable the Secretary of the Interior to carry out his functions and responsibilities under this subchapter, including data collection, research, planning, and conservation and rehabilitation programs on public lands. Such funds shall be in addition to those authorized for wildlife, range, soil, and water management pursuant to section 1748 of title 43, or other provisions of law.

(b) Functions and responsibilities of Secretary of Agriculture

There are authorized to be appropriated the sum of $12,000,000 for each of the fiscal years 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, and 1993, to enable the Secretary of Agriculture to carry out his functions and responsibilities under this subchapter. Such funds shall be in addition to those provided under other provisions of law. In requesting funds under this subsection the Secretary shall take into account fish and wildlife program needs, including those for projects, identified in the State comprehensive plans as contained in the program developed pursuant to the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended (16 U.S.C. 1601-1610).

(c) Use of other conservation or rehabilitation authorities

The Secretary of the Interior and the Secretary of Agriculture may each use any authority available to him under other laws relating to fish, wildlife, or plant conservation or rehabilitation for purposes of carrying out the provisions of this subchapter.

(d) Contract authority respecting property, services or assistance affecting State agencies; appropriations requirement

The Secretary of the Interior and the Secretary of Agriculture may each make purchases and contracts for property and services from, or provide assistance to, the State agencies concerned, if such property, services or assistance is required to implement those projects and programs carried out on, or of benefit to, Federal lands and identified in the comprehensive plans or cooperative agreements developed under section 670h of this title without regard to title III (other than section 304) of the Federal Property and Administrative Services Act of 1949 (41 U.S.C. 251-260). Contract authority provided in this section is effective only to such extent or in such amounts as are provided in appropriation Acts.

(Pub. L. 86-797, title II, Sec. 209, as added Pub. L. 93-452, Sec. 2, Oct. 18, 1974, 88 Stat. 1374; amended Pub. L. 95-420, Sec. 3, Oct. 5, 1978, 92 Stat. 921; Pub. L. 97-396, Sec. 5, Dec. 31, 1982, 96 Stat. 2005; Pub. L. 99-561, Sec. 1(b), Oct. 27, 1986, 100 Stat. 3149; Pub. L. 100-653, title II, Sec. 202(b), Nov. 14, 1988, 102 Stat. 3827.)

References in Text

The Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, referred to in subsec. (b), is Pub. L. 93-378, Aug. 17, 1974, 88 Stat. 476, as amended, which is classified generally to subchapter I (Sec. 1600 et seq.) of chapter 36 of this title. For complete classification of this Act to the Code, see Short Title note set out under section 1600 of this title and Tables.

The Federal Property and Administrative Services Act of 1949, referred to in subsec. (d), is act June 30, 1949, ch. 288, 63 Stat. 377, as amended. Title III of the Act is classified generally to subchapter IV (Sec. 251 et seq.) of chapter 4 of Title 41, Public Contracts. Section 304 of that Act is classified to section 254 of Title 41. For complete classification of this Act to the Code, see Short Title note set out under section 471 of Title 40, Public Buildings, Property, and Works, and Tables.

Amendments

1988--Subsecs. (a), (b). Pub. L. 100-653 substituted ``1988, 1989, 1990, 1991, 1992, and 1993'' for ``and 1988''.

1986--Subsecs. (a), (b). Pub. L. 99-561 substituted ``1985, 1986, 1987, and 1988'' for ``and 1985''.

1982--Subsecs. (a), (b). Pub. L. 97-396, Sec. 5(1), substituted ``1983, 1984, and 1985,'' for ``ending September 30, 1979, September 30, 1980, and September 30, 1981,'' wherever appearing.

Subsecs. (c), (d). Pub. L. 97-396, Sec. 5(2), added subsecs. (c) and (d).

1978--Subsec. (a). Pub. L. 95-420 substituted provisions authorizing appropriation of $10,000,000 for each of fiscal years ending Sept. 30, 1979, 1980, and 1981 to enable the Secretary to carry out his functions, including data collection, research, planning, and conservation and rehabilitation programs, such funds to be in addition to those authorized for wildlife, range, soil and water management pursuant to section 1748 of title 43, for provisions authorizing appropriation of $10,000,000 for fiscal year ending June 30, 1974, and for each of next four fiscal years to enable Department of the Interior to carry out its functions.

Subsec. (b). Pub. L. 95-420 substituted provisions authorizing appropriation of $12,000,000 for fiscal years ending Sept. 30, 1979, 1980, and 1981 to enable Secretary of Agriculture to carry out his functions, such funds to be in addition to those otherwise provided, and provisions relating to fish and wildlife program needs including those identified in State plans developed pursuant to Forest and Rangeland Renewable Resources Planning Act of 1974, for provisions authorizing appropriation of $10,000,000 for fiscal year ending June 30, 1974, and for each of next four fiscal years to enable Department of Agriculture to carry out its functions.

A5. SIKES ACT GUIDANCE

Information on the Sikes Act, including guidance, updates, and metrics, can be found at: https://www.denix.osd.mil/denix/Public/Library/NCR/metric_sikes.html.

Memorandum, Oct 10, 2002. Implementation of Sikes Act Improvement Act: Updated Guidance.

This Memorandum of the Under Secretary of Defense, issued on 10 October 2002, provides updated guidance for implementing Sikes Act Improvement Act requirements consistently throughout the Department of Defense (DoD). This guidance replaces implementing guidance dated September 21, 1998, same subject. The attachments define coordination, reporting, implementation, and miscellaneous Sikes Act Improvement Act requirements:

- Coordination Requirements: the Scope of Fish and Wildlife Service (FWS) and state involvement in developing integrated natural resources management plans (INRMPs); defining "mutual agreement" with the FWS and appropriate State fish and wildlife agency; soliciting public comments; specific coordination requirements; integrating other plans, programs, and policies; plan availability.
- Reporting Requirements: reporting deadlines and formats to use for providing information to our office for consolidation into required DoD reports to Congress; establishing formal new conservation metrics for preparing and implementing INRMPs.
- Implementation Requirements: budgeting for INRMP projects; defining implementation; INRMPs as a substitute for critical habitat designation; special management criteria; the INRMP Handbook.
- Miscellaneous requirements: when and how to prepare and revise INRMPs; how to accommodate public access; addressing the no net loss to military lands 0 requirement; INRMPs for closing bases; funds authorization for 18 months; authorization for cooperative agreements with private, State, and local organizations.

The USMC has incorporated this guidance into the *Handbook for Preparing, Revising, and Implementing Integrated Natural Resources Management Plans on Marine Corps Installations* (see Appendices C, E, and F, HQ USMC 2006).

The October 2002 memorandum and its supplement issued in November 2004 emphasize implementing and improving the overall INRMP coordination process and focus on coordinating with stakeholders, reporting requirements and metrics, budgeting for INRMP projects, using the INRMP as a substitute for critical habitat designation, supporting military training and testing needs, and the INRMP review process.

Memorandum, Nov 1, 2004. Implementation of Sikes Act Improvement Amendments: Supplemental Guidance concerning INRMP Reviews.

This Memorandum of the Under Secretary of Defense, issued on 1 November 2004 provides supplemental Department of Defense (DoD) guidance for implementing the Sikes Act Improvement Amendments of 1997. The new guidance addresses the Integrated Natural Resources Management Plan (INRMP) process as pertains to INRMP reviews, public comments on the reviews, and Endangered Species Act consultation on INRMPs.

The most important change concerns the difference between reviewing and revising an INRMP. The requirement to review the INRMPs on a regular basis, but not less often than every five years does not mean that every INRMP necessarily needs to be revised. The Sikes Act specifically directs that the INRMPs be reviewed "as to operation and effect," emphasizing that the review is intended to determine whether existing INRMPs are being implemented to meet the requirements of the Sikes Act and contribute to the conservation and rehabilitation of natural resources on military installations. As a result of this important clarification, we expect that many existing INRMPs will not need revision.

The USMC has incorporated this guidance into the *Handbook for Preparing, Revising, and Implementing Integrated Natural Resources Management Plans on Marine Corps Installations* (see Appendix D, HQ USMC 2006).

Memorandum, May 17, 2005. Implementation of Sikes Act Improvement Amendments: Supplemental Guidance concerning Leased Lands.

This Memorandum of the Under Secretary of Defense, issued on 17 May 2005 provides supplemental guidance for implementing Sikes Act Improvement Amendments requirements consistently throughout the Department of Defense. It adds to implementing guidance dated October 10, 2002 and November 1, 2004 same subject.

The guidance covers lands occupied by tenants or lessees or being used by others pursuant to a permit, license, right of way, or any other form of permission. INRMPs must address the resource management on all lands for which the subject installation has real property accountability, including leased lands. Installation commanders may require tenants to accept responsibility for performing appropriate natural resource management actions as a condition of their occupancy or use, but this does not preclude the requirement to address the natural resource management needs of these lands in the installation INRMP.

The USMC has incorporated this guidance into the *Handbook for Preparing, Revising, and Implementing Integrated Natural Resources Management Plans on Marine Corps Installations* (see Appendix G, HQ USMC 2006).

A6. TRIPARTITE MEMORANDUM OF UNDERSTANDING BETWEEN DOD, USFWS, AND IAFWA

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE U.S. DEPARTMENT OF DEFENSE
AND
THE U.S. FISH AND WILDLIFE SERVICE
AND
THE INTERNATIONAL ASSOCIATION OF FISH AND WILDLIFE AGENCIES
FOR A
COOPERATIVE INTEGRATED NATURAL RESOURCE MANAGEMENT PROGRAM
ON MILITARY INSTALLATIONS

A. PURPOSE

The purpose of this Memorandum of Understanding (MOU) is to establish a cooperative relationship between the U.S. Department of Defense (DoD), the U.S. Department of the Interior, Fish and Wildlife Service (FWS) and the State fish and wildlife agencies as represented by the International Association of Fish and Wildlife Agencies (IAFWA) in preparing, reviewing, and implementing integrated natural resource management plans (INRMPs) on military installations.

B. BACKGROUND

In recognition that military lands have significant natural resources, Congress enacted the Sikes Act in 1960 to address wildlife conservation and public access on military installations. The 1997 amendments to the Sikes Act require the DoD to develop and implement an INRMP for each military installation with significant natural resources. The INRMP must be prepared in cooperation with the FWS and the State fish and wildlife agency (States) and reflect the mutual agreement of the parties concerning conservation, protection, and management of fish and wildlife resources on military lands.

INRMPs provide for the management of natural resources, including fish, wildlife, and plants. They incorporate, to the maximum extent practicable, ecosystem management principles and provide the landscape necessary for the sustainment of military land uses. INRMPs allow for multipurpose uses of resources, including public access necessary and appropriate for those uses, provided such access does not conflict with military land use requirements. Effective partnering among the DoD, the FWS, and the States, initiated early in the planning process at national, regional, and the military installation levels, is essential to the development and implementation of comprehensive INRMPs. When such partnering involves the participation of all parties and synchronization of INRMPs with existing FWS and State natural resource management plans, the mutual agreement of all parties is achieved more easily. Consistent with the use of military installations to ensure the readiness of the Armed Forces, the purpose of INRMPs is to provide for the conservation and rehabilitation of natural resources on military lands. Thus, a clear understanding of land use objectives for military lands should enable DoD, the FWS and the States to share a common understanding of land management requirements while preparing and reviewing INRMPs.

This MOU addresses the responsibilities of the Parties to facilitate optimum management of natural resources on military installations. It replaces a DoD-FWS MOU on “Ecosystem-based Management of Fish, Wildlife and Plant Resources on Military Lands” which expired May 17, 2004.

C. AUTHORITIES

This MOU is established under the authority of the Sikes Act, as amended, 16 U.S.C. 670a-670f, which requires the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations in cooperation with the FWS and the State fish and wildlife agencies. The DoD’s primary mission is national defense. DoD manages approximately 25 million acres of land and waters under the Sikes Act to conserve and protect the biological resources thereon while supporting sustained military land use.

The FWS manages approximately 92 million acres of the National Wildlife Refuge System, and administers numerous fish and wildlife conservation and management statutes and authorities, including: the Fish and Wildlife Coordination Act, the Migratory Bird Treaty Act of 1918, the Endangered Species Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, the Anadromous Fish Conservation Act, the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, the Federal Noxious Weed Act, the Alien Species Prevention Enforcement Act of 1992, the North American Wetland Conservation Act, and the Coastal Barrier Resources Act.

The States in general possess broad trustee and police powers over fish and wildlife within their borders, including – absent a clear expression of Congress’ intent to the contrary – fish and wildlife on Federal lands within their borders. Where Congress has given federal agencies certain conservation responsibilities, such as for migratory birds or species listed as threatened or endangered under the Endangered Species Act, the States, in most cases, have cooperative management jurisdiction.

The Sikes Act (16 U.S.C. 670c-1) allows the Secretary of a military department to enter into cooperative agreements with States, local governments, nongovernmental organizations, and individuals to provide for the maintenance and improvement of natural resources, or to benefit natural and cultural resources research on Department of Defense installations.

The Sikes Act (16 (U.S.C. 670f(b)) also encourages the Secretary of Defense, to the greatest extent practicable, to enter into agreements to use the services , personnel, equipment, and facilities, with or without reimbursement, of the Secretary of the Interior in carrying out provisions of this section.

The Economy Act (31 U.S.C. 1535 and 1536) allows a Federal agency to enter into an agreement with another Federal agency for services, when those services can be rendered in a more convenient and cost effective manner by another Federal agency.

The Intergovernmental Cooperation Act of 1968 (P.L. 90-577 (82 Stat. 1098)) is intended to achieve the fullest cooperation and coordination of activities among the levels of government in order to improve the administration of grants-in-aid to the States and the provision of reimbursable technical services to State and local government.

D. RESPONSIBILITIES

The Parties to this agreement hereby enter into a cooperative program of INRMP development and implementation with mutually agreed-upon fish and wildlife conservation objectives to satisfy the goals of the Sikes Act.

1. The DoD, the FWS and IAFWA (the Parties) mutually agree, in accordance with all applicable Federal, State and local laws and regulations:

    a. To meet at least annually to discuss implementation of this MOU. The DoD will coordinate the annual meeting and any other meetings related to this MOU. Proposed amendments to the MOU should be presented in writing to the parties at least 15 days prior to the annual meeting. The terms of this MOU and any proposed amendments may be reviewed at the annual meeting. The meeting may also review mutual Sikes Act accomplishments, research and technology needs, and other emerging issues.
    b. To establish a Sikes Act Tripartite Working Group consisting of representatives from the Parties. This Working Group will meet at least quarterly to discuss and develop projects and documents to assist in the preparation and implementation of INRMPs and to discuss Sikes Act issues of national importance.
    c The Sikes Act Tripartite Working Group will encourage the establishment of INRMP Development and Implementation Teams to facilitate early communication during preparation, review, revision or implementation of an INRMP, and to ensure that such INRMPs are comprehensive and implemented as mutually agreed.
    d. Supplemental Sikes Act agreements may be developed at the regional and/or State level.
    e. To recognize the DoD and FWS Sikes Act Guidelines as the guidance for communication and cooperation of the Parties represented by this MOU.
    f. That none of the Parties to the MOU is relinquishing any authority, responsibility or duty as required by law, regulation, policy, or directive.
    g. To engage in sound management practices for natural resource protection and management pursuant to this MOU with due regard for military readiness, the welfare of the public, native fish and wildlife, threatened and endangered species, and the environment.
    h. Consistent with DoD's primary military mission and to the extent reasonably practicable, to promote the sustainable multipurpose use of natural resources on military installations, to include hunting, fishing, trapping and nonconsumptive uses such as wildlife viewing, boating, and camping.
    i. To designate the **individuals** listed below as the a national representatives from each signatory to participate in the activities pursuant to this MOU. Representatives may also be designated at the regional and local levels to participate in similar Sikes Act planning or coordination activities
        i. DoD: Conservation Team Leader, ODUSD (I&E) EM, 1225 Clark Street, Suite 1500, Arlington, VA 22202
        ii. FWS: National Sikes Act Coordinator, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, Room 410, Arlington, VA 22203
        iii. IAFWA: Executive Vice President, IAFWA, 444 N. Capitol Street, NW, Suite 544, Washington, DC 20001

2. DoD agrees to:
    a. Communicate the establishment of this MOU to all DoD Components.
    b. Take the lead in the development of policies related to INRMP development and implementation and seek the cooperation of the FWS and the State fish and wildlife agencies during development, review, and implementation.
    c. Ensure distribution of the DoD and FWS Sikes Act Guidelines to all appropriate DoD offices at every level of command.
    d. Encourage military installations to invite appropriate FWS and State fish and wildlife agency offices to participate in developing and updating the INRMPs. All such invitations should be extended well in advance of the needed date for the product or work in order to facilitate meaningful participation by all three Parties.
    e. Encourage military installations to take advantage of FWS and State fish and wildlife agency natural

resources expertise through the use of Economy Act transfers and cooperative agreements. Priority should be given to projects that:

i. Sustain the military mission;
ii. Consider the strategic planning priorities of the FWS and the State fish and wildlife agency; and
iii. Effectively apply the principles of ecosystem management.

f. Encourage military installations to identify INRMP project requirements and give priority to those that:

i. Ensure conservation of natural resources while sustaining military mission activities;
ii. Achieve compliance with Federal, State and local laws; and
iii. Provide adequate staffing for the development and implementation of the INRMP.

g. Discuss with the FWS and the State fish and wildlife agencies all issues of mutual interest related to the protection, conservation, and management of fish and wildlife resources on DoD installations, and obtain the mutual agreement of the FWS and the States regarding all INRMP provisions related to activities within their legal jurisdiction.

h. Subject to mission, safety and security requirements, provide public access to military installations to facilitate the sustainable multipurpose use of its natural resources.

i. Identify DoD natural resource research needs and develop research proposals with input from FWS and/or the IAFWA.

j. Encourage the Military Services to establish natural resources management liaisons to facilitate:

i. Coordination and mutual agreement of INRMPs;
ii. Development and implementation of cooperative regional and local natural resource conservation partnerships and conservation initiatives with FWS and State fish and wildlife agency offices; and
iii. Natural resources conservation technology transfer and training initiatives between the Military Services, Federal land management agencies, and State fish and wildlife agencies.

3. FWS agrees to*:*

a. Communicate the establishment of this MOU to each FWS Regional Office and appropriate field stations in close proximity to military installations.

b. Distribute the DoD and FWS Sikes Act Guidelines to each FWS Regional Office and appropriate field station in close proximity to military installations.

c. Designate regional and field office FWS liaisons to develop partnerships and assist the DoD in implementing joint management of ecosystem-based natural resource management programs.

d. Identify FWS personnel needs for the development, review, updating, and implementation of INRMPs and expedite the fulfillment of those needs, as appropriate, based on funding and FWS priorities.

e. Provide technical assistance to the DoD in managing Federal trust resources ***such as endangered species, migratory birds, interjurisdictional fisheries, invasive species, contaminants, wetlands, coastal resources, law enforcement, or other natural resource issues*** within the scope of FWS responsibilities, funding constraints, and expertise.

f. Work with the DoD to coordinate military natural resource research efforts and the creation of a consolidated source of information, with a particular emphasis on research on listed species and species at risk.

g. Disseminate upcoming proposed listing and critical habitat designations to DoD Headquarters offices and potentially affected installations as part of outreach efforts before the Federal Register publication of such proposed designations.

h. Provide law enforcement support to protect fish, wildlife, and plant resources on military installations within the jurisdiction of the FWS.

4. IAFWA agrees to*:*

a. Communicate the establishment of this MOU to each State fish and wildlife agency director and appropriate field offices.

b. Distribute the DoD and FWS Sikes Act Guidelines to each State fish and wildlife agency director and appropriate field offices.

c. Facilitate and coordinate with the States to encourage them to:

i. Participate in the development, review, updating and implementation of INRMPs upon request of military installations.
ii. Designate State liaisons to assist in developing partnerships and to assist the DoD in implementing natural resource conservation and management programs.
iii. Identify State wildlife management areas in close proximity to military installations and, where appropriate, participate in the joint management of ecosystem-based natural resource management projects.
iv. Provide technical assistance to the DoD in managing natural resource issues such as endangered species, migratory birds, interjurisdictional fisheries, invasive species, contaminants, wetlands, coastal resources, law enforcement, outdoor recreation or other natural resource issues within the scope of State responsibility and expertise.
v. Identify State personnel needs for the development, review and implementation of INRMPs and expedite the fulfillment of these needs as appropriate based on available funding and State priorities.
vi. Coordinate current and proposed State natural resource research efforts with those that may relate to DoD installations.

vii. Coordinate with DoD installations in development of comprehensive state wildlife conservation plans.

E. STATEMENT OF NO FINANCIAL OBLIGATION

This MOU does not impose any financial obligation on the part of any signatory.

F. AGREEMENTS TO FACILITATE CONSERVATION

The Parties are encouraged to enter into cooperative agreements to coordinate and implement natural resource management on military installations. If fiscal resources are to be transferred in support of this MOU, the Parties must develop a separately funded cooperative agreement. Such cooperative agreements may be entered into under the authorities of the Sikes Act (16 U.S.C. 670a-670f, as amended) and the Economy Act (31 U.S.C. 1535 and 1536). Each funded cooperative agreement shall include a work plan and a financial plan that identify goals, objectives, and a budget and payment schedule. A cooperative agreement to accomplish a study or research also will include a study design and methodology in the work plan. It is understood and agreed that any monies allocated via these cooperative agreements shall be expended in accordance with its terms and in the manner prescribed by the fiscal regulations and/or administrative policies of the Party making the funds available.

G. AMENDMENTS

This MOU may be amended at any time by mutual agreement of the parties in writing.

H. TERMINATION

Any party to this agreement may remove itself from this MOU upon sixty (60) days written notice to the other parties.

I. EFFECTIVE DATE AND DURATION

This MOU will be in effect upon date of final signature and will continue for five years from date of final signature. The parties will meet 6 months prior to the expiration of this MOU to discuss potential modifications and renewal terms.

1/31/06 /s/

Date

Alex A. Beehler
Assistant Deputy Under Secretary of Defense
(Environment, Safety and Occupational Health)
U.S. Department of Defense

1/31/06 /s/

Date

H Dale Hall
Acting Director
Fish and Wildlife Service
U.S. Department of Interior

1/31/06 /s/

Date

John Baughman
Executive Vice-President
International Association of Fish and Wildlife Agencies

A7. MIGRATORY BIRD TREATY ACT

This appendix contains reprints of the following documents relating to Department of Defense compliance with the Migratory Bird Treaty Act:

- Migratory Bird Permits; Take of Migratory Birds by Department of Defense (proposed rule)
- Memorandum of Understanding Between the U.S. Department of Defense and the U.S. Fish and Wildlife Service To Promote the Conservation of Migratory Birds, effective July 31, 2006

denied the request for further continuance and ruled that it would take no further action while the case was on appeal. On January 7, 2004, the U.S. Court of Appeals for the Ninth Circuit dismissed the appeal and returned the case to the District Court.

Public Comments Solicited

Since the close of the comment period, we have received new information in the form of a proposed natural resource management plan (copy available upon request) from the Government of Guam. The comment period is reopened to allow additional time for all interested parties to consider the information and submit written comments on the proposal. In particular, we are interested in comments addressing the extent to which the proposed Guam plan would provide conservation benefits for the proposed critical habitat area, the comparative costs, or other impacts of Guam's proposal and the proposed critical habitat, and whether or not Guam's proposal would provide a basis for excluding areas from final critical habitat designation pursuant to sections 4(b)(2) or 3(5)(A) of the Endangered Species Act.

We will accept written comments and information received during this reopened comment period. If you wish to comment, you may send or hand-deliver written comments and information to the Acting Field Supervisor (*see* **ADDRESSES** section).

Comments and materials received, as well as supporting documentation used in preparation of the proposal to designate critical habitat, will be available for inspection, by appointment, during normal business hours at the Pacific Islands Fish and Wildlife Office (*see* **ADDRESSES** section). Copies of the proposed rule are available on the Internet at *http://pacificislands.fws.gov* or by request from the Acting Field Supervisor at the address above (*see* **ADDRESSES** section), by phone at 808/792–9400, or by facsimile at 808/792–9581.

Author

The primary author of this notice is Fred Amidon, U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office (*see* **ADDRESSES** section).

Authority: The authority for this action is the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*).

Dated: May 25, 2004.

David P. Smith,

Acting Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 04–12432 Filed 6–1–04; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 21

RIN 1018–AI92

Migratory Bird Permits; Take of Migratory Birds by Department of Defense

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, or possessing of migratory birds unless permitted by regulations promulgated by the Secretary of the Interior. While some courts have held that the MBTA does not apply to Federal agencies, in July 2000, the United States Court of Appeals for the District of Columbia Circuit ruled that the prohibitions of the MBTA do apply to Federal agencies, and that a Federal agency's taking and killing of migratory birds without a permit violated the MBTA. On March 13, 2002, the United States District Court for the District of Columbia ruled that military training exercises of the Department of the Navy that incidentally take migratory birds without a permit violate the MBTA.

On December 2, 2002, the President signed the 2003 National Defense Authorization Act. Section 315 of the Authorization Act provides that, not later than one year after its enactment, the Secretary of the Interior (Secretary) shall exercise her authority under section 704(a) of the MBTA to prescribe regulations to exempt the Armed Forces for the incidental taking of migratory birds during military readiness activities authorized by the Secretary of Defense or the Secretary of the military department concerned. The Authorization Act further requires the Secretary to promulgate such regulations with the concurrence of the Secretary of Defense. This proposed rule has been developed in coordination and cooperation with the Department of Defense and the Secretary of Defense concurs with the requirements herein.

Current regulations authorize permits for take of migratory birds for activities such as scientific research, education, and depredation control. However, these regulations do not expressly address the issuance of permits for incidental take. As directed by section 315 of the Authorization Act, we are proposing this rule to authorize such take, with limitations, that result from Department of Defense military readiness activities. If the Department of Defense determines that a proposed or an ongoing military readiness activity may result in a significant adverse effect on the sustainability of a population of a migratory bird species of concern, then they must confer and cooperate with the U.S. Fish and Wildlife Service (Service) to develop appropriate and reasonable-conservation measures to minimize or mitigate identified significant adverse effects. The Secretary of the Interior, or her designee, will retain the power to withdraw or suspend the authorization for particular activities in appropriate circumstances.

We invite your comments on this proposed rule.

DATES: We will accept comments on this proposed rule until August 2, 2004.

ADDRESSES: You may mail, fax, or deliver comments to the Division of Migratory Bird Management, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, Room 4107, Arlington, Virginia 22203–1610, fax (703) 358–2217. Comments can also be sent on-line at *DODMBTARULE@fws.gov*. The proposed rule and other related documents can be downloaded at *http://migratorybirds.fws.gov*. The complete file for this proposed rule is available for inspection, by appointment, during normal business hours at the Division of Migratory Bird Management, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, Arlington, Virginia 22203, telephone (703) 358–1714.

FOR FURTHER INFORMATION CONTACT: Brian Millsap, Chief, Division of Migratory Bird Management, U.S. Fish and Wildlife Service, telephone (703) 358–1714.

SUPPLEMENTARY INFORMATION:

Background

Migratory birds are of great ecological and economic value and are an important international resource. They are a key ecological component of the environment, and they also provide immense enjoyment to millions of Americans who study, watch, feed, or hunt them. Recognizing their importance, the United States has been an active participant in the internationally coordinated management and conservation of migratory birds. The Migratory Bird Treaty Act (16 U.S.C. 703–712) (MBTA) is the primary legislation in the United States established to conserve migratory birds. We, the U.S. Fish and Wildlife Service (Service), are the Federal agency within the United States responsible for administering and enforcing the statute.

The MBTA, originally passed in 1918, implements the United States' commitment to four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. The original treaty upon which the MBTA was based was the Convention for the Protection of Migratory Birds signed with Great Britain in 1916 on behalf of Canada for the protection ''of the many species of birds that traverse certain parts of the United States and Canada in their annual migration.'' The MBTA was subsequently amended after treaties were signed with Mexico (1936, amended 1972, 1995), Japan (1972), and Russia (1976), and the amendment of the treaty with Canada (1999).

The treaties and subsequent amendments impose substantive obligations on the United States for the conservation of migratory birds and their habitats, including, but not limited to, the following conservation principles:

To conserve and manage migratory birds internationally;

To sustain healthy migratory bird populations for consumptive and nonconsumptive uses;

To provide for, maintain, and protect habitat necessary for the conservation of migratory birds; and

To restore depleted populations of migratory birds.

Each of the treaties protects selected species of birds and specifies closed seasons for hunting game birds. The list of the species protected by the MBTA appears in title 50, section 10.13, of the Code of Federal Regulations (50 CFR 10.13).

Under the MBTA, it is unlawful ''by any means or in any manner, to pursue, hunt, take, capture, [or] kill'' any migratory birds except as permitted by regulation (16 U.S.C. 703). The regulations at 50 CFR 21.11 prohibit the take of migratory birds except under a valid permit or as permitted in the implementing regulations. We define ''take'' to mean to ''pursue, hunt, shoot, wound, kill, trap, capture, or collect'' or to attempt these activities (50 CFR 10.12).

On July 18, 2000, the United States Court of Appeals for the District of Columbia ruled in *Humane Society* v. *Glickman,* 217 F.3d 882 (D.C. Cir. 2000), that Federal agencies are subject to the take prohibitions of the MBTA. The United States had previously taken the position, and two other courts of appeals held or suggested, that the MBTA does not by its terms apply to Federal agencies. *See Sierra Club* v. *Martin,* 110 F.3d 1551, 1555 (11th Cir. 1997); *Newton County Wildlife Ass'n* v *U.S. Forest Service,* 113 F.3d 110, 115 (8th Cir. 1997). Subsequently on December 20, 2000, we issued a Director's Order to clarify the Service's position that, pursuant to *Glickman,* Federal agencies are subject to the permit requirements of the Service's existing regulations.

Because the MBTA is a criminal statute and does not provide for citizen suit enforcement, a private party who violates the MBTA is subject to investigation by the Service and/or prosecution by the Department of Justice. However, the Administrative Procedure Act (APA) allows private parties to file suit to prevent a Federal agency from taking ''final agency action'' that is ''arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law'' (5 U.S.C. 706(2)(A)). If the prohibitions of the MBTA apply to Federal agencies, private parties could seek to enjoin Federal actions that take migratory birds, unless such take is authorized pursuant to regulations developed in accordance with 16 U.S.C. 704, even when such Federal actions are necessary to fulfill Government responsibilities and even when the action poses no threat to the species at issue.

In *Center for Biological Diversity* v. *Pirie,* a private party obtained an injunction prohibiting live fire military training exercises of the Department of the Navy that had the effect of killing some migratory birds on the island of Farallon de Medinilla (FDM) in the Pacific Ocean. On March 13, 2002, the United States District Court for the District of Columbia ruled that the Navy activities at FDM resulting in a take of migratory birds without a permit from the Service violated the MBTA and the APA (191 F. Supp. 2d. 161 and 201 F. Supp. 2d 113). On May 1, after hearing argument on the issue of remedy, the Court entered a preliminary injunction ordering the Navy to apply for a permit from the Service to cover the activities, and preliminarily enjoined the training activities for 30 days. The United States Court of Appeals for the District of Columbia Circuit stayed the District Court's preliminary injunction pending appeal. The preliminary injunction, and associated stay, expired on May 31. A permanent injunction was issued by the District Court on June 3. The Circuit Court also stayed this injunction pending appeal on June 5, 2002. On December 2, 2002, the President signed the Authorization Act creating an interim period during which the prohibitions on incidental take of migratory birds would not apply to military readiness activities. During the interim period, Congress also directed the Secretary of the Interior to develop regulations that exempt the Armed Forces from incidental take during authorized military readiness activities. The Department of Defense must concur with the regulations before they take effect. The Circuit Court subsequently dismissed the *Pirie* case as moot. In light of the *Glickman and Pirie* decisions, the authorization that would be provided by this rule is essential to preserving the Service's role in determining what military readiness activities, if any, create an unacceptable risk to the migratory bird resources and should be modified or curtailed.

The Department of Defense is responsible for protecting the United States from external threats. To provide for national security, they engage in military readiness activities, which include all training and operations of the Armed Forces that relate to combat, and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use. Military readiness does not include: (a) the routine operation of installation operating support functions, such as administrative offices, military exchanges, commissaries, water treatment facilities, storage facilities, schools, housing, motor pools, laundries, morale, welfare, and recreation activities, shops, and mess halls; (b) the operation of industrial activities; or (c) the construction or demolition of facilities listed above.

The 2003 National Defense Authorization Act (Pub. L. 107–314, 116 Stat. 2458, Dec. 2, 2002, 16 U.S.C. 703 note) (hereinafter ''Authorization Act'') requires the Secretary of Defense, in consultation with the Secretary, to identify ways to minimize, mitigate, and monitor take of migratory birds during military readiness activities and requires the Secretary to prescribe, with the concurrence of the Secretary of Defense, a regulation that exempts such activities from the MBTA's prohibitions against take of migratory birds. With this language, Congress has signaled that the Department of Defense should give appropriate consideration to the protection of migratory birds when planning and executing military readiness activities, but not at the expense of diminishing the effectiveness of such activities. Any diminishment in effectiveness could impair the Department of Defense's ability to fulfill

its national security mission. Diminishment could occur when military training or testing is modified in ways that do not allow the full range of training methods to be explored.

This proposed rule, if finalized, will authorize the Department of Defense to take migratory birds associated with military readiness activities, subject to certain limitations and subject to withdrawal of the authorization to ensure consistency with the provisions of the migratory bird treaties. The authorization provided by this rule is necessary to ensure that the work of the Department of Defense in meeting its statutory responsibilities can go forward. This rule is also appropriate and necessary to preserve the treaties as workable and sensible protections of a vital resource and to meet the Secretary's obligations under Section 704 of the MBTA as well as under Section 315 of the Authorization Act. This proposed rule has been developed in coordination and cooperation with the Department of Defense and the Secretary of Defense concurs with the requirements herein.

Executive Order 13186

Migratory bird conservation relative to the Department of Defense activities other than military readiness activities will be addressed separately in a Memorandum of Understanding (MOU) developed in accordance with Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, signed January 10, 2001. Upon completion of the MOU, and in keeping with the intent of the Executive Order for Federal agencies to promote the conservation of migratory bird populations, the Service proposes issuing a 50 CFR 21.27 Special Purpose Permit to address specific actions identified in the MOU not covered by this rule.

Measures Taken by the Department of Defense To Minimize and Mitigate Takes of Migratory Birds

As the basis for this proposed rule, under the authority of the MBTA and in accordance with Section 315 of the Authorization Act, the Department of Defense will consult with the Service to identify measures to minimize and mitigate adverse impacts of authorized military readiness activities on migratory birds and to identify techniques and protocols to monitor impacts of such activities. The inventory, avoidance, habitat enhancement, partnerships, and monitoring efforts described below illustrate the efforts currently undertaken by the Department of Defense to minimize adverse impacts to migratory birds from testing and training activities to maintain a ready defense. Additional conservation measures, designed to minimize and mitigate adverse impacts of authorized military readiness activities on affected migratory bird species, with emphasis on species of concern, will be developed in joint coordination with the Service when specific military readiness activities suggest the need for additional measures.

We have a long history of working with Department of Defense installation natural resources managers through our Field Offices to develop and implement these conservation initiatives. Many of the conservation measures detailed below represent state-of-the-art techniques and practices to inventory, protect, and monitor migratory bird populations. In accordance with provisions of the Sikes Act Improvement Act of 1997 (16 U.S.C. 670a *et seq.*), these conservation measures are detailed in Integrated Natural Resources Management Plans (INRMPs) for specific installations and endorsed by the Service and State fish and game agencies.

Bird Conservation Planning. The Department of Defense prepares INRMPs for most of the Department of Defense installations. Under the Sikes Act, the Department of Defense must provide for the conservation and rehabilitation of natural resources on military installations. To facilitate the program, the Secretary of Defense prepares and implements an INRMP for each military installation in the United States on which significant natural resources are found. The resulting plans must reflect the mutual agreement of the military department, the Service, and the appropriate State fish and wildlife agency on conservation, protection, and management of fish and wildlife resources. INRMPs incorporate conservation measures addressed in Regional or State Bird Conservation Plans to ensure that the Department of Defense does its part in landscape-level management efforts. INRMPs are a significant source of baseline conservation information and conservation initiatives used to develop National Environmental Policy Act (NEPA) documents for military readiness activities. This linkage helps to ensure that appropriate conservation measures are incorporated into mitigation actions, where needed, which will protect migratory birds and their habitats.

The Fish and Wildlife Conservation Act of 1980, as amended in 1988, directs the Secretary of the Interior to ''identify species, subspecies, and populations of all migratory non-game birds that, without additional conservation action, are likely to become candidates for listing under the Endangered Species Act of 1973.'' This list is prepared and updated at 5-year intervals by the Service's Division of Migratory Bird Management. The current list of the ''Birds of Conservation Concern'' is available at *http://migratorybirds.fws.gov/reports/bcc2002.pdf.*

''Birds of Conservation Concern 2002'' includes species that are of concern because of (a) documented or apparent population declines, (b) small or restricted populations, or (c) dependence on restricted or vulnerable habitats. It includes three distinct geographic scales: Bird Conservation Regions, Service Regions, and National. The Service Regions include the seven Service Regions plus the Hawaiian Islands and Puerto Rico/U.S. Virgin Islands.

Bird Conservation Regions (BCRs), adopted by the North American Bird Conservation Initiative (NABCI), are the most basic geographical unit by which migratory birds are designated as birds of conservation concern. The BCR list includes certain species endemic to Hawaii, the Pacific Island territories, and the U.S. Caribbean Islands that are not protected by the MBTA, and thus are not subject to this proposed rule. These species are clearly identified in the list. The complete BCR list contains 276 species. NABCI is a coalition of U.S., Canadian, and Mexican governmental agencies and private organizations working together to establish an inclusive framework to facilitate regionally based, biologically driven, landscape-oriented bird conservation partnerships. A map of the NABCI BCRs can be viewed at *http://www.nabci-us.org.*

The comprehensive bird conservation plans, such as the North American Waterfowl Management Plan, the U.S. Shorebird Conservation Plan, Partners in Flight (PIF) Bird Conservation Plans, and the North American Waterbird Conservation Plan, are the result of coordinated partnership-based national and international initiatives dedicated to migratory bird conservation. Each of these initiatives has produced landscape-oriented conservation plans that lay out population goals and habitat objectives for birds. Additional information on these plans and their respective migratory bird conservation goals can be found at:

North American Waterfowl Management Plan (*http://birdhabitat.fws.gov/NAWMP/nawmphp.htm*).
North American Waterbird Conservation Plan (*http://www.waterbirdconservation.org*).
U.S. Shorebird Conservation Plan (*http://shorebirdplan.fws.gov/*).
Partners in Flight (*http://www.partnersinflight.org*).

Conservation Partnerships. The Armed Forces have entered into a number of conservation partnerships with nonmilitary partners to improve habitats and protect avian species. In 1991, the Department of Defense, through each of the military services, joined the PIF initiative. The Department of Defense developed a PIF Strategic Plan in 1994, and revised it in 2002. The Department of Defense PIF program is recognized as a model conservation partnership program. Through the PIF initiative, the Department of Defense works in partnership with over 300 Federal and State agencies and nongovernmental organizations (NGOs) for the conservation of neotropical migratory and resident birds and enhancing migratory bird survival. For example, bases have worked with NGOs to develop management plans that address such issues as grazing and the conversion of wastewater treatment ponds to wetlands and suitable habitat. Universities use the Department of Defense lands for migratory bird research and, on occasion, re-establish nesting pairs to take advantage of an installation's hospitable habitat. The Department of Defense PIF program tracks this research and provides links between complementary research on different installations and service branches.

The Authorization Act included a provision that allows the Department of Defense to provide property at closed bases to conservation organizations for use as habitat and another provision that, in order to lessen problems of encroachment, allows the Department of Defense to purchase conservation easements on suitable property in partnership with other groups. Where utilized, these provisions will offer further conservation benefits to migratory birds.

Bird Inventories. The most important factor in minimizing and mitigating takes of migratory birds is an understanding of when and where such takes are likely to occur. This means developing knowledge of migratory bird habits and life histories, including their migratory paths and stopovers as well as their feeding, breeding, and nesting habits.

The Department of Defense implements bird inventories and monitoring programs in numerous ways. Some Department of Defense installations have developed partnerships with the Institute for Bird Populations to establish Monitoring Avian Productivity and Survivorship (MAPS) stations. The major objective of the MAPS program is to contribute to an integrated avian population monitoring system for North American land birds by providing annual regional indices and estimates for four population and demographic parameters for select target species in seven different regions of North America. The MAPS methodology provides annual regional indices of adult population size and post-fledgling productivity from data on the numbers and proportions of young and adult birds captured; annual regional estimates of adult population size, adult survivorship, and recruitment into the adult population from capture-recapture data on adult birds; and additional annual estimates of adult population size from point count data collected in the vicinity of MAPS stations. Without these critical data, it is difficult or impossible to account for observed population changes. The Department of Defense is helping to establish a network of MAPS stations in all seven biogeographical regions and build the program necessary to monitor neotropical migratory bird population changes nationwide. Approximately 20% of the continental MAPS network involves military lands.

Since the early 1940s, radar has been used to monitor bird migration. The newest weather surveillance radar, WSR–88D or NEXRAD (for Next Generation Radar), is ideal for studies of bird movements in the atmosphere. This sophisticated radar system can be used to map geographical areas of high bird activity (*e.g.,* stopover, roosting and feeding, and colonial breeding areas). It also provides information on the quantity, general direction, and altitudinal distribution of birds aloft. Currently, the United States Air Force is using NEXRAD, via the U.S. Avian Hazard Advisory System (AHAS), to provide bird hazard advisories to all pilots, military and civilian, in an attempt to warn air traffic of significant bird activity. The information is publicly available for the contiguous United States on line at *http://www.usahas.com* and will soon be available for the State of Alaska.

The NEXRAD information is critically important for the protection of habitats used by migratory birds during stopover periods. This information is vital to the Department of Defense land managers who protect stopover areas on military land. The data is also particularly important to land managers of military air stations where bird/aircraft collisions threaten lives and cost millions of dollars in damages every year. The Department of Defense established a partnership with the Department of Biological Sciences at Clemson University to collect, analyze, and use the biological information from the NEXRAD network to identify important stopover habitat in relation to the Department of Defense installations. Initial efforts were concentrated in the Southeast to complement existing radar data from the Gulf Coast. This partnership has enabled the collection and transfer of radar data from all NEXRAD sites, via modem, to one remote station at Clemson University, where the data can be archived and analyzed.

The Department of Defense uses bird inventory and survey information in connection with the preparation of INRMPs. The Department of Defense also uses bird inventory and survey information when undertaking environmental analyses required under the NEPA. An environmental assessment or an environmental impact statement is used to determine the potential effects of any new, planned activity on natural resources, including migratory birds.

The Department of Defense PIF program is currently developing a database of bird species listed in the Service's ''Birds of Conservation Concern'' report that are likely to occur on each of the installations utilizing the Birds of Conservation Concern published by the Service. This database will be valuable in initially evaluating what species may potentially be affected by military readiness activities.

Avoidance. Avoidance is the most effective means of minimizing takes of migratory birds. Where practicable, the Department of Defense avoids potentially harmful use of nesting sites during the breeding and nesting seasons and of resting sites on migratory pathways during migration seasons. Avoidance sometimes involves using one area of a range rather than another. On some sites in which bombing, strafing, or other activities involving the use of live military munitions could impact birds in the area, the Department of Defense may conduct an initial, benign sweep of the site to ensure that any migratory birds in the area are dispersed before live ordnance is used. Another tool used by the Department of Defense to deconflict flight training activities is the U.S. Air Force Bird Avoidance Model (BAM). This model

places breeding bird and Christmas count data into a Geographic Information Systems model to assist range planners in selecting training times when bird activity is low. The BAM is available on line at the *http://www.usahas.com* Web site.

Pesticide Reduction. Reducing or eliminating pesticide use also benefits migratory birds. The Department of Defense maintains an integrated pest management (IPM) program that is designed to reduce the use of pesticides to the minimum necessary. The Department of Defense policy requires all operations, activities, and installations worldwide to establish and maintain safe, effective, and environmentally sound IPM programs. IPM is defined as a planned program, incorporating continuous monitoring, education, record-keeping, and communication to prevent pests and disease vectors from causing unacceptable damage to operations, people, property, material, or the environment. IPM uses targeted, sustainable (*i.e.,* effective, economical, and environmentally sound) methods, including education, habitat modification, biological control, genetic control, cultural control, mechanical control, physical control, regulatory control, and the judicious use of least-hazardous pesticides. The Department of Defense policy mandates incorporation of sustainable IPM philosophy, strategies, and techniques in all aspects of the Department of Defense pest management planning, training, and operations, including installation pest management plans and other written guidance to reduce pesticide risk and prevent pollution.

Habitat Conservation and Enhancement. Habitat conservation and enhancement generally involve improvements to existing habitat, the creation of new habitat for migratory birds, and enhancing degraded habitats. Improvements to existing habitat include wetland protection, maintenance and enhancement of forest buffers, elimination of feral animals (in particular, feral cats) that may be a threat to migratory birds, and elimination of invasive species that crowd out other species necessary to migratory bird survival. Examples of the latter include control and elimination of brown tree snake, Japanese honeysuckle, kudzu, and brown-headed cowbirds.

Efforts to eliminate invasive species are being undertaken in association with natural resources management under Sikes Act INRMPs. For example, at one site, grazing was reduced from more than 60,000 to about 23,000 acres, and has become a management tool to enhance the competitive advantage of native plants, especially perennial grasses. Special projects are under way on Department of Defense property to control exotic plants and to remove unused structures that occupy potentially valuable habitat or unnaturally increase predator populations. At some locations, native forest habitat is being reestablished.

The preparation of INRMPs continues to offer opportunities to consider such land management measures as converting to uneven-age and/or other progressive forest management that enhances available habitat values, establishing native warm-season grasslands, maintaining and enhancing bottomland hardwood forests, and promoting positive water use modifications to improve hydrology and avian habitat in arid areas. Department of Defense installations are active in promoting the use of nest boxes and, where appropriate, the use of communications towers for nesting. In addition, the PIF program has prepared fact sheets addressing such issues as communications towers and power lines, West Nile virus, wind energy development, the Important Bird Areas program, and bird/aircraft strike hazards (BASH).

Other. At the very few sites where the potential for migratory bird take is more severe, the Department of Defense has implemented extensive mitigation measures. In such instances, the responsible military service has taken practicable measures to minimize the impacts of their operations on protected migratory birds. Such measures include limiting the type and quantity of ordnance; limiting target areas and activities to places and times that protect key nesting areas for migratory birds; implementing fire suppression programs or measures where wildfire can potentially damage nesting habitat; conducting environmental monitoring; and implementing mitigation measures, such as predator removal, on the site or nearby.

Monitoring the Impacts of Military Readiness Activities on Migratory Birds

The Department of Defense monitors bird populations that may be affected by military readiness activities in numerous ways. In addition to the MAPS program discussed above, Department of Defense facilities participate in the Breeding Biology Research and Monitoring Database (BBIRD) program to study nesting success and habitat requirements for breeding birds. Many installations also engage in Christmas bird counts, migration counts (Point, Circle, Area, or Fly Over Counts), standardized and/or customized breeding and wintering point counts, grassland bird flush counts, NEXRAD (discussed above) and BIRDRAD studies, point count surveys, hawk watches, overflight surveys, and/or rookery surveys. At sites where bird takes are a concern, such as Farallon de Medinilla in the Northern Marianas, the Department of Defense engages in more extensive monitoring, including overflight and rookery surveys several times a year so that it can monitor trends in bird populations.

Department of Defense is not alone in monitoring the status of birds on its installations. Much of its monitoring is done through formal partnerships with conservation organizations. In addition, Watchable Wildlife programs provide opportunities for the public to provide feedback on the numbers and types of birds they have observed from viewing sites on Department of Defense installations.

Department of Defense can use clear evidence of bird takes, such as the sight of numerous dead or injured birds, as a signal that it should modify its activities, as practicable, to reduce the number of takes. With respect to the problem of bird/aircraft collisions, the Department of Defense undertakes intensive, bird-by-bird monitoring. The U.S. Air Force Safety Center's Bird/Wildlife Aircraft Strike Hazard team at Kirtland Air Force Base, NM, and the Navy Safety Center at Norfolk, VA, track aircraft/wildlife (bird and mammal) collisions because of the danger such collisions represent to pilots, crews, and aircraft. By focusing on local, regional, and seasonal populations and movements of birds, pilots and airport personnel have been better able to avoid collisions, in many cases by modifying those conditions at airfields that are attractive to birds.

Department of Defense will continue to develop and implement conservation measures, as described above, to mitigate adverse impacts on species of concern, from military readiness activities. Department of Defense will also continue to consult with the Service to identify measures to minimize and mitigate testing and training impacts and will continue to monitor the impacts of military readiness activities on species of concern.

What Are the Provisions of the Proposed Rule?

NEPA Considerations

The NEPA, and its regulations at 40 CFR 1500–1508, require that Federal agencies prepare environmental impact statements for ''major Federal actions significantly affecting the quality of the human environment.'' These statements must include a detailed analysis of the impacts of an agency's proposed action and any reasonable alternatives to that proposal. NEPA requires the responsible Federal official to ''consult with and obtain comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. 42 U.S.C. 4332(2)(C). NEPA also provides for public involvement in the decision making process. The Council on Environmental Quality's (CEQ) regulations implementing NEPA emphasize the integration of the NEPA process with the requirements of other environmental laws. CEQ regulations at 40 CFR 1500.2 state: ''Federal agencies shall to the fullest extent possible * * * integrate the requirements of NEPA with other planning and environmental review procedures required by law or by agency practice so that all such procedures run concurrently rather than consecutively.'' Regulations at 40 CFR 1502.25 state: ''To the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with environmental impact analyses and related surveys and studies required by * * * other environmental review laws and executive orders.''

In keeping with this emphasis, the proposed rule anticipates that the Department of Defense will use the NEPA process to determine whether any ongoing or proposed military readiness activity is ''likely to result in a significant adverse effect on the population of a migratory bird species of concern.'' More particularly, the Department of Defense prepares NEPA analyses whenever they propose to undertake a new military readiness activity that may significantly affect the quality of the human environment; make a substantial change to an on-going military readiness activity that is relevant to environmental concerns; learn of significant new circumstances or information relevant to the environmental concerns bearing on an on-going military readiness activity; or prepare or revise an INRMP covering an area used for military readiness activities. During the preparation of environmental impacts statements analyzing the military readiness activities' effects on migratory bird species, DOD consults with the Service as an agency with jurisdiction by law and special expertise. If the Department of Defense identifies any such significant adverse effects on migratory birds during the preparation of its NEPA analysis, this rule would require the Department of Defense to confer and cooperate with the Service to develop appropriate conservation measures to minimize or mitigate any such significant adverse effects. Upon finalization of this rule, the Department of Defense will continue to be responsible for ensuring that military readiness activities are implemented in accordance with all applicable statutes including NEPA and ESA.

Endangered Species Act Consideration

Section 7(a)(1) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531, *et seq.*), provides that, ''[t]he Secretary [of the Interior] shall review other programs administered by him and utilize such programs in furtherance of the purposes of this Act.'' Furthermore, section 7(a)(2) requires all Federal agencies to insure that any action authorized, funded, or carried out * * * is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat. We have determined that this proposed rule to authorize take under the MBTA will have no effect on listed species. The proposed rule does not authorize take under the ESA. In addition, if a military training activity may affect a listed species, the Department of Defense must consult with the Service in accordance with section 7(a)(2) of the ESA.

Rule Authorization

The proposed rule would authorize the Department of Defense to take migratory birds as an incidental result of military readiness activities. The Department of Defense must continue to apply for and receive an MBTA permit for scientific collecting, control of birds causing damage to Department of Defense property, or any other activity that is addressed by our existing permit regulations. These activities could not be conducted under the authority of this rule. If any Department of Defense activity falls within the scope of our existing regulations, we will consider, when processing the application, the specific take requested as well as any other take authorized by this proposed rule that may occur.

Authorization of takes under this proposed rule would apply to take of migratory birds incidental to military readiness activities, including (a) all training and operations of the Armed Forces that relate to combat, and (b) the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use. Authorization of take would not apply to: (a) Routine operation of installation operating support functions, such as administrative offices, military exchanges, commissaries, water treatment facilities, storage facilities, schools, housing, motor pools, laundries, morale, welfare, and recreation activities, shops, and mess halls; (b) operation of industrial activities; or (c) construction or demolition of facilities relating to these routine operations.

The authorization provided by this rule is subject to the military service conducting an otherwise lawful military readiness activity in compliance with the provisions of the rule. To ensure the Service maintains the ability to manage and conserve the resource, the Secretary retains the authority to withdraw authorization of take with respect to any specific military readiness activity under certain circumstances.

With respect to a Department of Defense military readiness activity likely to take migratory birds, the rule would authorize take provided the Department of Defense is in compliance with the following requirement:

If ongoing or proposed activities are likely to result in a significant adverse effect on the sustainability of the population of a migratory bird species of concern, the Department of Defense must confer and cooperate with the Service to develop appropriate conservation measures to minimize or mitigate such significant adverse effects.

We recognize that data on species of migratory birds may be limited. Furthermore, the migratory nature of most species complicates assessment of the expected effects of a proposed action or the effects of an ongoing action. We encourage the Department of Defense to develop information that will assist in guiding its decisions regarding migratory bird conservation, particularly in developing or amending INRMPs. This proposed rule would not require the Department of Defense to obtain new data to assess impacts of a proposed or an ongoing action on birds in order to comply with the provisions of this rule. Existing demographic, population, habitat association, species indicator, or ecological indicator data may be used to estimate the level of take and evaluate whether a proposed or an ongoing action is likely to have a significant adverse impact on a population.

The Department of Defense will continue to be responsible for addressing its activities other than military readiness through an MOU

developed in accordance with Executive Order 13186.

When Would Take Not Be Authorized

If a proposed or an ongoing action may threaten the sustainability of a population of a migratory bird species of concern, the Department of Defense must confer with the Service so we may recommend conservation measures. In certain circumstances, the Secretary must suspend the take authorization with respect to a particular military readiness activity; in other circumstances, the Secretary has the discretion to initiate a process that may result in withdrawal. We will make every effort to work with the Department of Defense in advance of a potential determination to withdraw take authorization in order to resolve migratory bird take concerns and avoid withdrawal. With respect to discretionary withdrawal, the rule provides an elevation process if the Secretary of Defense or his/her delegatee determines that protection of national security requires continuation of the activity.

The Secretary will immediately suspend authorization for take if continued authorization would not be compatible with any one of the migratory bird treaties. Withdrawal of authorization may be proposed if the Secretary determines that failure to do so would result in a significant adverse effect on the sustainability of a population of a migratory bird species of concern and one or more of the following circumstances apply:

(A) The Department of Defense has not implemented conservation measures that (i) are directly related to protecting the migratory bird species of concern affected by the proposed military readiness activity; (ii) would significantly reduce take of migratory birds species of concern affected by the military readiness activity, (iii) are economically feasible, and (iv) do not limit the effectiveness of military readiness activities.

(B) The Department of Defense fails to conduct mutually agreed upon monitoring to determine the effects of a military readiness activity on the migratory bird species of concern and/or the efficacy of the conservation measures implemented by the Department of Defense.

(C) The Department of Defense has not provided reasonable, appropriate, and readily available information that the Service has requested and that the Secretary determines is necessary to evaluate whether withdrawal of take authorization for the specific action is required or appropriate.

The determination as to whether an immediate suspension of authorization is warranted (*i.e.*, whether the action would be compatible with a migratory bird treaty), or withdrawal of an authorization is proposed will be made independent of each other. Regardless of whether the circumstances of paragraphs (A) through (C) above exist, there will be an immediate suspension if the Secretary determines, after seeking the views of the Secretary of Defense and after consulting with the Secretary of State, that, incidental take of migratory birds during a specific military readiness activity would not be compatible with one or more of the migratory bird treaties.

Proposed withdrawal of authorization will be provided in writing to the Secretary of Defense including the basis for the determination. The notice will also specify any conservation measures or other measures that would, if the Department of Defense agrees to implement them, allow the Secretary to cancel the proposed withdrawal of authorization. Any take incidental to a military readiness activity subject to a proposed withdrawal of authorization would continue to be authorized by this regulation until the Secretary of the Interior, or his or her delegatee, makes a final determination on the withdrawal.

The Secretary may, at his or her discretion, cancel a suspension or withdrawal of authorization at any time. A suspension may be cancelled in the event new information is provided that the proposed activity would be compatible with the migratory bird treaties. A proposed withdrawal may be cancelled if the Department of Defense modifies the proposed activity to alleviate significant adverse effects on the sustainability of a population of a migratory bird species of concern or the circumstances in paragraphs (A)—(C) above no longer exist. Cancellation of suspension or withdrawal of authorization becomes effective upon delivery of written notice from the Secretary to the Department of Defense.

Request for Reconsideration

In order to ensure that the action of the Secretary in not authorizing take does not result in significant harm to the Nation, any proposal to withdraw authorization under paragraph 21.15(b)(2) of the proposed rule, will be reconsidered by the Secretary of the Interior or his or her delegatee who must be an official nominated by the President and confirmed by the Senate, if, within 30 days of the notification with respect to a military readiness activity, the Secretary of Defense, or his or her delegatee who also must be an official nominated by the President and confirmed by the Senate, determines that protection of the national security requires continuation of the action.

Scope of Authorization

The take authorization provided by the rule would apply to the Department of Defense military readiness activities, including those implemented through the Department of Defense contractors and their agents.

Principles and Standards

As discussed above, the only condition applicable to the authorization under this rule is that the Department of Defense confer and cooperate with the Service if the Department of Defense determines ''that a proposed or an ongoing military readiness activity is likely to result in a significant adverse effect on the sustainability of a population of a migratory bird species of concern.'' To avoid this threshold from being reached, as well as to provide for migratory bird conservation, it is in the Department of Defense's best interest to address potential migratory bird impacts from military readiness activities by adopting the following principles and standards.

To proactively address migratory bird conservation, the Department of Defense should engage in early planning and scoping and involve agencies with special expertise in the matters relating to the potential impacts of a proposed action. When a proposed action by the Department of Defense related to military readiness may result in the incidental take of birds, we encourage the Department of Defense to contact the Service so we can assist the Department of Defense in addressing potential adverse impacts on birds and mitigating those impacts, particularly those that may have a significant adverse effect on a population of a migratory bird species of concern.

To identify species of concern, the Department of Defense should consult ''Birds of Conservation Concern''; priority migratory bird species documented in the comprehensive bird conservation plans; species or populations of waterfowl identified as high, or moderately high, continental priority in the North American Waterfowl Management Plan; listed threatened and endangered bird species in 50 CFR 17.11; and MBTA-listed game birds below desired population sizes.

The Department of Defense should, in close coordination with the Service, develop a list of conservation measures designed to minimize and mitigate potential adverse impacts of authorized military readiness activities on affected migratory bird species, with emphasis on species of concern. A cooperative approach initiated early in the project planning process will have the greatest potential for successfully reducing or eliminating adverse impacts. Our recommendations will emphasize avoidance, minimization, and rectifying adverse impacts. We encourage the Department of Defense to consider obvious avoidance measures at the outset of project planning, such as siting projects to avoid important nesting areas or to avoid collisions of birds with structures, or timing projects to avoid peak breeding activity. In addition, models such as the U.S. AHAS and BAM should be used to avoid bird activity when planning flight training and range use. These conservation measures should be considered for incorporation in new NEPA analyses, INRMPs, INRMP revisions, and base comprehensive or master plans, whenever adverse impacts to migratory birds may result from proposed military readiness activities.

''Conservation measures'' are project design or mitigation activities that are technically and economically reasonable, and minimize the take of migratory birds and adverse impacts while allowing for completion of an action in a timely manner. When appropriate, the Department of Defense should adopt existing industry guidelines supported by the Service and developed to avoid or minimize take of migratory birds. Monitoring is an important conservation measure or a component of conservation measures when it has the potential to produce data relevant to substantiating impacts, validating effectiveness of mitigation, or providing other pertinent information. We recognize that implementation of conservation measures will be subject to the availability of appropriations.

The Department of Defense should promote the inclusion of comprehensive migratory bird management objectives from bird conservation plans into the Department of Defense planning documents. The bird conservation plans available either from the Service's Regional Offices or via the Internet include: North American Waterfowl Management Plan, PIF, and the U.S. Shorebird Conservation Plan. The North American Waterbird Conservation Plan, the newest planning effort, addresses conservation of seabirds, wading birds, terns, gulls, and some marsh birds, and their habitats. The Department of Defense should continue to work through the PIF program for incorporating bird habitat management efforts into INRMPs. The Department of Defense should also work collaboratively with partners to identify, protect, restore, and manage Important Bird Areas, Western Hemisphere Shorebird Reserve Network sites, and other significant bird sites that occur on Department of Defense lands.

In accordance with the Authorization Act and the 2002 revised Sikes Act guidelines, the annual review of INRMPs by the Department of Defense, in cooperation with the Service and State fish and wildlife agencies, should include monitoring results of any migratory bird conservation measures.

The Department of Defense should use the best available databases to determine which migratory bird species are likely to occur in the area of proposed military readiness activities. This would include species likely to occur in the project area during all phases of the project. Any species of concern should be specifically noted.

The Department of Defense should use the best scientific data available to assess through the NEPA process, or other environmental requirements, the expected impact of proposed or ongoing military readiness activities on migratory bird species likely to occur in action areas. The Department of Defense should address impacts on species of concern more thoroughly and specifically, focusing on the effects of the proposed action on the sustainability of these populations. Special consideration should be given to priority habitats, such as important nesting areas, migration stop-over areas, and wintering habitats.

The Department of Defense should adopt, to the maximum extent practicable, conservation measures designed to minimize and mitigate any adverse impacts of authorized military readiness activities on affected migratory bird species, with emphasis on species of concern. The term ''to the maximum extent practicable'' means without limiting the subject readiness activities in ways that compromise the effectiveness of those activities, and to the extent economically feasible. The Department of Defense should give special emphasis to addressing those activities that may negatively affect the sustainability of a population of a migratory bird species of concern.

At the Department of Defense's request, the Service will provide technical assistance in identifying the migratory bird species and determining those likely to be taken as a result of the proposed action, assessing impacts of the action on migratory bird species, and identifying appropriate conservation measures to mitigate adverse impacts.

Is This Proposed Rule Consistent With the MBTA?

Yes, section 704 and 712(2) of 16 U.S.C. provide us with broad authority to promulgate regulations allowing for the take of migratory birds when compatible with the terms of the migratory bird treaties. We find the take that would be authorized in this proposed rule is compatible with the terms of the treaties and consistent with the purposes of the treaties.

The MBTA implements four treaties: a 1916 treaty with Great Britain on behalf of Canada that was substantially revised by a 1999 protocol; a 1936 treaty with Mexico; a 1972 treaty with Japan; and a 1978 treaty with the former Soviet Union. These international agreements recognize that migratory birds are important for a variety of purposes. They provide a food resource, insectivorous birds are useful to agriculture, they provide recreational benefits, and are useful for scientific and educational purposes, and are important for aesthetic, social, and spiritual purposes. Collectively, the treaties provide mechanisms for protecting the birds and their habitat, and include special emphasis on protecting those birds that are in danger of extinction.

The Japanese and Soviet treaties have the more broadly worded prohibitions against take of migratory birds. At the same time, those treaties include broad exceptions to the take prohibition. The exceptions recognize a variety of purposes for which take may be authorized, including scientific, educational, and propagative purposes; for the protection of persons or property; and for hunting during open seasons. These treaties also authorize takings for ''specific purposes not inconsistent with the objectives'' of the treaties.

The take prohibitions in the 1916 treaty with Canada and the 1936 treaty with Mexico have a narrower focus than the take prohibitions in the Japanese and Soviets treaties. Those treaties are more clearly directed at stopping the indiscriminate killing of migratory birds from hunting through the establishment of closed seasons. Likewise, the prohibitions in the 1999 Canadian protocol retain the structure of the earlier treaty using closed seasons to prohibit hunting.

The take that is authorized by this proposed rule is compatible with the migratory bird treaties. The Japanese and Soviet treaties expressly authorize exceptions from the take prohibition for special purposes not inconsistent with the treaties. The take that would be

authorized here is for a special purpose not inconsistent with the treaties. The authorization allows take of birds only in narrow instances—take that results from military readiness activities. Furthermore, the proposed rule expressly requires the Department of Defense to develop conservation measures to minimize or mitigate impacts where such impacts may have a significant adverse effect on the sustainability of a population of a migratory bird species of concern. Moreover, the Secretary must suspend the take authorization if she concludes that a specific military readiness activity would not be compatible with the migratory bird treaties and may withdraw the authorization if she is unable to obtain from Department of Defense the information needed to assure compliance. In these circumstances, the take that would be authorized by this proposed rule is thus compatible with the terms of the treaties and consistent with the purposes of those treaties.

The proposed rule's process of broad, automatic authorization subject to withdrawal is particularly appropriate to military readiness activities. First, we expect that military readiness activities will rarely, if ever, have the broad impact that would lead to a significant adverse effect on migratory bird species of concern, even absent the conservation measures that the Department of Defense undertakes voluntarily or pursuant to another statute, such as the ESA. Second, The Department of Defense, like other Federal agencies, has a special role in ensuring that the United States complies with its obligations under the four migratory bird treaties, as evidenced by the Migratory Bird Executive Order 13186 (January 10, 2001). Like other Federal agencies, the Department of Defense strives not only to lessen detrimental effects of the Department of Defense actions on migratory birds but to actively promote the conservation of the resource and integrate conservation principles and practices into agency programs. Numerous internal programs and collaborative ventures among Federal agencies and non-Federal partners have contributed significantly to avian conservation. These efforts are grounded in the tenets of stewardship inherent in our treaty obligations. Third, given the importance of military readiness to national security, it is especially important not to create a complex process that, while perhaps useful in other contexts, might impede the timely carrying-out of military readiness activities.

Why Does the Proposed Rule Apply Only to the Department of Defense?

This proposed rule is being developed in accordance with the Authorization Act, which created an interim period, during which the prohibitions on incidental take of migratory birds would not apply to military readiness activities, and requiring the development of regulations authorizing the incidental take of migratory birds associated with military readiness activities. This proposed rule, if finalized, will carry out the mandates of the Authorization Act. This rule would authorize take resulting from otherwise lawful military readiness activities subject to certain limitations and subject to withdrawal of the authorization to ensure consistency with the provisions of the treaties.

Public Comments Invited

We invite comments on this proposed rule from affected or concerned government agencies, the public, the scientific community, industry, environmental organizations, and any other interested party. Please reference "RIN 1018–AI92" at the top of your letter. We will consider all comments submitted to us by the deadline indicated above in **DATES**.

Our practice is to make comments, including names and home addresses of respondents, available for public review during normal business hours. Individual respondents may request that we withhold their home address from the rulemaking record, which we will honor to the extent allowable by law. If you wish for us to withhold your name and/or address, you must state this prominently at the beginning of your comment. However, we will not consider anonymous comments. We will make all submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety.

Required Determinations

Regulatory Planning and Review (E.O. 12866) In accordance with the criteria in Executive Order 12866, this rule is a significant regulatory action. OMB makes the final determination of significance under Executive Order 12866.

a. Preliminary analysis indicates this rule will not have an annual economic effect of $100 million or adversely affect an economic sector, productivity, jobs, the environment, or other units of government. This rule is intended to benefit the Department of Defense, and all of its branches of the Armed Forces, by providing a mechanism to comply with the MBTA and the treaties. A full cost-benefit and economic analysis is not required.

This proposed rule would not affect small businesses or other segments of the private sector. It would apply only to the Department of Defense. Thus any expenditure under this proposed rule would accrue only to the Department of Defense. Our current regulations allow us to permit take of migratory birds only for limited types of activities. This proposed rule would authorize take resulting from the Department of Defense military readiness activities, provided the Department of Defense complies with certain requirements to minimize or mitigate significant adverse effects on the sustainability of a population of a migratory bird species of concern.

Preliminary analysis of the annual economic effect of this rule indicates that it would have *de minimis* effects for the following reasons. Without the rule, the Department of Defense could be subject to injunction by third parties via the APA for lack of authorization under the MBTA for incidental takes of migratory birds that might result from military readiness activities. This rule would enable the Department of Defense to alleviate costs associated with responding to litigation as well as costs associated with delays in military training. Furthermore, the rule is structured such that the Department of Defense is not required to apply for individual permits to authorize take for every individual military readiness activity. The take authorization is conveyed by the rule. This avoids potential costs associated with staff necessary to prepare and review applications for individual permits to authorize military readiness activities that may result in incidental take of migratory birds, and the costs that would be attendant to delay.

The principal annual economic cost to the Department of Defense would likely be related to costs associated with developing and implementing conservation measures to minimize or mitigate impacts from military readiness activities that may have a significant adverse effect on the sustainability of a population of a migratory bird species of concern. However, we anticipate that this threshold of potential effects on the sustainability of a population has a low probability of occurring. The Department of Defense is already obligated to comply with a host of other environmental laws, such as NEPA, which requires them to assess impacts of their military readiness activities on migratory birds, endangered and threatened species, and other wildlife. Most of the requirements of the proposed rule will be subsumed by these existing requirements.

With the rule, the Department of Defense would have a regulatory mechanism to enable the Department of Defense to effectively implement otherwise lawful military readiness activities. Without the rule, the Department of Defense might not be able to complete certain military readiness activities that could result in the take of migratory birds pending issuance of an MBTA take permit or resolution of any lawsuits.

b. This proposed rule would not create serious inconsistencies or otherwise interfere with the Department of Defense actions, including those other than military readiness. The Department of Defense must already comply with numerous environmental laws intended to encourage minimizing impacts to wildlife.

c. This proposed rule would not materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients. This rule does not have anything to do with such programs.

d. This proposed rule raises novel legal or policy issues. This proposed rule raises a novel policy issue in that it implements a new area of our program to carry out the MBTA. Under 50 CFR 21.27, the Service has the authority to issue special purpose permits for take that is otherwise outside the scope of the standard form permits of section 21. Special purpose permits may be issued for proposed actions whereby take of migratory birds could result as an unintended consequence. However, the Service has previously issued such permits only in very limited circumstances.

Regulatory Flexibility Act. For the reasons discussed under Regulatory Planning and Review above, I certify that this proposed rule would not have a significant economic effect on a substantial number of small entities as defined under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*). A final Regulatory Flexibility Analysis is not required. Accordingly, a Small Entity Compliance Guide is not required.

Small Business Regulatory Enforcement Fairness Act. This proposed rule is not a major rule under 5 U.S.C. 804(2), the Small Business Regulatory Enforcement Fairness Act. This rule:

a. Would not have an annual effect on the economy of $100 million or more.

b. Would not cause a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions.

c. Would not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S.-based enterprises to compete with foreign-based enterprises.

Unfunded Mandates Reform Act. In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501, *et seq.*):

a. This proposed rule would not "significantly or uniquely" affect small governments. A Small Government Agency Plan is not required. We have determined and certified pursuant to the Unfunded Mandates Reform Act, 2 U.S.C. 1502 *et seq.*, that this rulemaking would not impose a cost of $100 million or more in any given year on local or State government or private entities.

b. This rule would not produce a Federal mandate of $100 million or greater in any year, *i.e.*, it is not a "significant regulatory action" under the Unfunded Mandates Reform Act.

Takings. In accordance with Executive Order 12630, the rule does not have significant takings implications. A takings implication assessment is not required. The only effect of this rule would be to authorize incidental takes of migratory birds by the Department of Defense as a result of military readiness activities. This rule would not result in the physical occupancy of property, the physical invasion of property, or the regulatory taking of any property.

Federalism. In accordance with Executive Order 13132, and based on the discussions in Regulatory Planning and Review above, this rule would not have significant Federalism effects. A Federalism assessment is not required. Due to the migratory nature of certain species of birds, and given the Federal Government's responsibility to implement the migratory bird treaties, Congress assigned the Federal Government responsibility over these species when it enacted the MBTA. This rule would not have a substantial direct effect on fiscal capacity, change the roles or responsibilities of Federal or State governments, or intrude on State policy or administration.

Civil Justice Reform. In accordance with Executive Order 12988, the Office of the Solicitor has determined that this proposed rule would not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. The intent of the rule is to relieve the Department of Defense and the judicial system from potential litigation resulting from potential take of migratory birds during military readiness activities. The Department of the Interior has certified to the Office of Management and Budget that this rule meets the applicable standards provided in Sections 3(a) and 3(b)(2) of Executive Order 12988.

Paperwork Reduction Act. This rule would not require any new information collections under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). Under the Paperwork Reduction Act, we do not need to seek Office of Management and Budget (OMB) approval to collect information from current Federal employees, military personnel, military reservists, and members of the National Guard in their professional capacities. Because this rule would newly enable us to collect information only from the Department of Defense employees in their professional capacity, we do not need to seek OMB approval under the Paperwork Reduction Act. In other cases, Federal agencies may not conduct or sponsor, and members of the public are not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act. We have made a determination that this proposed rule is categorically excluded under the Department of the Interior's NEPA procedures in 516 Departmental Manual 2, Appendix 1.10. Appendix 1.10 applies to "policies, directives, regulations, and guidelines of an administrative, financial, legal, and technical, or procedural nature; or the environmental effects of which are too broad, speculative or conjectural to lend themselves to meaningful analysis and will be subject later to the NEPA process, either collectively or case-by-case."

Department of Defense military readiness activities occur across a very broad geographic area covering a wide diversity of habitat types and potentially affecting a high diversity of migratory birds. In addition, the specific type of military readiness activity will vary significantly amongst the Armed Services. Because of the broad scope of activities, their locations, habitat types, and potential migratory birds present that may be affected by this proposed rule, it is not foreseeable or reasonable to anticipate all the possible locations where the Department of Defense may conduct military readiness activities or what the circumstances of the activities and the surrounding environment will be, thus it is premature to examine potential impacts of the proposed rule. Any environmental analysis of the proposed rule is determined to be too broad, speculative, and conjectural. A

copy of the Categorical Exclusion is available upon request at the address indicated in the **ADDRESSES** section of this proposed rule.

In addition, we have made the determination that this proposed rule does not dictate extraordinary circumstances that would warrant preparation of an environment document in accordance with Departmental Manual, Part 516, 2.3. First, this proposed rule would only apply to military readiness activities that are otherwise authorized by the Secretary of Defense or the Secretary of the military department concerned. Second, we expect that military readiness activities will rarely, if ever, have the broad impact that would lead to a significant adverse effect on migratory bird species of concern, even absent the conservation measures that the Department of Defense undertakes voluntarily or pursuant to another statute. The Department of Defense also has an important role in ensuring that the United States complies with the four migratory bird treaties.

However, upon finalization of this rule, the Department of Defense will continue to be responsible for ensuring military readiness activities are implemented in accordance with all applicable regulations including NEPA and ESA. In addition, authorization under this rule would require that if a proposed military readiness activity may result in a significant adverse impact on the sustainability of a population of a species of concern, the Department of Defense must confer and cooperate with the Service to develop appropriate measures to minimize or mitigate these effects and address them through their NEPA responsibilities.

Government-to-Government Relationship with Tribes. In accordance with the President's memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951), E.O. 13175, and 512 DM 2, we have evaluated possible effects on federally recognized Indian tribes and have determined that there are no effects. This rule applies only to military readiness activities carried out by the Department of Defense that take migratory birds. It would not interfere with the Tribes' ability to manage themselves or their funds.

Energy Effects. On May 18, 2001, the President issued Executive Order 13211 on regulations that significantly affect energy supply, distribution, or use. This Executive Order requires agencies to prepare Statements of Energy Effects when undertaking certain actions. As this proposed rule is not expected to significantly affect energy supply, distribution, or use, this action is not a significant energy action and no Statement of Energy Effects is required.

Clarity of Regulations. Executive Order 12866 requires each agency to write regulations that are easy to understand. We invite your comments on how to make this rule easier to understand, including answers to questions such as the following: (1) Are the requirements in the rule clearly stated? (2) Does the rule contain technical language or jargon that interferes with its clarity? (3) Does the format of the rule (grouping and order of sections, use of headings, paragraphing, etc.) aid or reduce its clarity? (4) Would the rule be easier to understand if it were divided into more (but shorter) sections? (5) Is the description of the rule in the **SUPPLEMENTARY INFORMATION** section of the preamble helpful in understanding the proposed rule? What else could we do to make the rule easier to understand?

Send a copy of any comments about how we could make this rule easier to understand to: Office of Regulatory Affairs, Department of the Interior, Room 7229, 1849 C Street NW., Washington, DC 20240.

List of Subjects in 50 CFR Part 21

Exports, Hunting, Imports, Reporting and recordkeeping requirements, Transportation, Wildlife.

For the reasons described in the preamble, we propose to amend title 50, chapter I, subchapter B of the CFR as follows:

PART 21—[AMENDED]

1. Revise the authority citation for part 21 to read as follows:

Authority: Pub. L. 95–616, 92 Stat. 3112 (16 U.S.C. 704, 712(2)); Pub. L. 107–314, 116 Stat. 2458 (16 U.S.C. 703 note).

2. Amend § 21.3 by adding the following definitions, in alphabetical order:

§ 21.3 Definitions.

* * * * *

Conservation measures, as used in § 21.15, means project design or mitigation activities that are reasonable and feasible from a scientific, technological, and economic standpoint, and avoid or minimize the take of migratory birds, rectify, reduce, or eliminate adverse impacts over time, or compensate for such adverse impacts, while allowing for completion of the action in a timely manner. Monitoring is a conservation measure when it has the potential to produce data relevant to substantiating impacts, validating effectiveness of mitigation, or providing other pertinent information.

* * * * *

Military readiness activity includes all training and operations of the Armed Forces that relate to combat, and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use. It includes activities carried out by the Department of Defense and their contractors. It does not include: routine operation of installation operating support functions, such as administrative offices, military exchanges, commissaries, water treatment facilities, storage facilities, schools, housing, motor pools, laundries, morale, welfare, and recreation activities, shops, and mess halls; operation of industrial activities; or construction or demolition of facilities relating to these routine operations.

Population, as used in § 21.15, refers to the population of a migratory bird species of concern, and means the number of individuals of a specific species within a particular Bird Conservation Region (BCR).

* * * * *

Secretary of Defense means the Secretary of Defense or any other official in the Department of Defense, any of the military departments, or the Department of Homeland Security with respect to military readiness activities of the United States Coast Guard, who has been nominated by the President and confirmed by the Senate.

* * * * *

Significant adverse effect on the sustainability of a population, as used in § 21.15, means an effect that could result in a population no longer being maintained at a ''biologically viable level for the long term.'' A population is ''biologically viable for the long term'' when its ability to maintain its genetic diversity, to reproduce, and to perform its role or function in its native ecosystem are not irreversibly harmed.

Species of concern refers to those species listed in the periodic report *Birds of Conservation Concern* published by the FWS Division of Migratory Bird Management (*http://migratorybirds.fws.gov/reports/bcc2002.pdf*); priority migratory bird species documented in the comprehensive bird conservation plans (North American Waterbird Conservation Plan *http://www.waterbirdconservation.org*), United States Shorebird Conservation Plan (*http://shorebirdplan.fws.gov*), Partners in Flight Bird Conservation Plans (*http://www.partnersinflight.org*); species or populations of waterfowl identified as high, or moderately high, continental priority in the North American Waterfowl Management Plan; listed threatened and endangered bird species in 50 CFR 17.11; and Migratory Bird Treaty Act—listed game birds below desired population sizes (*http://migratorybirds.fws.gov/reports/reports.html*).

3. Amend part 21, subpart B by adding a new § 21.15 as follows:

§ 21.15 Authorization of take incidental to military readiness activities

(a) Except to the extent authorization is withdrawn or suspended pursuant to paragraph (b) of this section, the Department of Defense may take migratory birds incidental to military readiness activities provided that, for those ongoing or proposed activities that are likely to result in a significant adverse effect on the sustainability of the population of a migratory bird species of concern, the Department of Defense must confer and cooperate with the Service to develop appropriate conservation measures to minimize or mitigate such significant adverse effects.

(b) Withdrawal of take authorization.

(1) If the Secretary determines, after seeking the views of the Secretary of Defense and consulting with the Secretary of State, that incidental take of migratory birds during a specific military readiness activity would not be compatible with one or more of the migratory bird treaties, the Secretary will suspend authorization of the take associated with that activity.

(2) The Secretary may propose to withdraw, and 30 days thereafter may withdraw, the authorization for any take incidental to a specific military readiness activity if the Secretary determines that a proposed military readiness activity may result in a significant adverse effect on the sustainability of the population of a migratory bird species of concern and one or more of the following circumstances exists:

(i) The Department of Defense has not implemented conservation measures that:

(A) Are directly related to protecting the migratory bird species of concern affected by the proposed military readiness activity;

(B) Would significantly reduce take of the migratory bird species of concern affected by the military readiness activity;

(C) Are economically feasible; and

(D) Do not limit the effectiveness of the military readiness activity;

(ii) The Department of Defense fails to conduct mutually agreed upon monitoring to determine the effects of a military readiness activity on the migratory bird species of concern and/or the efficacy of the conservation measures implemented by the Department of Defense; or

(iii) The Department of Defense has not provided reasonably available information that the Secretary has determined is necessary to evaluate whether withdrawal of take authorization for the specific military readiness activity is appropriate.

(3) When the Secretary proposes to withdraw authorization with respect to a specific military readiness activity, the Secretary will first provide written notice to the Secretary of Defense. Any such notice will include the basis for the Secretary's determination that withdrawal is warranted in accordance with the criteria contained in paragraph (b)(2) of this section, and will identify any conservation measures or other measures that would, if implemented by the Department of Defense, permit the Secretary to cancel the proposed withdrawal of authorization.

(4) Within 30 days of receipt of the notice specified in paragraph (b)(3) of this section, the Secretary of Defense may notify the Secretary in writing of the Department of Defense's objections, if any, to the proposed withdrawal, specifying the reasons therefore. Before acting to withdraw the take authorization for any specific military readiness activity, the Secretary will consider the objections raised by the Department of Defense. If the Secretary continues to believe that withdrawal is appropriate, he or she will provide written notice to the Secretary of Defense of the withdrawal and the rationale therefore, including a response to the Department of Defense's objections. If the Secretary of Defense continues to object to the withdrawal of authorization, the withdrawal will not become effective until the Secretary of Defense has had the opportunity to meet with the Secretary.

(5) Any take incidental to a military readiness activity subject to a proposed withdrawal of authorization will continue to be authorized by this regulation until the Secretary makes a final determination on the withdrawal.

(6) The Secretary may, at his or her discretion, cancel a suspension or withdrawal of authorization at any time. A suspension may be cancelled in the event new information is provided that the proposed activity would be compatible with the migratory bird treaties. A proposed withdrawal may be cancelled if the Department of Defense modifies the proposed activity to alleviate significant adverse effects on the sustainability of a population of a migratory bird species of concern or the circumstances in paragraphs (b)(2)(i) through (iii) of this section no longer exist. Cancellation of suspension or withdrawal of authorization becomes effective upon delivery of written notice from the Secretary to the Department of Defense.

(7) The responsibilities of the Secretary under paragraph (b) of this section, may be fulfilled by his or her delegatee who must be an official nominated by the President and confirmed by the Senate.

Dated: December 12, 2003.

Craig Manson,

Assistant Secretary for Fish and Wildlife and Parks.

Dated: January 8, 2004.

Concurrence of:

Raymond DuBois,

Deputy Under Secretary of Defense (Installation & Environment).

Editorial Note: This document was received by the Office of the Federal Register on May 17, 2004.

[FR Doc. 04–11411 Filed 5–28–04; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 679

[Docket No. 040521156–4156–01; I.D. 051704E]

RIN 0648–AS10

Fisheries of the Exclusive Economic Zone Off Alaska; Reduction to a Harvest Restriction for the Harvest Limit Area Atka Mackerel Fishery in the Aleutian Islands Subarea

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed rule; request for comments.

SUMMARY: NMFS issues a proposed rule that would remove a harvest restriction on participants in the harvest limit area (HLA) Atka mackerel fishery in the Aleutian Islands subarea. If approved, the regulatory amendments would allow participants assigned to an HLA fishery to harvest Atka mackerel outside of the HLA during the first HLA fishery in each season. This action would allow participants to harvest Atka mackerel

received without change, including any personal identifiers or contact information.

DOD Clearance Officer: Ms. Patricia Toppings.

Written requests for copies of the information collection proposal should be sent to Ms. Toppings at WHS/ESD/Information Management Division, 1777 North Kent Street, RPN, Suite 11000, Arlington, VA 22209–2133.

Dated: August 24, 2006.

Patricia L. Toppings,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 06–7241 Filed 8–29–06; 8:45 am]

BILLING CODE 5001–06–M

DEPARTMENT OF DEFENSE

Office of the Secretary

[No. DOD–2006–OS–0080]

Submission for OMB Review; Comment Request

ACTION: Notice. The Department of Defense has submitted to OMB for clearance, the following proposal for collection of information under the provisions of the Paperwork Reduction Act (44 U.S.C. Chapter 35).

DATES: Consideration will be given to all comments received by September 29, 2006.

Title, Associated Form and OMB Number: Application for Department of Defense Impact Aid for Children with Severe Disabilities; SD Form 816 and SD Form 816C, OMB Control Number 0704–0425.

Type of Request: Extension.

Number of Respondents: 50.

Responses per Respondent: 1.

Annual Responses: 50.

Average Burden per Response: 8 hours.

Annual Burden Hours: 400.

Needs and Uses: Department of Defense funds are authorized for local educational agencies (LEA)s that educate military dependent students with severe disabilities and meet certain criteria. Eligible LEAs are determined by their responses to the U.S. Department of Education (ED) from information they submitted on children with disabilities, when they completed the Impact Program form for the Department of Education. This application will be requested of LEAs who educate military dependent students with disabilities, who have been deemed eligible for the U.S. Department of Education Impact Aid program, to determine if they meet the criteria to receive additional funds from the Department of Defense due to high special education costs of the military dependents with severe disabilities that they serve.

Affected Public: State, local or tribal government.

Frequency: On occasion.

Respondent's Obligation: Required to obtain or retain benefits.

OMB Desk Officer: Ms. Hillary Jaffe. Written comments and recommendations on the proposed information collection should be sent to Ms. Jaffe at the Office of Management and Budget, Desk Officer for DoD, Room 10236, New Executive Office Building, Washington, DC 20503.

You may also submit comments, identified by docket number and title, by the following method:

• Federal eRulemaking Portal: *http://www.regulations.gov*. Follow the instructions for submitting comments.

Instructions: All submissions received must include the agency name, docket number and title for this **Federal Register** document. The general policy for comments and other submissions from members of the public is to make these submissions available for public viewing on the Internet at *http://www.regulations.gov* as they are received without change, including any personal identifers or contact information.

DOD Clearance Officer: Ms. Patricia Toppings. Written requests for copies of the information collection proposal should be sent to Ms. Toppings at WHS/ESD/Information Management Division, 1777 North Kent Street, RPN, Suite 11000, Arlington, VA 22209–2133.

Dated: August 24, 2006.

Patricia L. Toppings,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 06–7242 Filed 8–29–06; 8:45 am]

BILLING CODE 5001–06–M

DEPARTMENT OF DEFENSE

Office of the Secretary

Memorandum of Understanding Between the U.S. Department of Defense and the U.S. Fish and Wildlife Service To Promote the Conservation of Migratory Birds

AGENCY: Department of Defense.

ACTION: Notice.

SUMMARY: This notice announces a public notice of the signing of a Memorandum of Understanding (MOU) between the U.S. Department of Defense and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds. Pursuant to Executive Order 13186 (January 17, 2001), ''Responsibilities of Federal Agencies to Protect Migratory Birds,'' this MOU outlines a collaborative approach to promote the conservation of migratory bird populations. This MOU identifies specific activities where cooperation between the Parties will contribute substantially to the conservation of migratory birds and their habitats. It does not authorize the ''take'' of migratory birds. Take, as defined in 50 CFR 10.12, includes the pursuit, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to pursue, hunt, shoot, wound, kill, trap, capture, or collect.

The complete text of the MOU is attached.

EFFECTIVE DATES: This notice is effective August 30, 2006. The MOU is effective July 31, 2006 and shall remain effective for a period of five years.

FOR FURTHER INFORMATION CONTACT: Peter Boice, 703–704–0524.

SUPPLEMENTARY INFORMATION: The notice is required by Section 3(g) of Executive Order 13186 which states ''Each agency shall advise the public of the availability of its MOU through a notice published in the **Federal Register**.''

Dated: August 24, 2006.

L.M. Bynum,

OSD Federal Register Liaison Officer, DoD.

Memorandum of Understanding Between the U.S. Department of Defense and the U.S. Fish and Wildlife Service To Promote the Conservation of Migratory Birds

This Memorandum of Understanding (MOU) is entered into between the U.S. Department of Defense (DoD) and the U.S. Fish and Wildlife Service (FWS) (hereinafter ''the Parties'').

A. Purpose and Scope

Pursuant to Executive Order 13186 (January 17, 2001), Responsibilities of Federal Agencies to Protect Migratory Birds, this MOU outlines a collaborative approach to promote the conservation of migratory bird populations.

This MOU does not address incidental take during military readiness activities, which is being addressed in a rulemaking in accordance with section 315 of the National Defense Authorization Act for Fiscal Year 2003 (Pub. L. 107–314, 116 Stat. 2458).

This MOU specifically pertains to the following categories of DoD activities:

(1) Natural resource management activities, including, but not limited to, habitat management, erosion control, forestry activities, agricultural outleasing, conservation law enforcement, invasive weed management, and prescribed burning;

(2) Installation support functions, including but not limited to, the maintenance, construction or operation of administrative offices, military exchanges, road construction, commissaries, water treatment facilities, storage facilities, schools, housing, motor pools, non-tactical equipment, laundries, morale, welfare, and recreation activities, shops, landscaping, and mess halls;

(3) Operation of industrial activities;

(4) Construction or demolition of facilities relating to these routine operations; and

(5) Hazardous waste cleanup.

This MOU identifies specific activities where cooperation between the Parties will contribute substantially to the conservation of migratory birds and their habitats. This MOU does not authorize the take of migratory birds.

B. Authorities

The Parties' responsibilities under the MOU are authorized by provisions of the following laws:

Alaska National Interest Lands Conservation Act of 1980 (16 U.S.C. 410hh–3233).

Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668–668d).

Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*).

Fish and Wildlife Act of 1956 (16 U.S.C. 742 *et seq.*).

Fish and Wildlife Conservation Act of 1980 (16 U.S.C. 2901–2911).

Fish and Wildlife Coordination Act (16 U.S.C. 661–667).

Migratory Bird Conservation Act (16 U.S.C. 715–715d, 715e, 715f–715r).

Migratory Bird Treaty Act (16 U.S.C. 703–711).

National Environmental Policy Act of 1969 (42 U.S.C. 4321–4347).

Sikes Act Improvement Act of 1997 (16 U.S.C. 670a–670o).

Agreements to limit encroachments and other constraints on military training, testing, and operations (10 U.S.C. 2684a)

C. Background

The Parties have a common interest in the conservation and management of America's natural resources. The Parties agree that migratory birds are important components of biological diversity and that the conservation of migratory birds will both help sustain ecological systems and help meet the public demand for conservation education and outdoor recreation, such as wildlife viewing and hunting opportunities. The Parties also agree that it is important to: (1) Focus on bird populations; (2) focus on habitat restoration and enhancement where actions can benefit specific ecosystems and migratory birds dependent upon them; and (3) recognize that actions taken to benefit some migratory bird populations may adversely affect other migratory bird populations.

The DoD mission is to provide for the Nation's defense. DoD's conservation program works to ensure continued access to land, air, and water resources for realistic military training and testing while ensuring that the natural and cultural resources entrusted to DoD's care are sustained in a healthy condition.

The DoD is an active participant in international bird conservation partnerships including Partners in Flight (PIF) and the North American Bird Conservation Initiative (NABCI). Military lands frequently provide some of the best remaining habitat for migratory bird species of concern, and DoD plans to continue its leadership role in bird conservation partnerships.

Through the PIF initiative, DoD works in partnership with numerous Federal and State agencies and nongovernmental organizations for the conservation of migratory and resident birds and to enhance migratory bird survival. Through DoD PIF, a list of species of concern (see Definitions) has been developed for each Bird Conservation Region where DoD facilities occur, thus improving DoD's ability to evaluate any migratory bird conservation concerns on respective DoD lands.

Integrated Natural Resources Management Plans (INRMPs) offer a coordinated approach for incorporating habitat conservation efforts into installation management. INRMPs are a significant source of baseline conservation information and conservation initiatives used when preparing National Environmental Policy Act (NEPA) documents for all DoD management activities. This linkage helps to ensure that appropriate conservation and mitigation measures are identified in NEPA documents and committed to, when appropriate, in final decision documents.

The DoD PIF program provides a framework for incorporating landbird, shorebird and waterbird habitat management efforts into INRMPs. DoD's strategy focuses on inventorying and long-term monitoring to determine changes in migratory bird populations on DoD installations. Effective on-the-ground management may then be applied to those areas identified as having the highest conservation value. DoD's PIF goal is to support the military's training and testing mission while being a vital and supportive partner in regional, national, and international bird conservation initiatives. DoD strives to implement cooperative projects and programs on military lands to benefit the health and well-being of birds and their habitats, whenever possible.

The Department of Defense implements bird inventories and monitoring programs in numerous ways including Monitoring Avian Productivity and Survivorship (MAPS) and Next Generation Radar (NEXRAD) for studying bird movements in the atmosphere. DoD also maintains an integrated pest management (IPM) program designed to reduce the use of pesticides to the minimum necessary.

The mission of the FWS is to work with others to conserve, protect, manage, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people. The FWS is legally mandated to implement the provisions of the Migratory Bird Treaty Act (MBTA), which include responsibilities for population management (e.g., monitoring), habitat protection (e.g., acquisition, enhancement, and modification), international coordination, and regulation development and enforcement. The FWS also promotes migratory bird conservation through its coordination and consultation efforts with other entities.

Many FWS programs are involved in bird conservation activities, including:

1. The Division of Migratory Bird Management and Regional Migratory Birds and Habitat Programs serve as focal points in the United States for policy development and strategic planning, developing and implementing monitoring and management initiatives that help maintain healthy populations of migratory birds and their habitat, and providing continued opportunities for citizens to enjoy bird-related recreation.

2. The Division of Bird Habitat Conservation is instrumental in supporting habitat conservation partnerships through the administration of bird conservation grant programs and development of Joint Ventures that serve as major vehicles for implementing the various bird conservation plans across the country.

3. Ecological Services Field Offices across the country serve as the primary contacts for environmental reviews that include, when requested, projects developed by local military installations and DoD regional offices involving

migratory bird issues. The Field Offices coordinate with the Regional Migratory Bird Offices, as necessary, during these reviews regarding permits and overall migratory bird conservation coordination for DoD activities.

4. The Office of Law Enforcement is the principal FWS program that enforces the legal provisions of the MBTA.

The Parties agree this MOU shall be implemented to the extent permitted by law and in harmony with agency missions, subject to the availability of appropriations and budgetary limits.

D. Responsibilities

1. Each Party shall:

a. Emphasize an interdisciplinary, collaborative approach to migratory bird conservation in cooperation with other governments, State and Federal agencies, and non-Federal partners within the geographic framework of the NABCI Bird Conservation Regions

b. Strive to protect, restore, enhance, and manage habitat of migratory birds, and prevent or minimize the loss or degradation of habitats on DoD-managed lands, by:

(1) Identifying and avoiding management actions that have the potential to adversely affect migratory bird populations, including breeding, migration, or wintering habitats; and by developing and implementing, as appropriate, conservation measures that would avoid or minimize the take of migratory birds or enhance the quality of the habitat used by migratory birds.;

(2) Working with partners to identify, conserve, and manage Important Bird Areas, Western Hemisphere Shorebird Reserve Network sites, and other significant bird conservation sites that occur on DoD-managed lands;

(3) Preventing or abating the pollution or detrimental alteration of the habitats used by migratory birds;

(4) Developing and integrating information on migratory birds and their habitats into outreach and education materials and activities; and

(5) Controlling the introduction, establishment, and spread of non-native plants or animals that may be harmful to migratory bird populations, as required by Executive Order 13112 on Invasive Species.

c. Work with willing landowners to prevent or minimize the loss or degradation of migratory bird habitats on lands adjacent or near military installation boundaries. This cooperative conservation may include:

(1) Participating in efforts to identify, protect, and conserve important migratory bird habitats or other significant bird conservation sites and ecological conditions that occur in landscapes or watersheds that may be affected by activities on DoD lands;

(2) Developing and integrating information on migratory bird resources found on DoD lands into other partners' outreach and education materials and activities; and

(3) Using available authorities to enter into agreements with other Federal agencies, States, other governmental entities, and private conservation organizations to conserve and enhance habitat in a compatible manner so military operations are not restricted.

d. Promote collaborative projects such as:

(1) Developing or using existing inventory and monitoring programs, at appropriate scales, with national or regional standardized protocols, to assess the status and trends of bird populations and habitats, including migrating, breeding, and wintering birds;

(2) Designing management studies and research projects using national or regional standardized protocols and programs, such as MAPS to identify the habitat conditions needed by applicable species of concern, to understand interrelationships of co-existing species, and to evaluate the effects of management activities on habitats and populations of migratory birds;

(3) Sharing inventory, monitoring, research, and study data for breeding, migrating, and wintering bird populations and habitats in a timely fashion with national data repositories such as Breeding Bird Research and Monitoring Database (BBIRD), National Point Count Database, National Biological Information Infrastructure, and MAPS;

(4) Working in conjunction with each other and other Federal and State agencies to develop reasonable and effective conservation measures for actions that affect migratory birds and their natural habitats;

(5) Participating in or promoting the implementation of existing regional or national inventory and monitoring programs such as Breeding Bird Survey (BBS), BBIRD, Christmas Bird Counts, bird atlas projects, or game bird surveys (e.g., mid-winter waterfowl surveys) on DoD lands where practicable and feasible.

(6) Using existing partnerships and exploring opportunities for expanding and creating new partnerships to facilitate combined funding for inventory, monitoring, management studies, and research.

e. Provide training opportunities to DoD natural resources personnel on migratory bird issues, to include bird population and habitat inventorying, monitoring methods, and management practices that avert detrimental effects and promote beneficial approaches to migratory bird conservation.

f. Participate in the Interagency Council for the Conservation of Migratory Birds to evaluate implementation of this MOU.

g. Promote migratory bird conservation internationally, as it relates to wintering, breeding and migration habitats of birds that breed on DoD lands.

h. Promote and undertake ecologically sound actions to curb the introduction in the wild of exotic or invasive species harmful to migratory birds.

2. The Department of Defense shall:

a. Follow all migratory bird permitting requirements for non-military readiness activities that are subject to 50 CFR Parts 21.22 (banding or marking), 21.23 (scientific collecting), 21.26 (special Canada goose permit), 21.27 (special purposes), or 21.41 (depredation). No permit is required to take birds in accordance with Parts 21.43–21.47 (depredation orders).

b. Encourage incorporation of comprehensive migratory bird management objectives in the preparation of DoD planning documents, including Integrated Natural Resource Management Plans, Pest Management Plans, Installation Master Plans, NEPA analyses, and non-military readiness elements of Bird Aircraft Strike Hazard documents. Comprehensive planning efforts for migratory birds include PIF Bird Conservation Plans, the North American Waterfowl Management Plan, U.S. Shorebird Conservation Plan, and North American Waterbird Conservation Plan and associated regional plans where available.

c. Incorporate conservation measures addressed in Regional or State Bird Conservation Plans in INRMPs.

d. Consistent with imperatives of safety and security, allow the FWS and other partners reasonable access to military lands for conducting sampling or survey programs such as MAPS, BBS, BBIRD, International Shorebird Survey, and breeding bird atlases.

e. Prior to starting any activity that is likely to affect populations of migratory birds:

(1) Identify the migratory bird species likely to occur in the area of the proposed action and determine if any species of concern could be affected by the activity;

(2) Assess and document, through the project planning process, using NEPA when applicable, the effect of the proposed action on species of concern.

Use best available demographic, population, or habitat association data in the assessment of effects upon species of concern;

(3) Engage in early planning and scoping with the FWS relative to potential impacts of a proposed action, to proactively address migratory bird conservation, and to initiate appropriate actions to avoid or minimize the take of migratory birds.

f. Manage military lands and non-military readiness activities in a manner that supports migratory bird conservation, giving consideration to the following factors:

(1) Habitat protection, restoration, and enhancement. Military lands contain many important habitats for migratory birds. Some unique, sensitive, endangered and/or declining habitat types that may require special management attention include:

(a) Grasslands. Many native grassland communities require intensive management to maintain and restore vigor and species diversity and to provide habitat for migratory birds and other wildlife dependent on native grasslands. Grassland management and restoration tools include controlled burning, mowing, grazing, native species planting, and exotic plant removal. Many grasslands have evolved with a natural fire regime, and the management activities often emulate this fire regime.

(b) Riparian and wetland habitats. Military lands contain riparian and wetland habitats that may be critical for migratory birds. DoD will strive to prevent the destruction or degradation of wetlands and riparian vegetation, and also restore those habitats, when feasible, where they have been degraded.

(c) Coastal beach, salt marsh, and dune habitats. Military lands support some of the best remaining undisturbed coastal habitats. DoD will strive to protect, restore and prevent the destruction of coastal and island habitats that are important to breeding, migrating and wintering shorebirds, salt marsh land birds and colonial water birds.

(d) Longleaf pine ecosystem. Some of the best remaining examples of the longleaf pine ecosystem occur on military lands. Such habitats benefit from prescribed fire and other management measures which DoD regularly implements on thousands of acres in the Southeast. The DoD manages and will continue to manage this ecosystem to benefit and promote migratory bird conservation.

(2) Fire and fuels management practices. Fire plays an important role in shaping plant and animal communities and is a valuable tool in restoring habitats altered by decades of fire suppression. Fire management may include fire suppression, but also involves fire prevention and fuels treatment, including prescribed burning and monitoring, to protect communities and provide for healthy ecosystems. Fire management planning efforts will consider the effects of fire management strategies on the conservation of migratory bird populations.

(3) Invasive Species and Aquatic Nuisance Species management practices. Invasive Species and Aquatic Nuisance Species are a threat to native habitats and wildlife species throughout the United States, including military lands. Efforts to control/contain these species must take into account both the impacts from invasive species and the effects of the control efforts on migratory bird populations. Invasive Species and Aquatic Nuisance Species that can threaten migratory birds and their habitats include, but are not limited to, exotic grasses, trees and weeds, terrestrial and aquatic insects and organisms, non-native birds, and stray and feral cats.

(4) Communications towers, utilities and energy development. Increased communications demands, changes in technology and the development of alternative energy sources result in impacts on migratory birds. DoD will review wind turbine and powerline guidelines published by FWS and the Avian Power Line Interaction Committee, respectively, and consult with FWS as needed, in considering potential effects on migratory birds of proposals for locating communications towers, powerlines or wind turbines on military lands. Construction of new utility and energy systems and associated infrastructure should be designed to avoid and minimize impacts on migratory bird populations. Existing utilities may also be considered for retrofitting to reduce impacts.

(5) Recreation and public use. The demand for outdoor recreational opportunities on public lands is increasing. Impacts on migratory birds may occur both through direct and indirect disturbances by visitors and through agency activities associated with providing recreational opportunities to visitors and installation personnel and morale facilities (e.g., facilities construction). DoD provides access to military lands for recreation and other public use, such as Watchable Wildlife and bird watching, where such access does not compromise security and safety concerns or impact migratory birds, other species, or their habitats.

Many conservation measures have been developed to benefit a variety of migratory bird species and their associated habitats. Some of these conservation measures may be directly applicable to DoD non-military readiness related activities; however, the appropriateness and practicality of implementing any specific conservation measure may have to be determined on a case-by-case basis. The FWS will work cooperatively with DoD in providing existing conservation measures and developing new ones as needed. Examples of some conservation measures may be found at *http://www.partnersinflight.org/pubs/BMPs.htm* for landbird species.

g. Develop and implement new and/or existing inventory and monitoring programs, at appropriate scales, using national standardized protocols, to evaluate the effectiveness of conservation measures to minimize or mitigate take of migratory birds, with emphasis on those actions that have the potential to significantly impact species of concern.

h. Advise the public of the availability of this MOU through a notice published in the **Federal Register**.

i. In accordance with DoD INRMP guidance, promote timely and effective review of INRMPs with respect to migratory bird issues with the FWS and respective state agencies. During the INRMP review process, evaluate and coordinate with FWS on any potential revisions to migratory bird conservation measures taken to avoid or minimize take of migratory birds.

3. The Fish and Wildlife Service shall:

a. Work with DoD by providing recommendations to minimize adverse effects upon migratory birds from DoD actions.

b. Through the Division of Migratory Bird Management, maintain a Web page on permits that provides links to all offices responsible for issuing permits and permit application forms for take of migratory birds.

c. Provide essential background information to the DoD when requested to ensure sound management decisions. This may include migratory bird distributions, status, key habitats, conservation guidelines, and risk factors within each BCR. This includes updating the FWS publication of *Birds of Conservation Concern* at regular intervals so it can be reliably referenced.

d. Work to identify special migratory bird habitats (i.e., migration corridors, stop-over habitats, ecological conditions important in nesting habitats) to aid in collaborative planning.

e. Through the Ecological Service Field Office, provide to DoD, upon

request, technical assistance on migratory bird species and their habitats.

f. In accordance with FWS Guidelines for Coordination with DoD and Implementation of the 1997 Sikes Act (2005), work cooperatively with DoD in the development, review and revision of INRMPs.

g. Review and comment on NEPA documents and other planning documents forwarded by military installations.

E. It Is Mutually Agreed and Understood That

1. This MOU will not change or alter requirements associated with the MBTA, Endangered Species Act, NEPA, Sikes Act or other statutes or legal authority.

2. The responsibilities established by this MOU may be incorporated into existing DoD actions; however, DoD may not be able to implement some responsibilities identified in the MOU until DoD has successfully included them in formal planning processes. This MOU is intended to be implemented when new actions are initiated as well as during the initiation of new, or revisions to, INRMPs, Pest Management Plans, and non-military readiness elements of Bird Aircraft Strike Hazard plans. It does not apply to ongoing DoD actions for which a NEPA decision document was finalized prior to, or within 180 days of the date this MOU is signed.

3. This MOU in no way restricts either Party from participating in similar activities with other public or private agencies, governments, organizations, or individuals.

4. An elevation process to resolve any dispute between the Parties regarding a particular practice or activity is in place and consists of first attempting to resolve the dispute with the DoD military installation and the responsible Ecological Services Field Office. If there is no resolution at this level, either Party may elevate the issue to the appropriate officials at the applicable Military Service's Chain of Command and FWS Regional Offices. In the event that there is no resolution by these offices, the dispute may be elevated by either Party to the headquarters office of each agency.

5. This MOU is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement, contribution of funds, or transfer of anything of value between the Parties will be handled in accordance with applicable laws, regulations, and procedures, including those for government procurement and printing. Such endeavors will be outlined in separate agreements that shall be made in writing by representatives of the Parties and shall be independently authorized by appropriate statutory authority.

6. The Parties shall schedule periodic meetings to review progress and identify opportunities for advancing the principles of this MOU.

7. This MOU is intended to improve the internal management of the executive branch and does not create any right or benefit, substantive or procedural, separately enforceable at law or equity by a party against the United States, its agencies or instrumentalities, its officers or employees, or any other person.

8. Modifications to the scope of this MOU shall be made by mutual consent of the Parties, through issuance of a written modification, signed and dated by both Parties, prior to any changes.

9. Either Party may terminate this instrument, in whole or in part, at any time before the date of expiration by providing the other Party with a written statement to that effect.

The principal contacts for this instrument are as follows:

Brian Millsap, Chief, Division of Migratory Bird Management, U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, MS4107, Arlington, VA 22203.

L. Peter Boice, Conservation Team, Leader, Office of the Secretary of Defense, 1225 S. Clark St., Suite 1500, Arlington, VA 22202–4336.

This MOU is executed as of the last date signed below and expires no later than five (5) years thereafter, at which time it is subject to review and renewal, or expiration.

F. Definitions

Action—a program, activity, project, official policy, rule, regulation or formal plan directly carried out by DoD, but not a military readiness activity.

Breeding Biology Research and Monitoring Database (BBIRD)—national, cooperative program that uses standardized field methodologies for studies of nesting success and habitat requirements of breeding birds (*http://pica.wru.umt.edu/BBIRD/*).

Breeding Bird Survey (BBS)—a standardized international survey that provides information on population trends of breeding birds, through volunteer observations located along randomly selected roadside routes in the United States, Canada and Mexico (*http://www.mbr-pwrc.usgs.gov/bbs/bbs.html*).

Bird Conservation Region—a geographic unit used to facilitate bird conservation actions under the North American Bird Conservation Initiative (*http://www.manomet.org/USSCP/bcrmaps.html*).

Birds of Conservation Concern—published by the FWS Division of Migratory Bird Management, refers to the list of migratory and non-migratory birds of the United States and its territories that are of conservation concern. The current version of the list Birds of Conservation Concern 2002 is available at (*http://migratorybirds.fws.gov/reports/bcc2002.pdf*).

Comprehensive Planning Efforts for Migratory Birds—includes Partners in Flight, North American Waterfowl Management Plan, U.S. Shorebird Conservation Plan, Western Hemisphere Shorebird Reserve Network, North American Waterbird Conservation Plan, and other planning efforts integrated through the North American Bird Conservation Initiative.

Conservation Measure—an action undertaken to improve the conservation status of one or more species of migratory birds. Examples include surveys and inventories, monitoring, status assessments, land acquisition or protection, habitat restoration, population manipulation, research, and outreach.

Conservation Planning—strategic and tactical planning of agency activities for the long-term conservation of migratory birds and their habitats.

Council for the Conservation of Migratory Birds—an interagency council established by the Secretary of the Interior to oversee the implementation of Executive Order 13186.

Ecological Condition—the composition, structure, and processes of ecosystems over time and space. This includes the diversity of plant and animal communities, the productive capacity of ecological systems and species diversity, ecosystem diversity, disturbance processes, soil productivity, water quality and quantity, and air quality. Often referred to in terms of ecosystem health, which is the degree to which ecological factors and their interactions are reasonably complete and functioning for continued resilience, productivity, and renewal of the ecosystem.

Effect (adverse or beneficial)—''effects'' and ''impacts,'' as used in this MOU are synonymous. Effects may be direct, indirect, or cumulative, and refer to effects from management actions or categories of management actions on migratory bird populations, habitats, ecological conditions and/or significant bird conservation sites.

Important Bird Areas (IBAs)—a network of sites that provide essential habitat for the long-term conservation of birds. In the United States, the IBA network is administered by the American Bird Conservancy and the National Audubon Society. (*http://www.audubon.org/nird/iba/*)

Integrated Natural Resources Management Plan (INRMP)—an integrated plan based, to the maximum extent practicable, on ecosystem management that shows the interrelationships of individual components of natural resources management (*e.g.*, fish and wildlife, forestry, land management, outdoor recreation) to military mission requirements and other land use activities affecting an installation's natural resources. INRMPs are required for all DoD installations with significant natural resources, pursuant to the Sikes Act Improvement Act.

International Shorebird Survey—a monitoring program started in 1974 to survey shorebirds (sandpipers, plovers, etc.) across the Western Hemisphere. (*http://www.manomet.org/programs/shorebirds*).

Management Action—an activity by a government agency that could cause a positive or negative impact on migratory bird populations or habitats. Conservation measures to mitigate potential negative effects of actions may be required.

Migratory Bird—any bird listed in 50 CFR 10.13, Code of Federal Regulations.

Military Readiness Activity—all training and operations of the Armed Forces that relate to combat, including but not limited to the adequate and realistic testing of military equipment, vehicles, weapons and sensors for proper operation and suitability for combat use.

Monitoring Avian Productivity and Survivorship (MAPS)—a program that uses the banding of birds during the breeding season to track the changes and patterns in the number of young produced and the survivorship of adults and young (*http://www.birdpop.org/maps.htm*).

National Environmental Policy Act (NEPA)—a Federal statute that requires Federal agencies to prepare a detailed analysis of the environmental impacts of a proposed action and alternatives, and to include public involvement in the decision making process for major Federal actions significantly affecting the quality of the human environment 42 U.S.C. 4321, *et seq.*

North American Bird Conservation Initiative (NABCI)—an initiative to align the avian conservation community to implement bird conservation through regionally-based, biologically driven, landscape-oriented partnerships across the North American continent. NABCI includes Federal agencies of Canada, Mexico and the United States, as well as most landbird, shorebird, waterbird, and waterfowl conservation initiatives (*http://www.nabci-us.org*).

North American Waterbird Conservation Plan—a partnership of Federal and State government agencies, non-governmental organizations, and private interests focusing on the conservation of waterbirds, primarily including marshbirds and inland, coastal, and pelagic colonial waterbirds (*www.nacwcp.org/pubs/*). The vision of the partnership is that the distribution, diversity and abundance of populations and breeding, migratory, and nonbreeding waterbirds are sustained throughout the lands and waters of North America, Central America, and the Caribbean.

North American Waterfowl Management Plan—a partnership of Federal and State agencies, non-governmental organizations, and private interests focusing on the restoration of waterfowl populations through habitat restoration, protection, and enhancement (*http://birdhabitat.fws.gov/NAWMP/nawmphp.htm*).

Partners in Flight (PIF)—a cooperative partnership program of more than 300 partners including Federal and State government agencies, non-governmental organizations, conservation groups, foundations, universities and industry focusing on the conservation of landbirds. DoD was an original signatory to the PIF Federal Agencies' MOA. (*http://www.partnersinflight.org* and *http://www.dodpif.org*).

Species of Concern—refers to those species listed in the periodic report *Birds of Conservation Concern*; priority migratory bird species documented in the comprehensive bird conservation plans (North American Waterbird Conservation Plan, U.S. Shorebird Conservation Plan, Partners in Flight Bird Conservation Plans); species or populations of waterfowl identified as high, or moderately high, continental priority in the North American Waterfowl Management Plan; listed threatened and endangered bird species in 50 CFR 17.11; and MBTA listed game birds below desired population sizes.

Take—as defined in 50 CFR 10.12, to include pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.

U.S. Shorebird Conservation Plan—an effort undertaken by a partnership of Federal and State government agencies, as well as non-governmental and private organizations to ensure that stable and self-sustaining populations of all shorebird species are restored and protected (*http://www.fws.gov/shorebird*).

The Parties hereto have executed this agreement as of the date shown below.

Signed: July 7, 2006.

H. Dale Hall,

Director, U.S. Fish and Wildlife Service.

Signed: July 31, 2006.

Alex Albert Beehler,

Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), U.S. Department of Defense.

[FR Doc. E6–14352 Filed 8–29–06; 8:45 am]

BILLING CODE 5001–06–P

DEPARTMENT OF DEFENSE

Department of the Army

[No. USA–2006–0016]

Submission for OMB Review; Comment Request

ACTION: Notice.

The Department of Defense has submitted to OMB for clearance, the following proposal for collection of information under the provisions of the Paperwork Reduction Act (44 U.S.C. Chapter 35).

DATES: Consideration will be given to all comments received by September 29, 2006.

Title, Associated Form and OMB Number: Disposition of Remains—Reimbursable Basis and Request for Payment of Funeral and/or Internet Expense; DD Forms 2065 and 1375; OMB Number 0704–0030.

Type of Request: Extension.

Number of Respondents: 3200.

Response per Respondent: 1.

Annual Responses: 3200.

Average Burden per Response: 20 minutes (DD 2065) and 10 minutes (DD 1375).

Annual Burden Hours: 550.

Needs and Uses: DD Form 2065 records disposition instructions and costs for preparation and final disposition of remains. DD Form 1375 provides next-of-kin an instrument to apply for reimbursement of funeral/interment expenses. This information is used to adjudicate claims for reimbursement of these expenses.

Affected Public: Individuals and households.

Frequency: On occasion.

Respondent's Obligation: Required to obtain or retain benefits.

OMB Desk Officer: Ms. Hillary Jaffe.

APPENDIX B
FIGURES

This appendix contains maps and figures detailing information in support of the INRMP. The MCBH EGIS data repository, developed with contractor assistance through a HQ USMC effort (see COA Component Plan 7.7 Resource Information Management and Appendix F2), was the primary government provided information to support development of these figures. This data repository is still undergoing review and analysis of data content and quality. Due to gaps in this data repository, some figures have been reproduced directly from reports completed as part of INRMP implementation. Additional information was obtained from public data repositories (e.g., State, Federal) and contractor-developed datasets. Some additions and corrections to the data repository are being completed as part of the INRMP update.

Regional

1. MCBH Properties, Island of O‘ahu
2. MCBH Properties, Ko‘olaupoko District
3. Wetlands and Hawaiian Stilt Habitat, Ko‘olaupoko District

MCBH-KB

4. MCBH-Kaneohe Bay Site Map
5. MCBH-Kaneohe Bay Soils Map
6. MCBH-Kaneohe Bay – Wetlands
    a. MCBH-KB Wetlands - Overview
    b. MCBH-KB Wetlands – Nu‘upia Ponds Vicinity
    c. MCBH-KB Wetlands – Hale Koa and Sag Harbor
    d. MCBH-KB Wetlands – Kaneohe Klipper Ponds
    e. MCBH-KB Wetland Improvement Project Areas
7. MCBH-Kaneohe Bay Flood Zones
8. Ulupa‘u Crater Erosion Study (Figures 2-8 from SRGII 2004)
    a. Sub Watersheds
    b. Hotspots in Crater Catchment
    c. Hotspots in Landfill
    d. Vegetation Types
    e. Fire Risk
    f. Erosion Sensitivity
    g. Erosion Areas of Concern

9. MCBH-KB Marine Resources
10. MCBH-KB Bird surveys
    a. State DLNR semi-annual count route
    b. Audubon Christmas count route
    c. MCBH-KB Bird Surveys – Nu‘upia Ponds vicinity: Shearwater Nesting Burrow Locations (2006)
    d. MCBH-KB Bird Surveys - Nu‘upia Ponds vicinity: Hawaiian Stilt Nesting and Foraging Locations (2006)
    e. MCBH-KB Bird Surveys - Hale Koa and Sag Harbor: Hawaiian Stilt Nesting and Foraging Locations (2006)

MCTAB

11. Marine Corps Training Area Bellows (MCTAB) and Vicinity
12. Marine Corps Training Area Bellows (MCTAB) Site Map
13. Marine Corps Training Area Bellows (MCTAB) Soils Map
14. Marine Corps Training Area Bellows (MCTAB) – Wetlands
    a. MCTAB Wetlands - Overview
    b. MCTAB – Wetland boundary/jurisdictional issue
15. Marine Corps Training Area Bellows (MCTAB) FEMA FIRM
16. Marine Corps Training Area Bellows (MCTAB) Vegetation
17. MCTAB Invasive Species Vegetation (Figures 2-7 from GII 2004; Figure 9 from SWCA 2006)
    a. Koa Haole Cover
    b. Guinea Grass Cover
    c. Christmasberry Cover
    d. Kiawe Cover
    e. California Grass Cover
    f. High Fire Danger
    g. Fountain Grass

Waikane Valley Impact Area

18. MCBH-Waikane Valley Impact Area and Vicinity
19. MCBH-Waikane Valley Soils Map

Camp H.M. Smith

20. MCBH-Camp H.M. Smith and Vicinity
21. MCBH-Camp H.M. Smith Soils Map
22. MCBH- Camp H.M. Smith – Vegetation

Puuloa Training Facility

23. MCBH-Puuloa Training Facility and Vicinity
24. MCBH-Puuloa Training Facility Soils Map

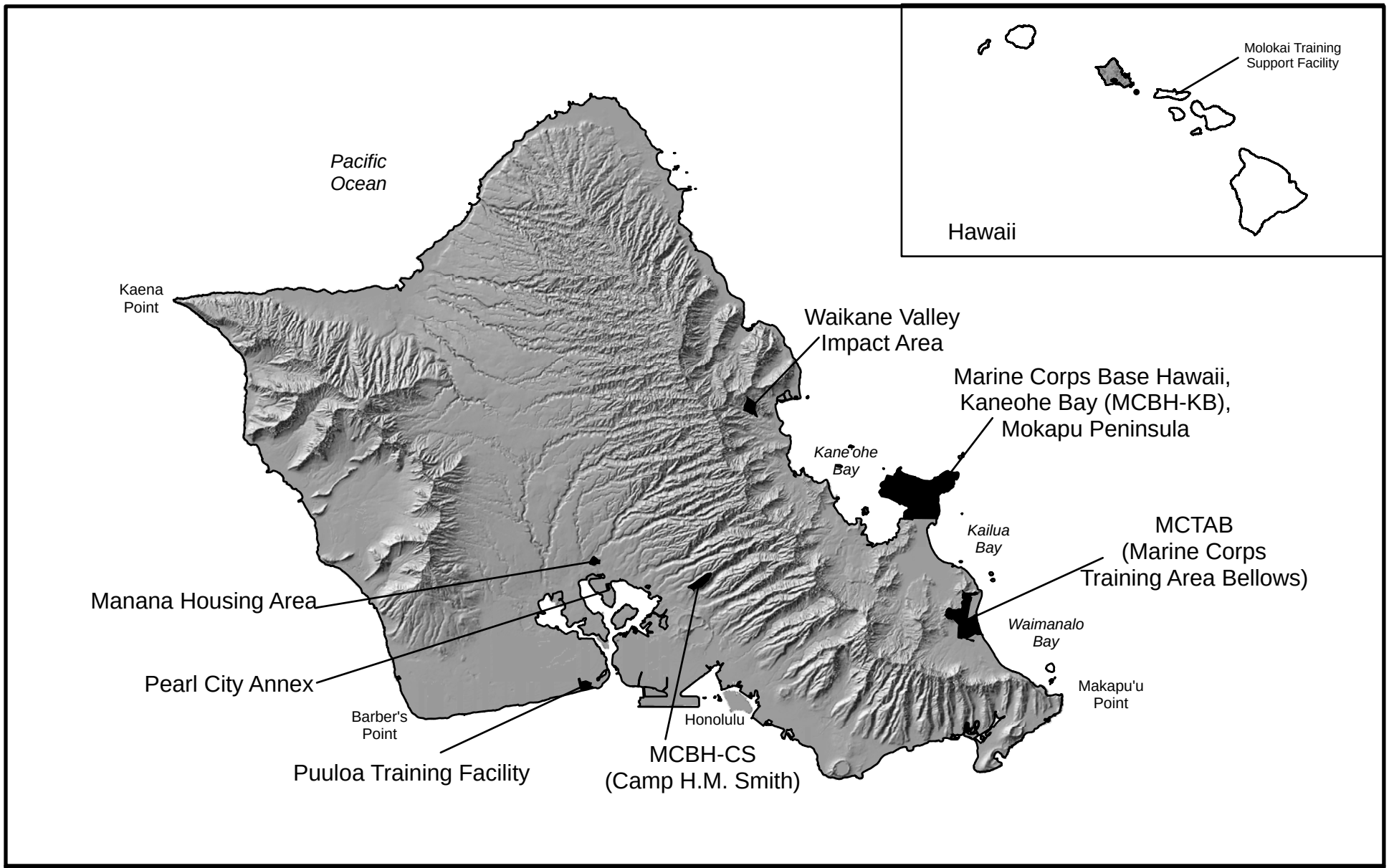


Figure 1
MCBH Properties, Island of Oahu

Source: MCBH EGIS Data Repository;
State of Hawaii Data Repository

Final MCBH INRMP Update (2007-2011)
November 2006

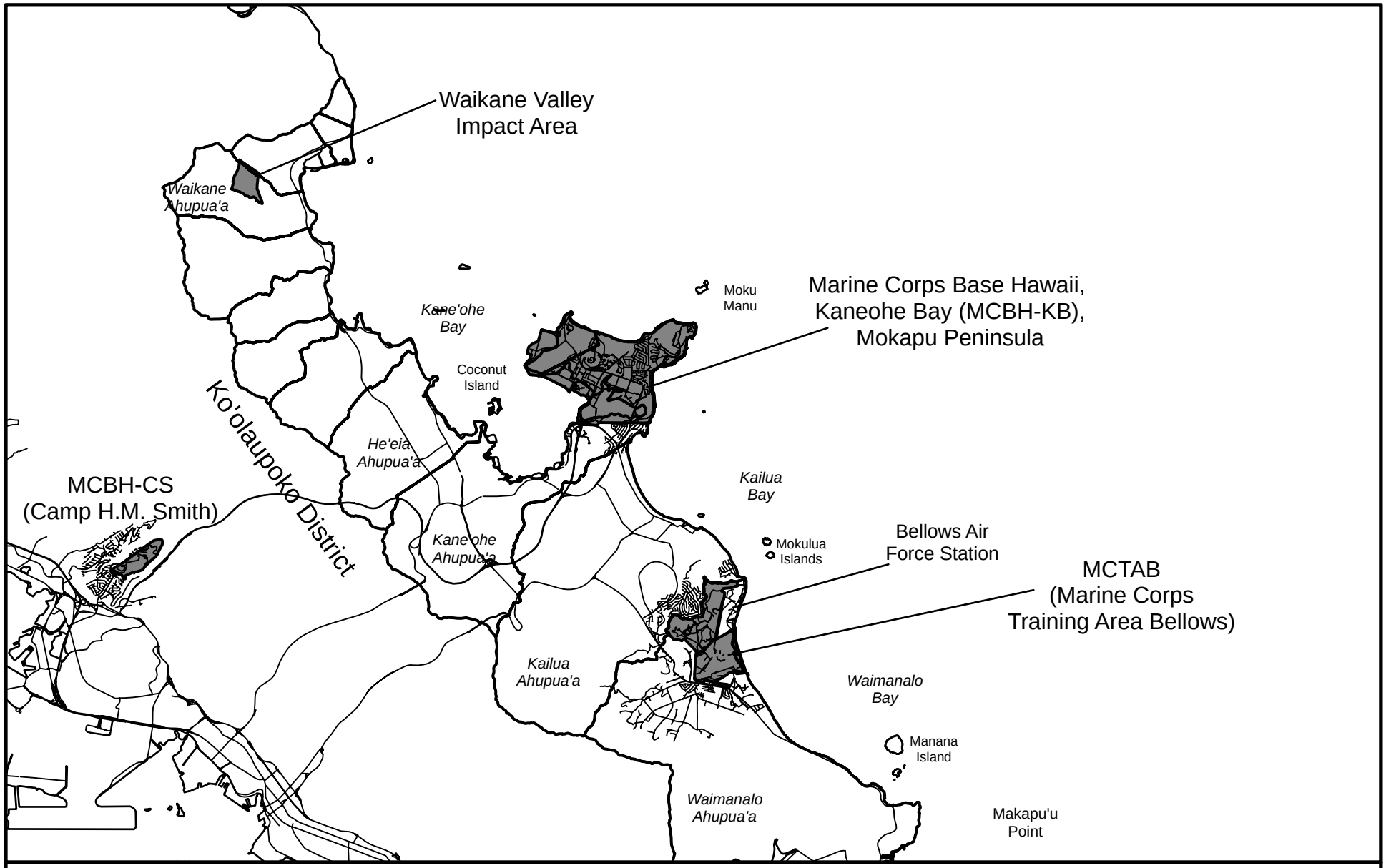


Figure 2
MCBH Properties, Ko'olaupoko District

Final MCBH INRMP Update (2007-2011)
November 2006

Source: MCBH EGIS Data Repository;
State of Hawaii Data Repository

N

0 0.5 1 2 3 Miles

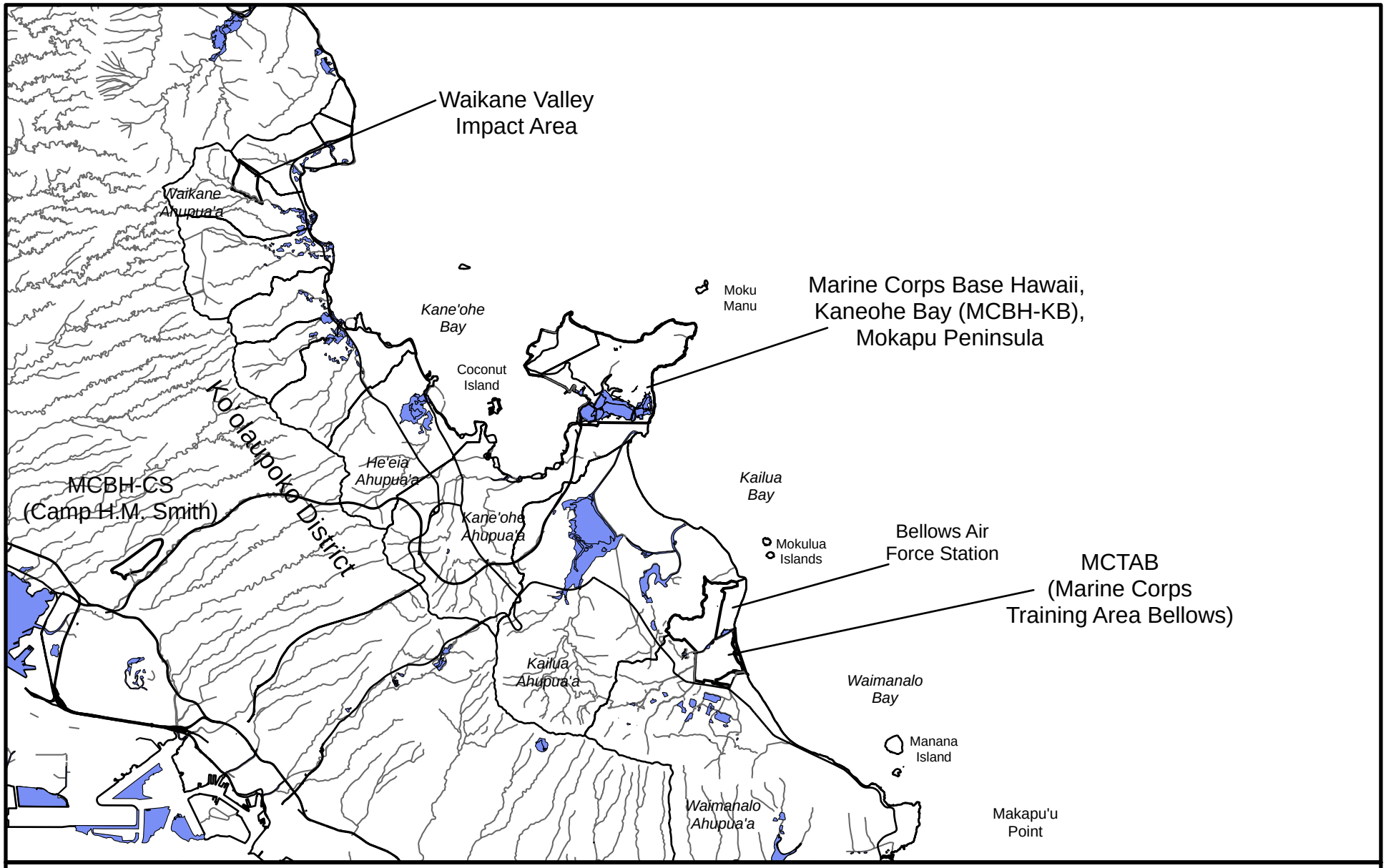


Figure 3
Wetlands and Hawaiian Stilt Habitat, Ko'olaupoko District

Final MCBH INRMP Update (2007-2011)
November 2006

Source: MCBH EGIS Data Repository;
State of Hawaii Data Repository

N

0 0.5 1 2 3
Miles

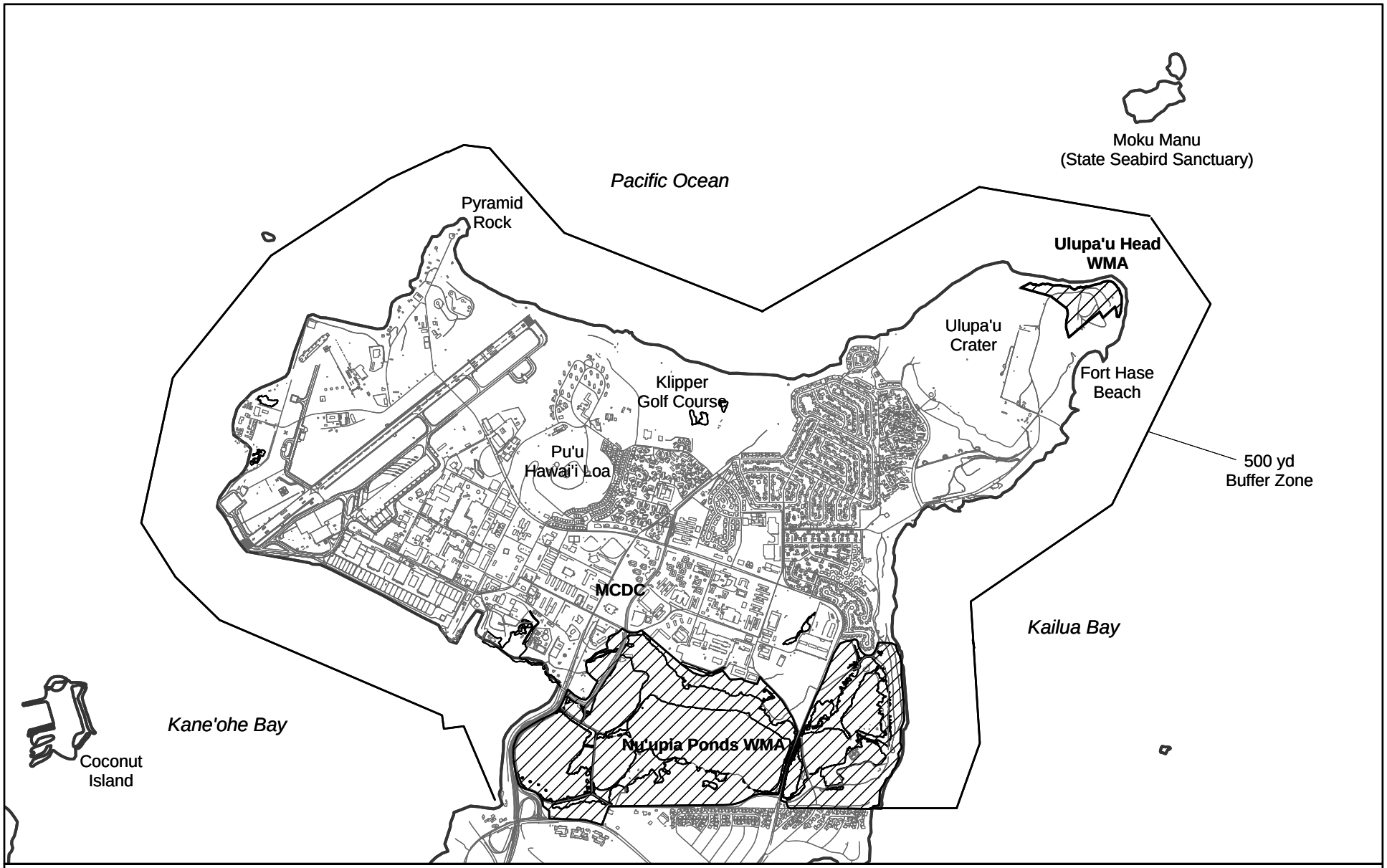


Figure 4
MCBH-Kaneohe Bay Site Map

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

MCDC = Mokapu Central Drainage Channel
WMA = Wildlife Management Area

Source: MCBH EGIS Data Repository

N

Miles
0 0.15 0.3 0.6 0.9

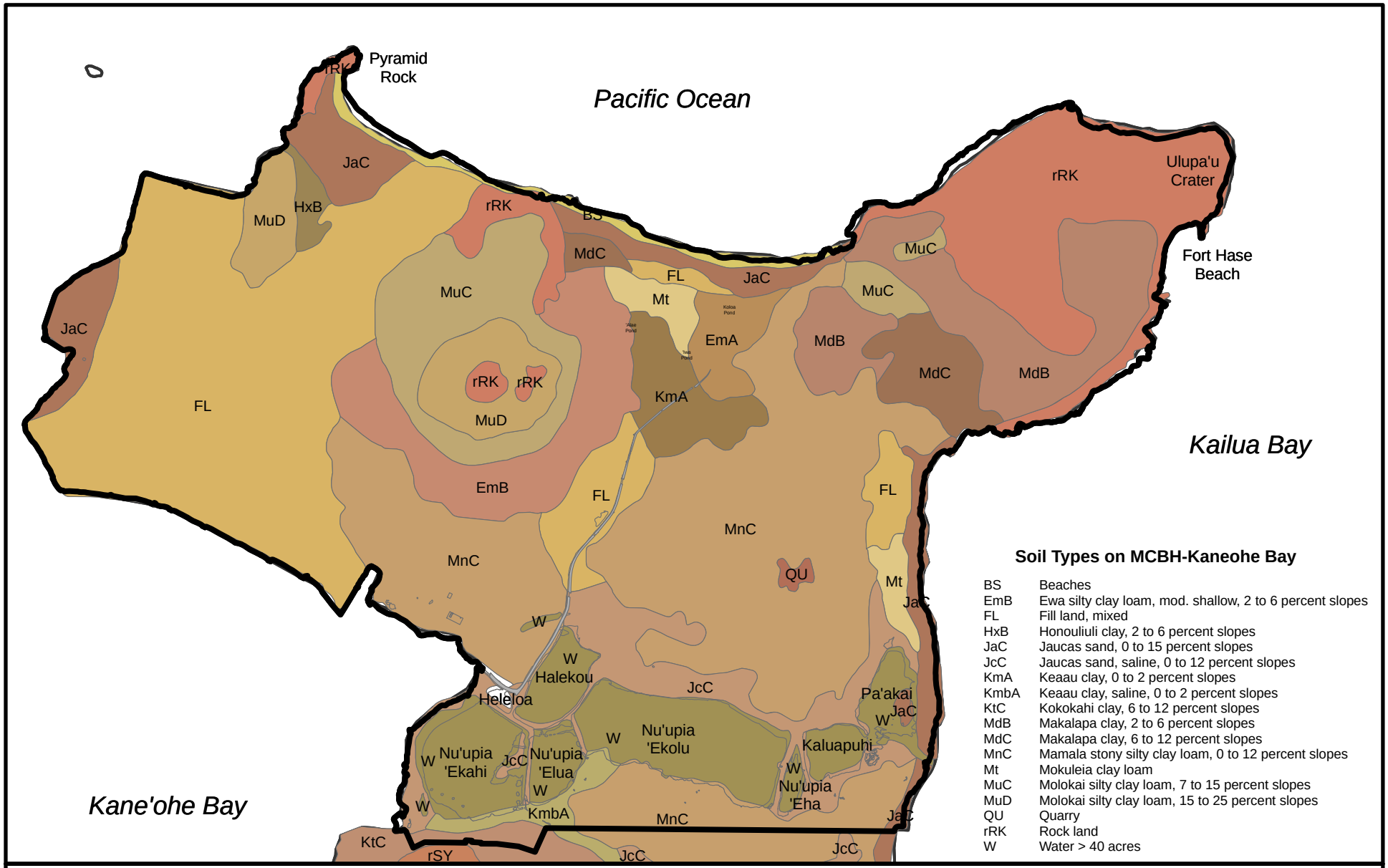


Figure 5
MCBH-Kaneohe Bay Soils

Final MCBH INRMP Update (2007-2011)
November 2006

Source: MCBH EGIS Data Repository;
State of Hawaii Data Repository (Soil types from NRCS (SCS) Soil Survey of O`ahu (Foote et al. 1972) (http://www.ctahr.hawaii.edu/soilsurvey/5is/oahu.htm))

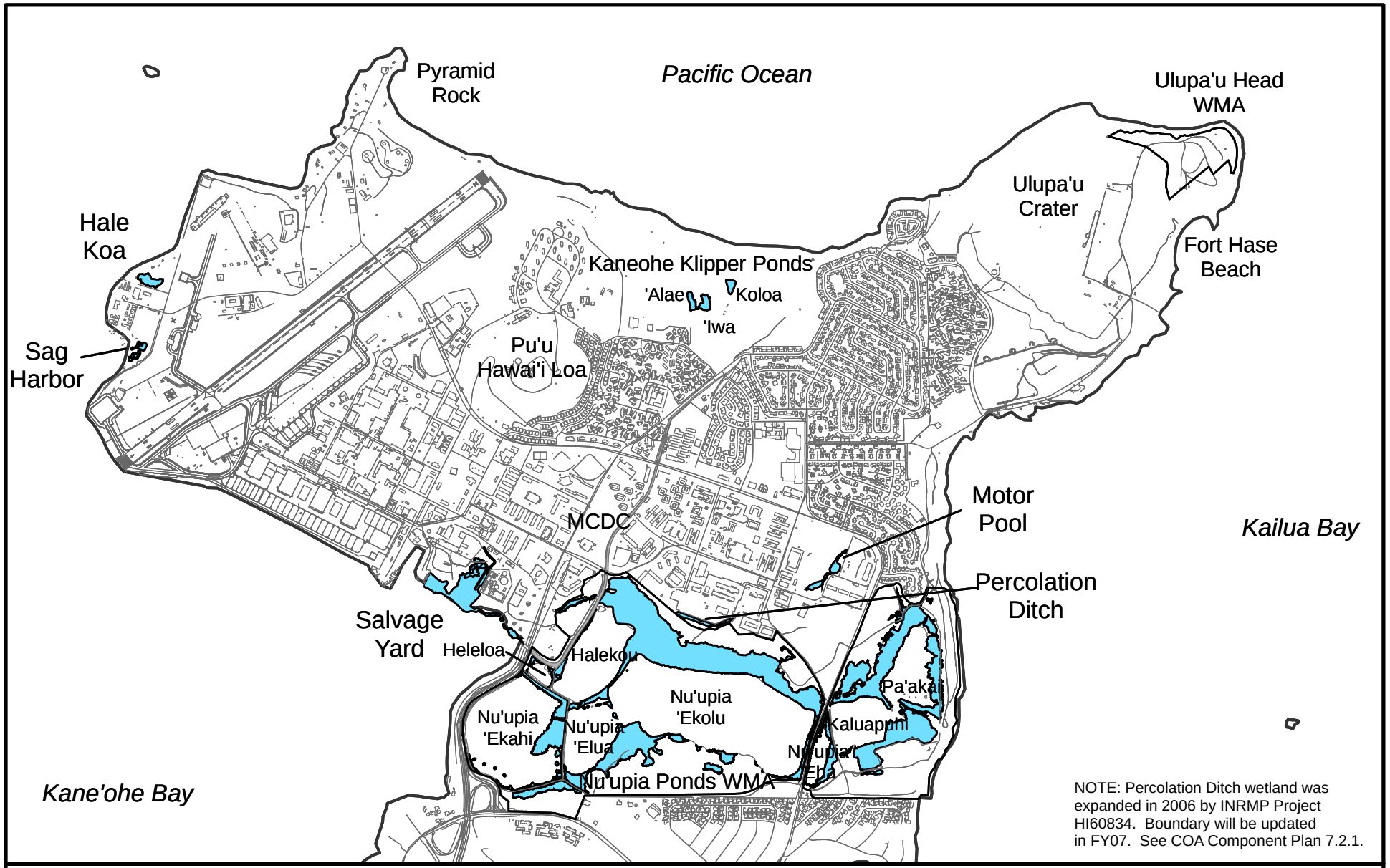


Figure 6a
MCBH-KB Wetlands - Overview

Final MCBH INRMP Update (2007-2011)
November 2006

Legend
= ACOE Jurisdictional Wetlands (Ching 2002)
MCDC = Mokapu Central Drainage Channel
WMA = Wildlife Management Area

Source: MCBH EGIS Data Repository

N

0 0.125 0.25 0.5 0.75 Miles

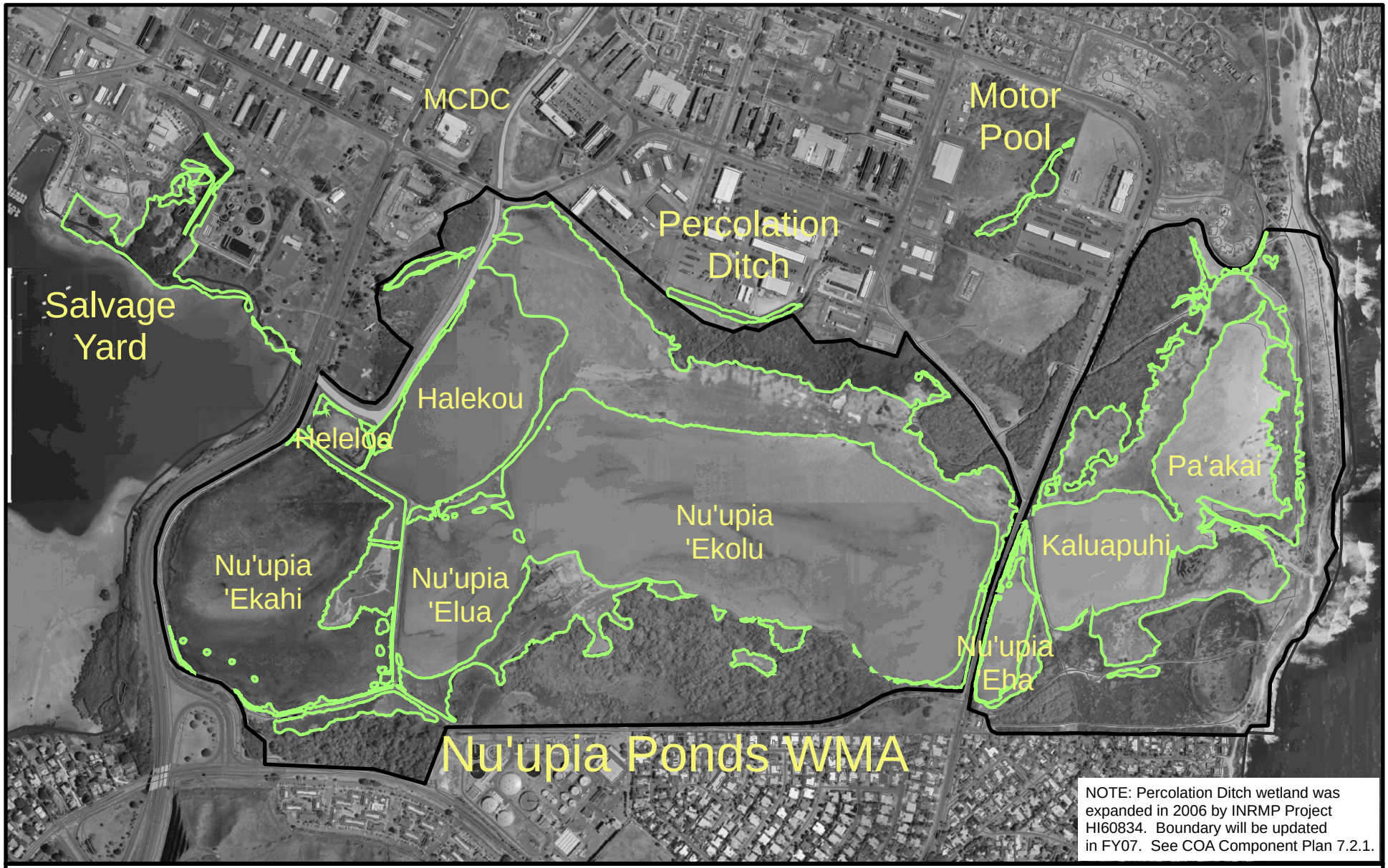


Figure 6b
MCBH-KB Wetlands - Nu'upia Ponds Vicinity

Final MCBH INRMP Update (2007-2011)
November 2006

Legend
= ACOE Jurisdictional Wetlands (Ching 2002)
MCDC = Mokapu Central Drainage Channel
WMA = Wildlife Management Area

Source: MCBH EGIS Data Repository;
Aerial photo from MCBH files (2001)

N

0 0.05 0.1 0.2 0.3 Miles

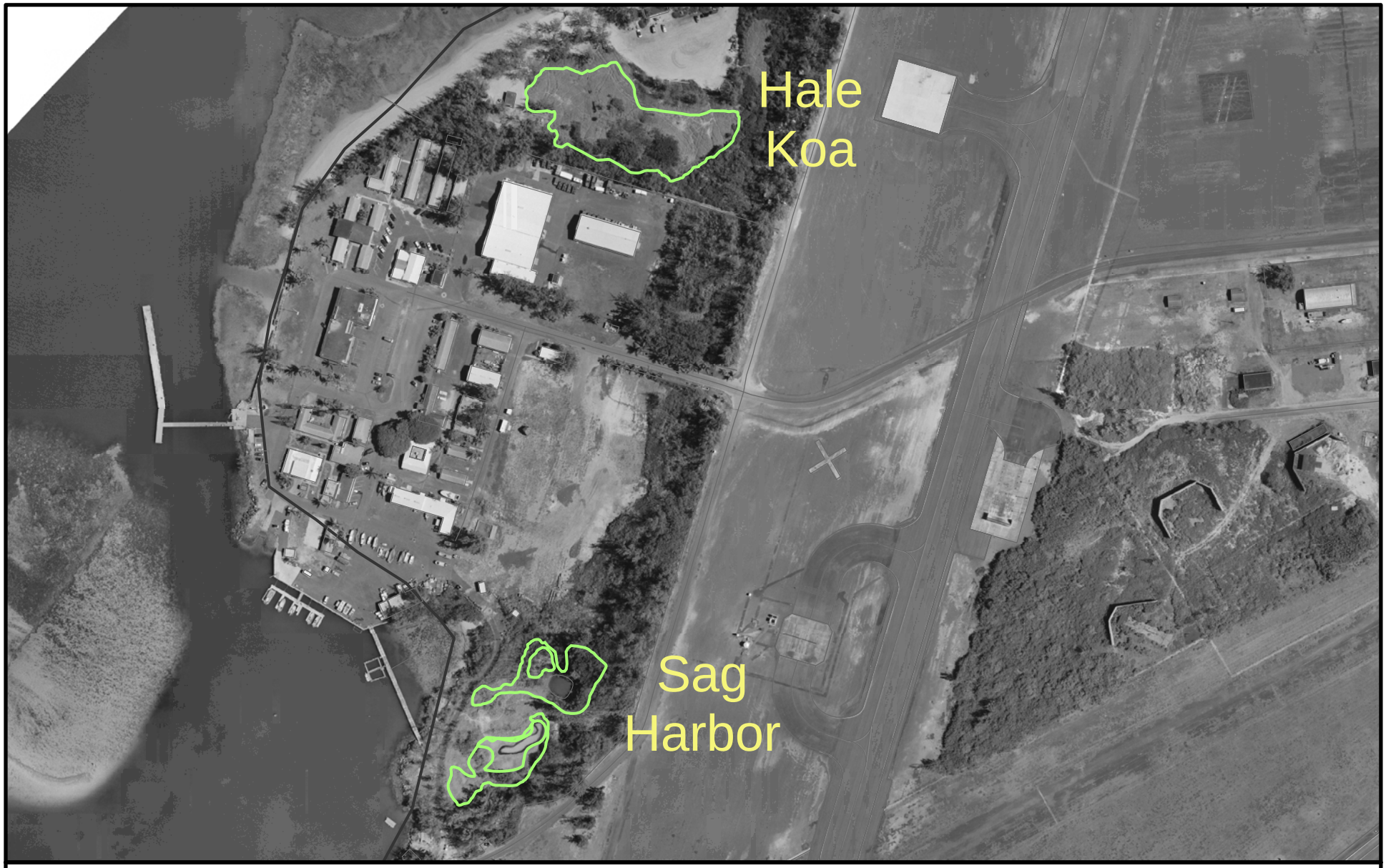


Figure 6c
MCBH-KB Wetlands - Hale Koa & Sag Harbor

Final MCBH INRMP Update (2007-2011)
November 2006

Legend
= ACOE Jurisdictional Wetlands (Ching 2002)

Source: MCBH EGIS Data Repository;
Aerial photo from MCBH files (2001)

N

Miles
0 0.02 0.04 0.08

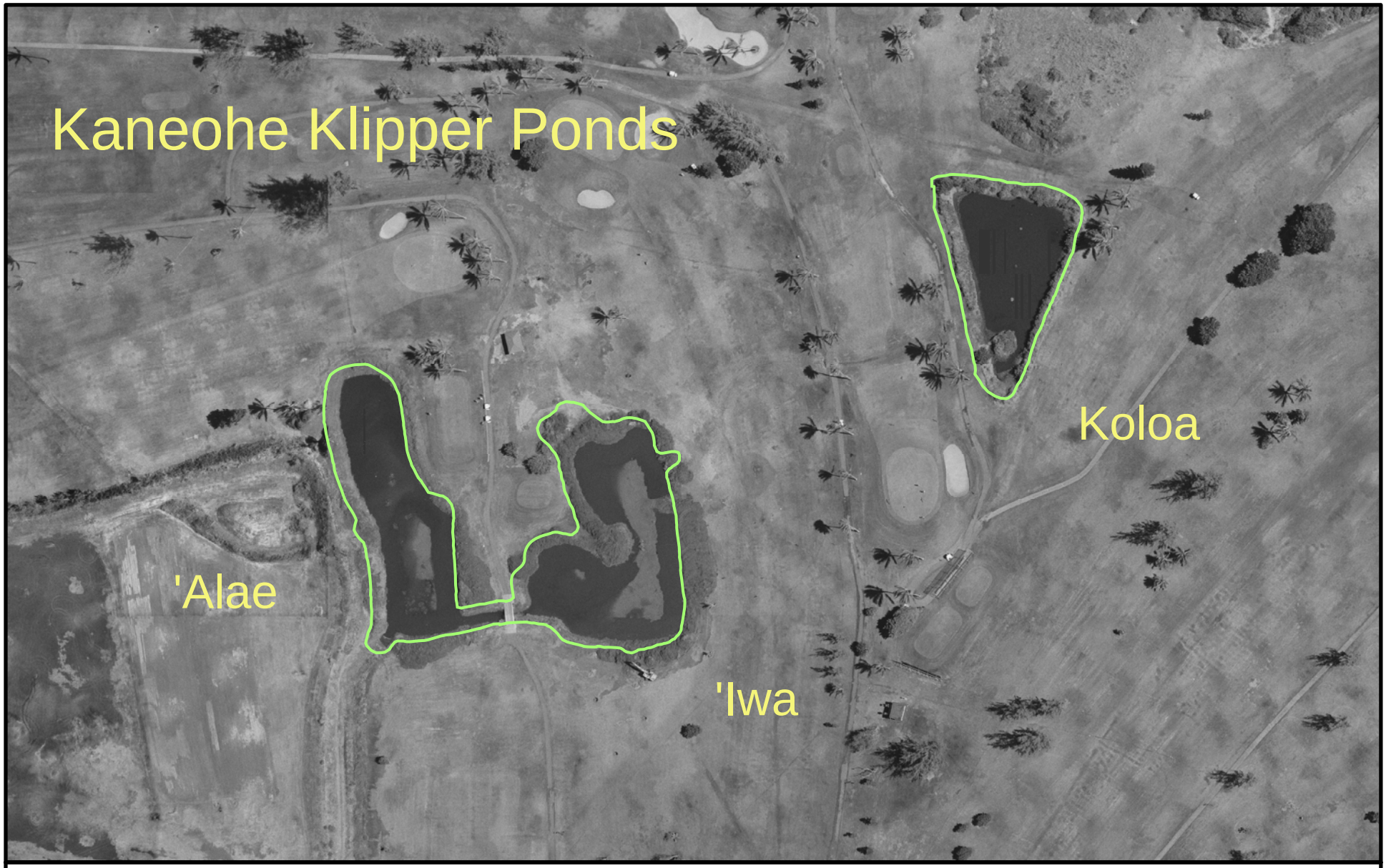


Figure 6d
MCBH-KB Wetlands - Kaneohe Klipper Ponds

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

= ACOE Jurisdictional Wetlands (Ching 2002)

Note: Kaneohe Klipper Ponds are located on the Kaneohe Klipper Golf Course

Source: MCBH EGIS Data Repository; Aerial photo from MCBH files (2001)

N

Miles
0 0.01 0.02 0.04

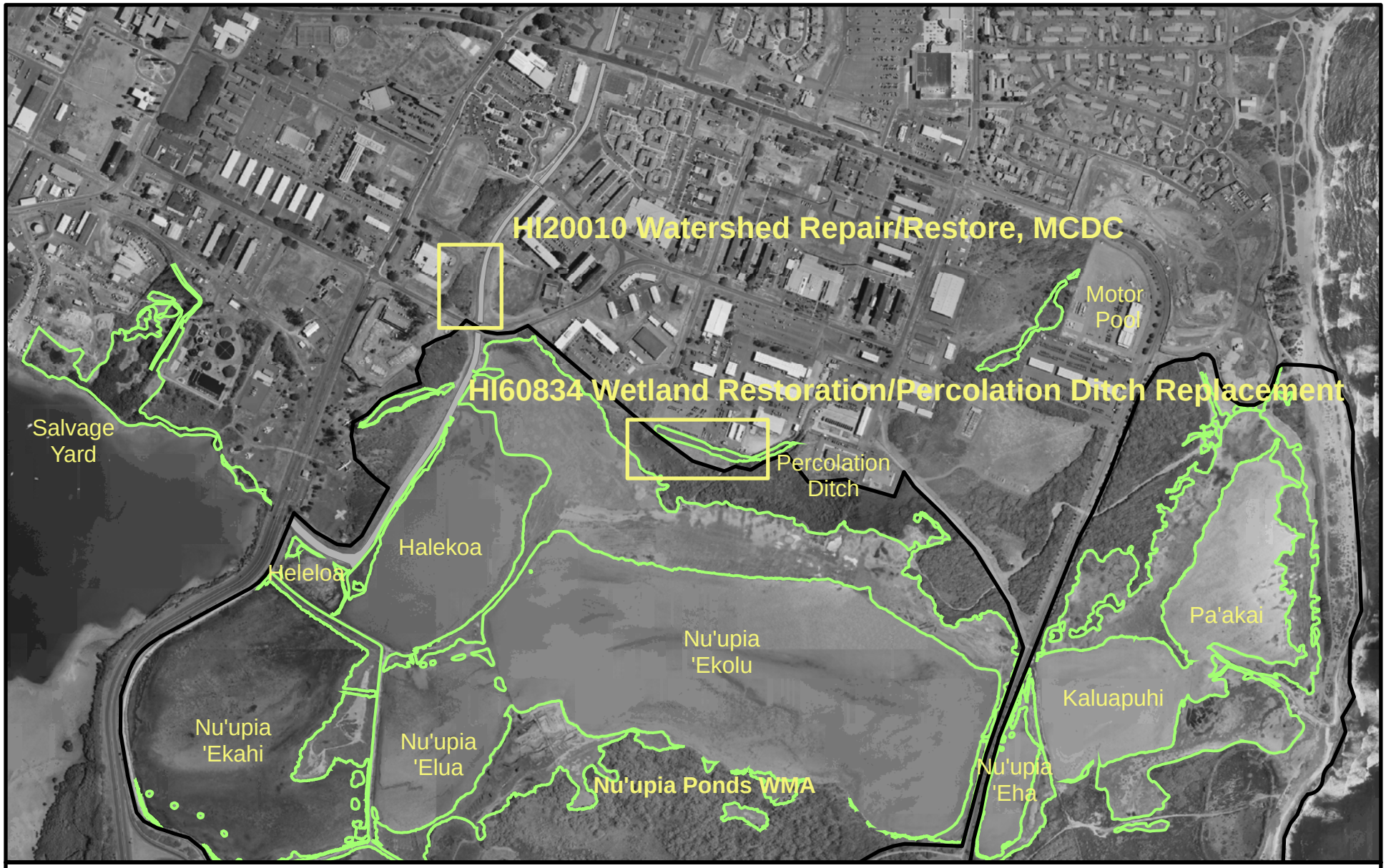


Figure 6e
MCBH-KB Wetland Improvement Project Areas

Final MCBH INRMP Update (2007-2011)
November 2006

Legend
= Project Area
= ACOE Jurisdictional Wetlands (Ching 2002)
WMA = Wildlife Management Area
MCDC = Mokapu Central Drainage Channel

Source: MCBH EGIS Data Repository; Aerial photo from MCBH files (2001)

N

0 0.05 0.1 0.2 Miles

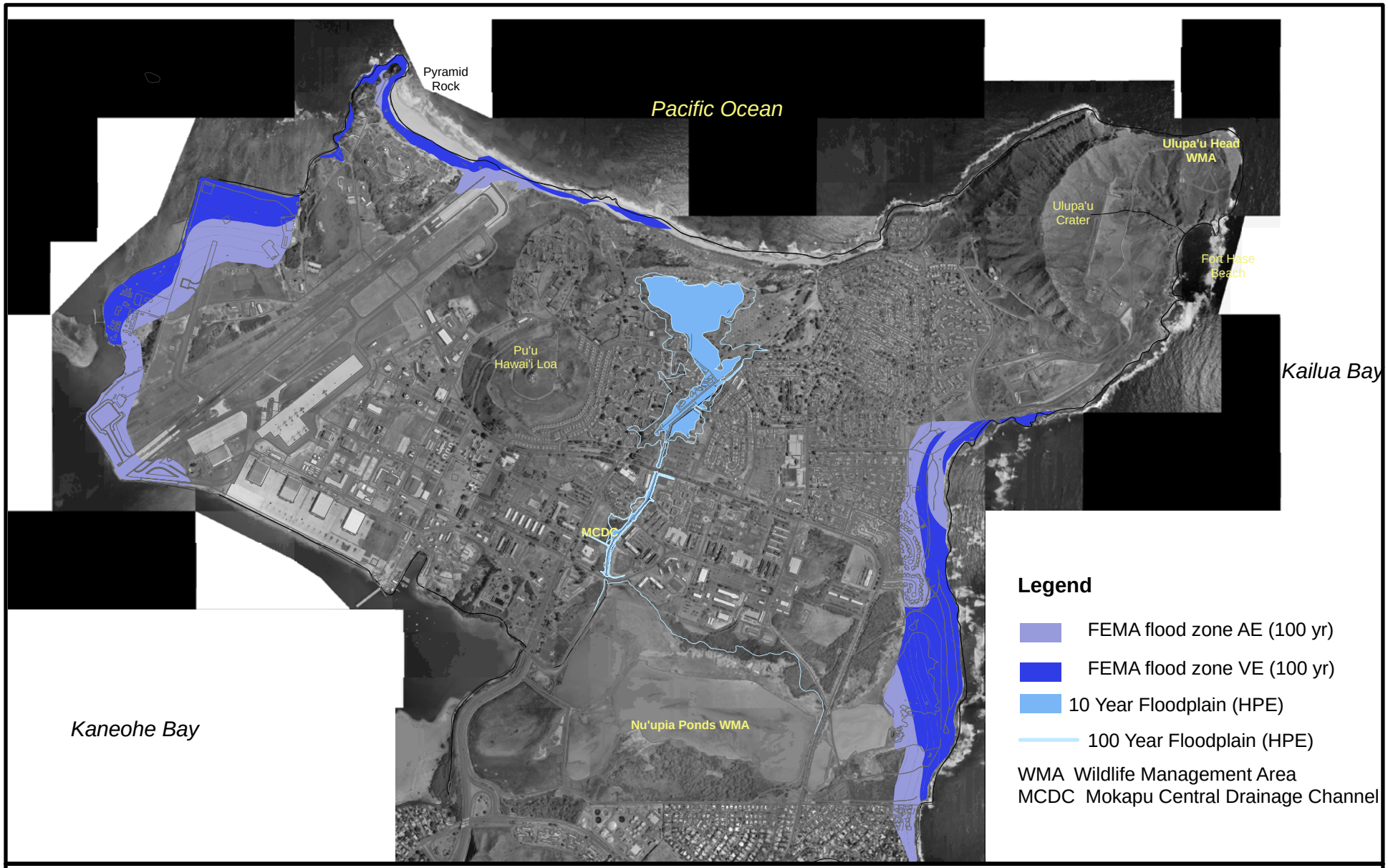


Figure 7
MCBH-KB Flood Zones

Final MCBH INRMP Update (2007-2011)
November 2006

Source: MCBH EGIS Data Repository;
Aerial photo from MCBH files (2001)
FEMA FIRM from C/C Honolulu (2005)
and Mokapu Central Drainage Channel Study, MCBH (HPE 2003a)

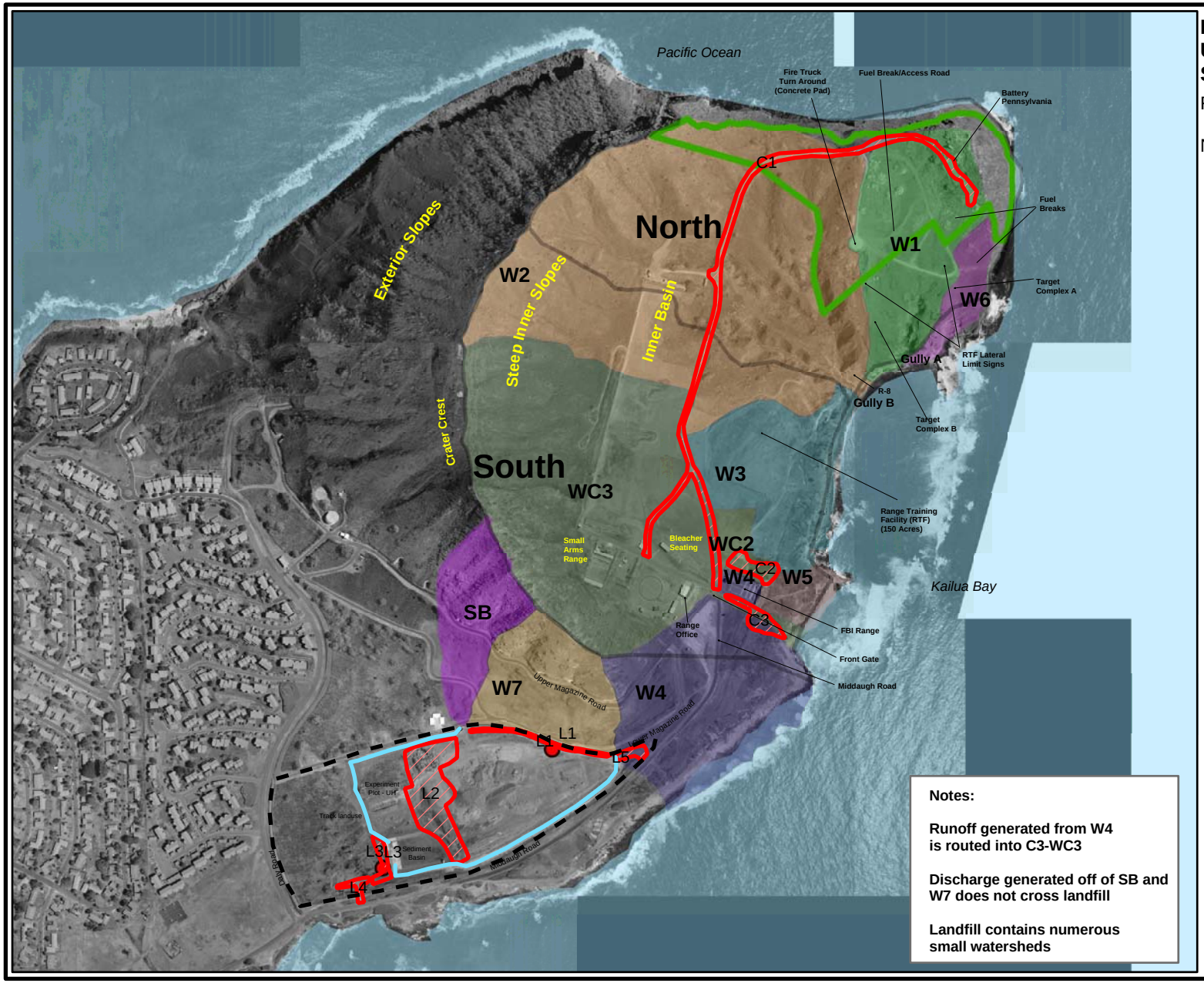


Figure 8a
Ulupa'u Crater Erosion Study: Sub Watersheds

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

- Wildlife Management Area
- Erosion Hotspot Areas
- Landfill (33 Acres)
- Run-on/Run-off Culverts
- Erosion Hotspots

Sub Watersheds

- SB (9.18 acres)
- W1 (17.98 acres)
- W2 (68.88 acres)
- W3 (15.23 acres)
- W4 (24.10 acres)
- W5 (2.82 acres)
- W6 (3.62 acres)
- W7 (11.3 acres)
- WC2 (2.41 acres)
- WC3 (47.23 acres)

N

1 inch equals 877 feet

Source: Figure 2, SRGII 2004

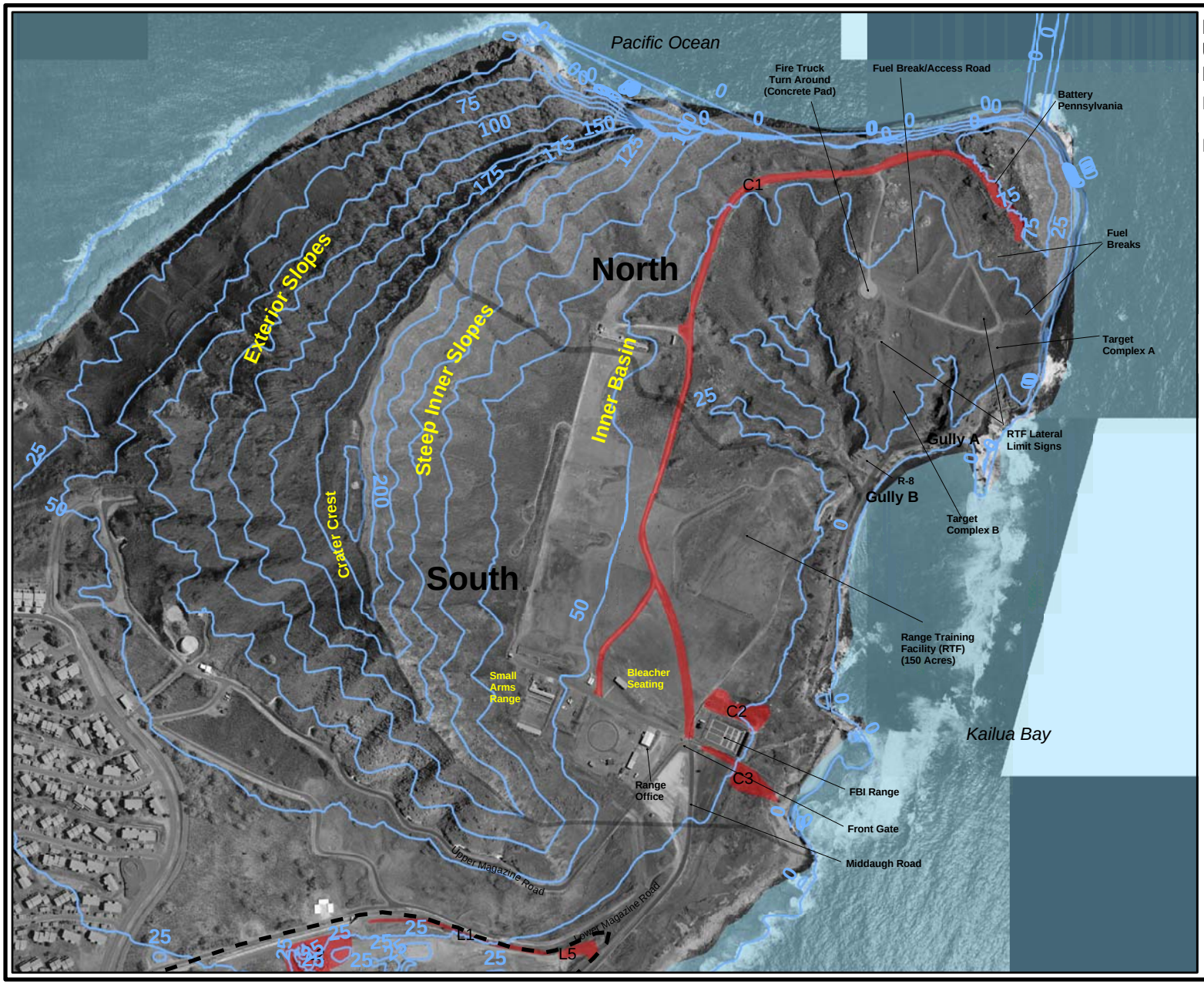


Figure 8b
Ulupa'u Crater Erosion Study: Hotspots in Crater Catchment

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

- Erosion Hotspot Areas
- Landfill (27 acres)
- Contours (25 Meters)

N

1 inch equals 676 feet

Source: Figure 3, SRGII 2004

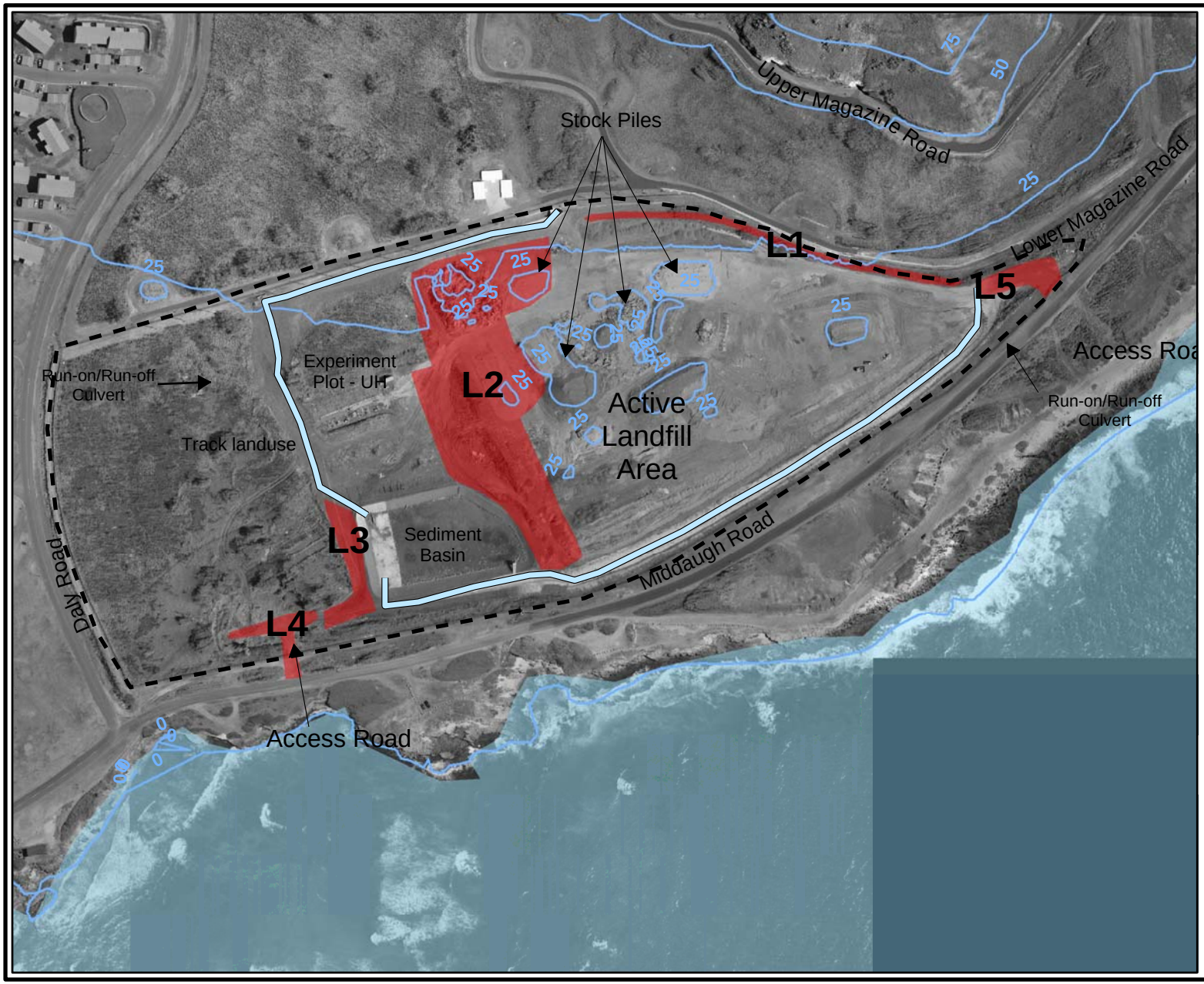


Figure 8c
Ulupa'u Crater Erosion Study: Hotspots in Landfill

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

- Erosion Hotspot Areas
- Landfill (33 acres)
- Run-on/Run-off Culverts
- Contours (Meters)

N

1 inch equals 327 feet

Source: Figure 4, SRGII 2004

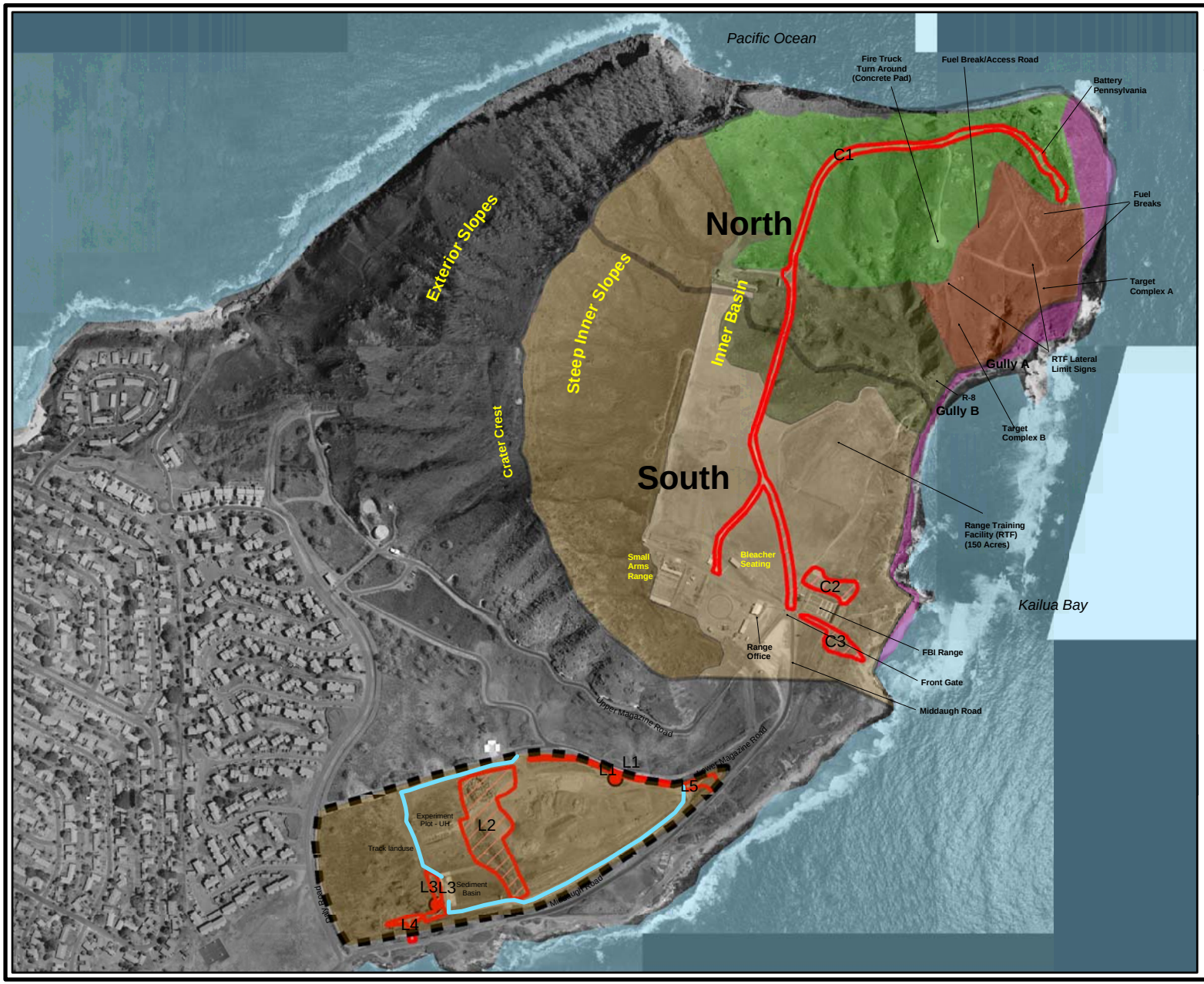


Figure 8d
Ulupa'u Crater Erosion Study: Vegetation Types

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

- Hotspot Areas
- Landfill Area Features
- Run-on/Run-off Culverts
- Erosion Hotspots

Vegetation Types

- Kiawe/Mixed Grass (24 acres)
- Grasslands/Other (14 acres)
- Landscaped Grasses (49 acres)
- Coastal Mixed (7 acres)
- Haole Koa/Kiawe/Mixed Grass (20 acres)
- Crater Haole Koa/Mixed Grass/Scrub (48 acres)
- Landfill Haole Koa/Mixed Grass/Scrub (33 acres)

N

1 inch equals 825 feet

Source: Figure 5, SRGII 2004

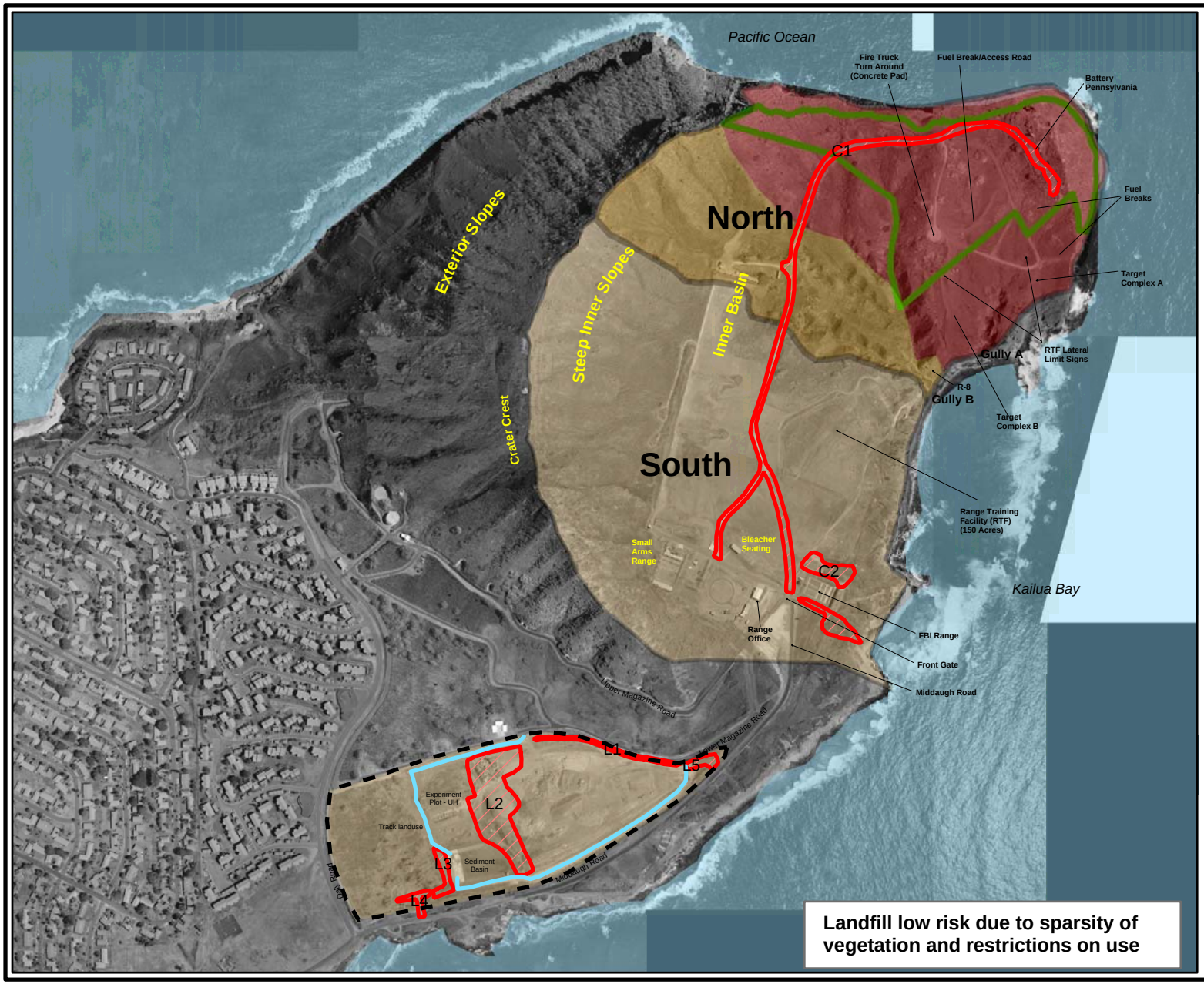


Figure 8e
Ulupa'u Crater Erosion Study: Fire Risk

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

- Wildlife Management Area
- Hotspot Areas
- Run-on/Run-off Culverts

Fire Risk

Fire Risk Rank

- HIGH
- MODERATE
- LOW
- Landfill (33 acres)

N

1 inch equals 847 feet

Source: Figure 6, SRGII 2004

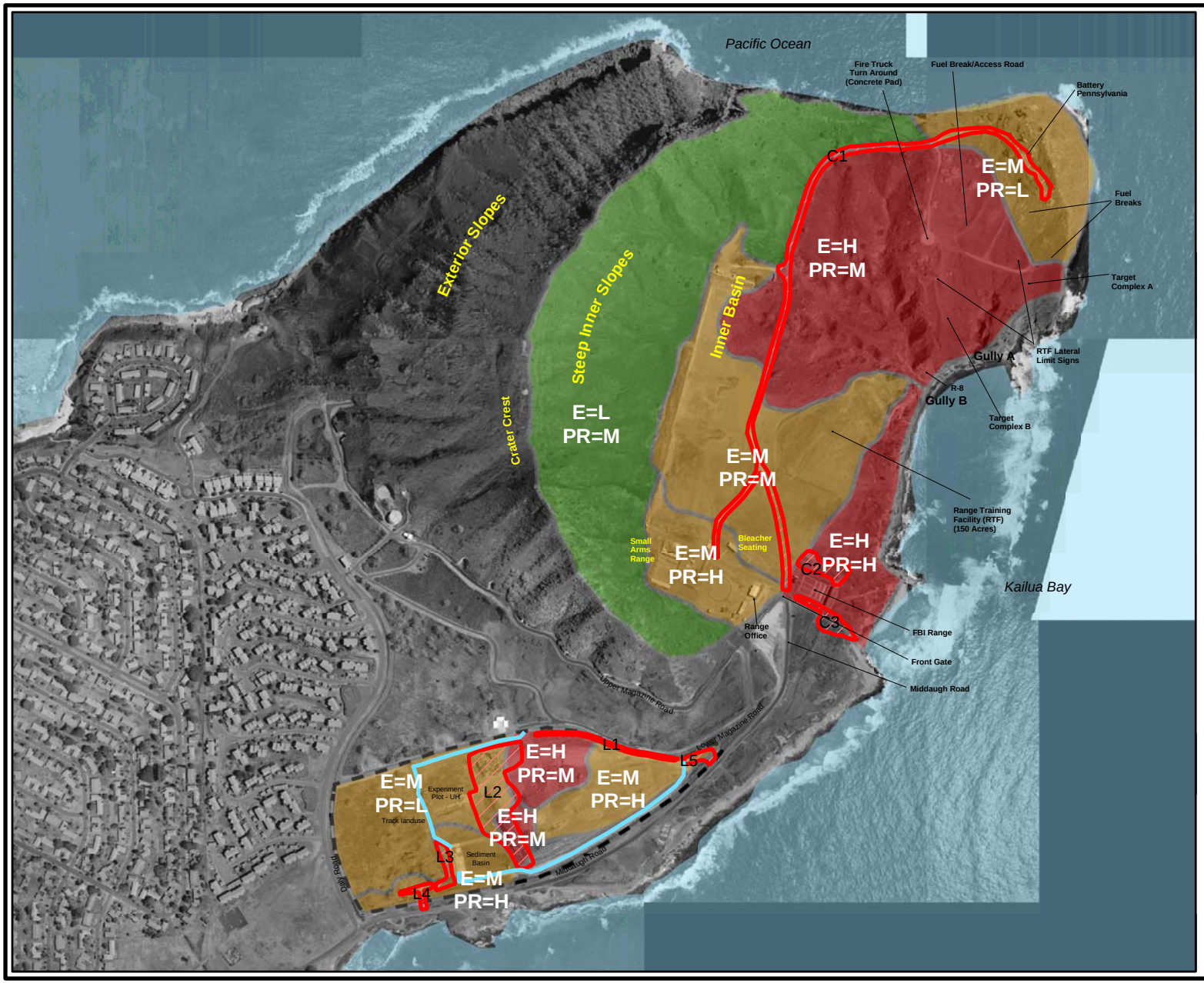


Figure 8f
Ulupa'u Crater Erosion Study: Erosion Sensitivity

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

- Erosion Hotspot Areas
- Landfill (33 acres)
- Run-on/Run-off Culverts

Relative Erosion Rate (E)

- High (H)
- Medium (M)
- Low (L)

Probability of Runoff (PR)

High (H)
Medium (M)
Low (L)

Note: Area Delineating Hotspots C1 is PR = High, E= High

N

1 inch equals 860 feet

Source: Figure 7, SRGII 2004

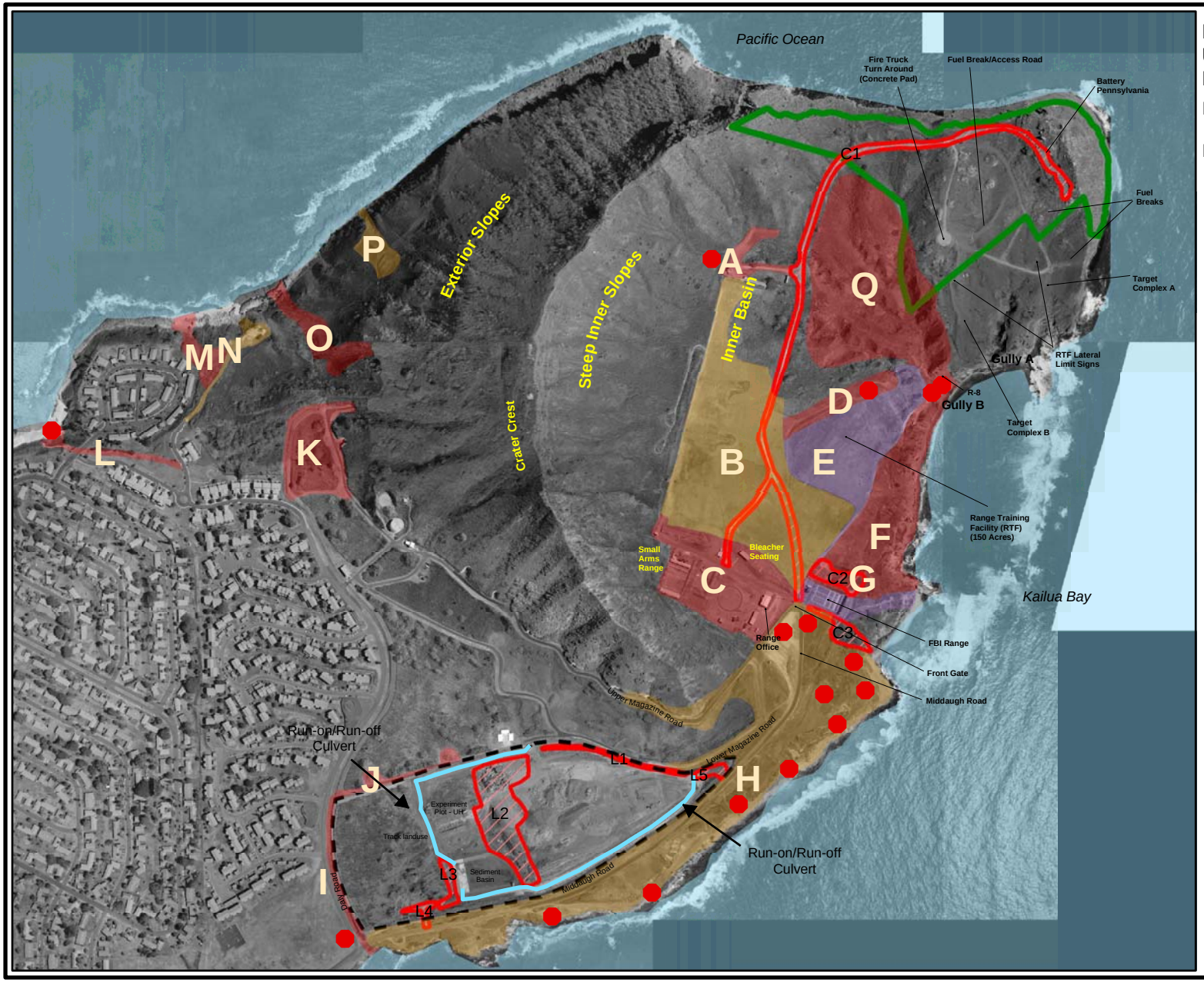


Figure 8g
Ulupa'u Crater Erosion Study: Erosion Areas of Concern

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

- Landfill (33 acres)
- Erosion Hotspot Areas
- Run-on/Run-off Culverts
- Concern Hotspot
- Wildlife Management Area

Note: Alpha codes delineate general locations where active erosion and runoff are occurring

Point markers represents specific locations where erosion features were documented during site visits.

N

1 inch equals 838 feet

Source: Figure 8, SRGII 2004

FIGURE 9: MCBH-KB MARINE RESOURCES SURVEY

The following figure and associated descriptive information (below) about the observations (e.g., habitat, species) at survey stations are preliminary highlights of the USFWS-led marine resources survey in the MCBH-KB 500-yard security buffer zone (USFWS 2006, in prep). This data was obtained from USFWS Pacific Islands Office in early 2006. It must be emphasized that the descriptive information below is not exhaustive; it is a preliminary summary of highlights of notable species and conditions within zones 1 – 11 found during the field phase of this report, and was prepared as part of a progress report submitted in February 2006. Final, detailed results of the marine resources survey, including station locations and descriptions, and related management recommendations, will be incorporated into the INRMP upon receipt of the final project report. Spatial data (e.g., survey locations and study area boundaries) and associated habitat and species information will be added to the MCBH EGIS as appropriate. Since the final marine resources survey report was not available in time to incorporate into the Final INRMP Update, it will be more fully incorporated during the next annual review and update of MCBH INRMP.

Station 1 Habitat: Carbonate and basalt pavement with sediment filled sand channels and depressions was the primary habitat with a change in rugosity to a basalt dominated boulder field.

Station 2 Habitat: This site was a moderate relief carbonate pavement over basalt with occasional sand channels and overhangs. *Porites compressa* and *Montipora capitata* were observed and macroalgae assemblage was diverse with 34 taxa recorded during the survey.

Station 3 Habitat: This station had high-relief spur-and-groove morphology with overhangs and archways large enough for a diver to swim through. The spurs were mostly composed of carbonate while the grooves were sediment-covered basalt. Coral, crustose coralline algae and filamentous turf algae with grazing scars were the common benthic organisms.

Station 4 Habitat: Located at the base of a windward cliff, this site is dominated by a mix of boulders covered with small encrusting coral colonies (*Porites* and *Montipora*) and a variety of zoanthids (*Palythoa* and *Zoanthus*). A diverse assemblage of urchins, mollusks, and sponges were recorded.

Station 5 Habitat: Complex coral community features caves, overhangs, and crevices provide suitable habitat for a diverse assemblage of reef fish, mollusks, and algae. Significant bioerosion is attributed to large numbers of the boring urchin, *Echinometra matthaei*.

Station 6 Habitat: Sand-scoured carbonate pavement and basalt with sand filled channels and depressions; ledges; scattered coral heads of *Pocillopora damicornis* and collapsed lava tubes dominate substrate types of this station. Ghost nets and ordnance (various sizes) were observed

Station 7 Habitat: The primary substrate type was low relief carbonate pavement over basalt with occasional sand channels and overhangs. Macroalgae formed three distinct canopies: 1) the tallest macrophytes were meadow-forming adult forms of the brown alga *Dictyopteris australis*; 2) a mixture of the green alga *Microdictyon setchellianum* and juvenile *D. australis* as a turf and sediment-covered filamentous turf algae in between the *D. australis* adults; 3) crustose coralline algae underneath the *M. setchellianum*. The green turtle *Chelonia mydas* was observed at the surface. Since the alga *Microdictyon setchellianum* is consumed by green turtles in Hawaii, this area may provide a grazing habitat for turtles.

Station 8 Habitat: High energy, low relief coral community featuring *Pocillopora*, *Porites*, and *Montipora* coral species. Strong waves have eroded the carbonate reef forming arches, crevices, ridges and grooves that provide habitat for a wide variety of reef fish and mollusk species. Algae diversity was low. Observed a young Hawaiian monk seal (*Monachus schauinslandi*), with acoustical tracking tag, foraging for food at the spur and groove structure.

Station 9 Habitat: This dredged area had an intact reef flat, a steep graded slope with coral and macroalgae cover and a broad soft sediment plain that leveled off. Coral cover abruptly ended along the dredged slope. *Halophila decipiens* formed an extensive meadow in the shallow soft sediments. The green turtle *Chelonia mydas* was seen resting in the area. As both seagrass species are frequently consumed by green turtles in Hawaii this area could be considered a potential grazing habitat for the green turtle. The endemic seagrass *Halophila hawaiiana* formed dense patches, on soft sediment.

Station 10 Habitat: Low energy environment largely soft sediment bottom, with isolated *Porites* coral pinnacles appearing in abundance throughout the station. The pinnacles support a diverse assemblage of macroinvertebrates. However, the pinnacles have been invaded by alien algae (*Acanthophora* and *Gracilaria*) and the keyhole sponge (*Mycale*).

Station 11 Habitat: Two invasive macroalgae species occurred as unattached accumulations (tumbleweed-like morphology) within the soft bottom, dredged habitat (marina). The red alga *Gracilaria salicornia* formed the base of the macroalgal accumulations and it supported an epiphyte, the red alga *Acanthophora spicifera*.

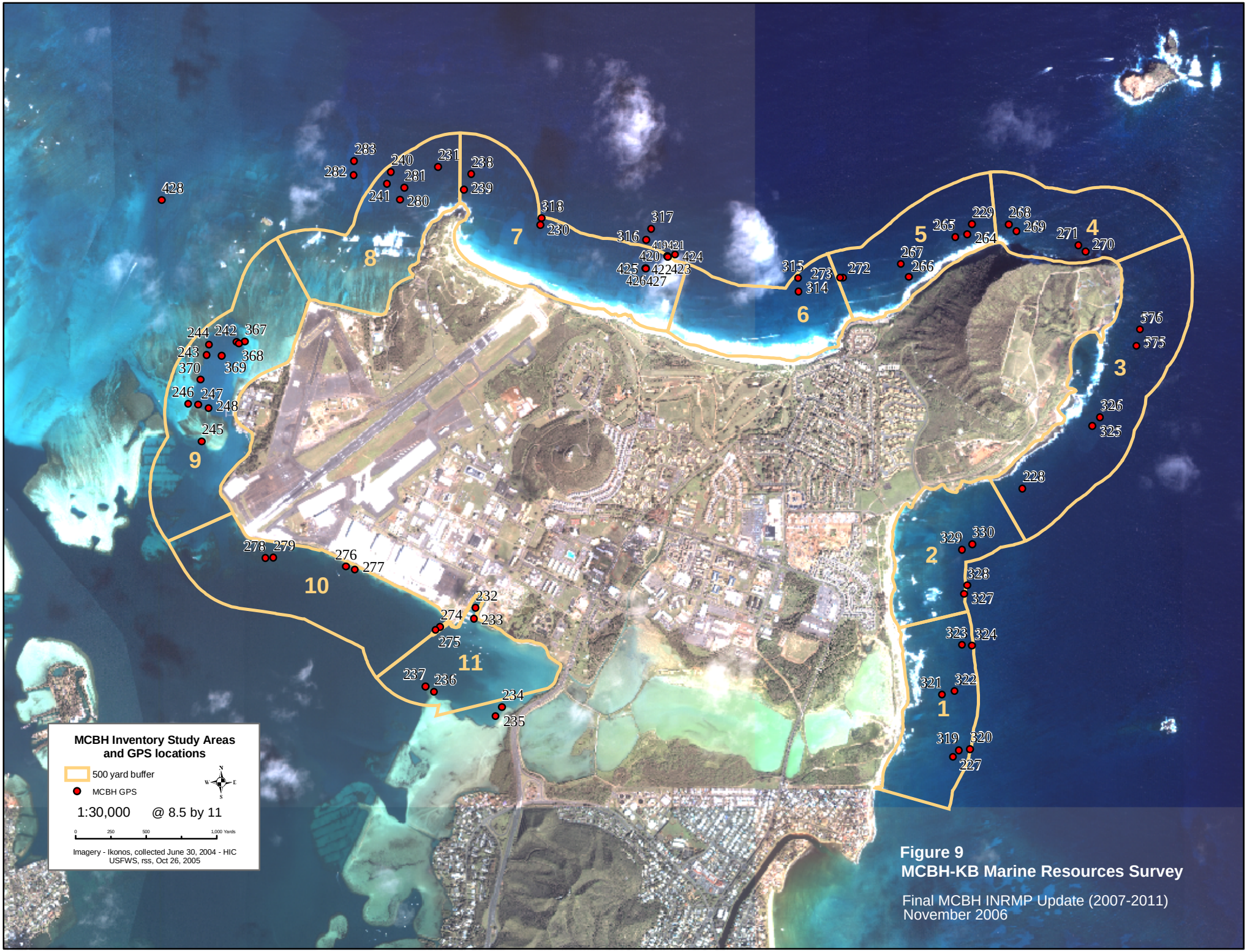


Figure 9
MCBH-KB Marine Resources Survey

Final MCBH INRMP Update (2007-2011)
November 2006

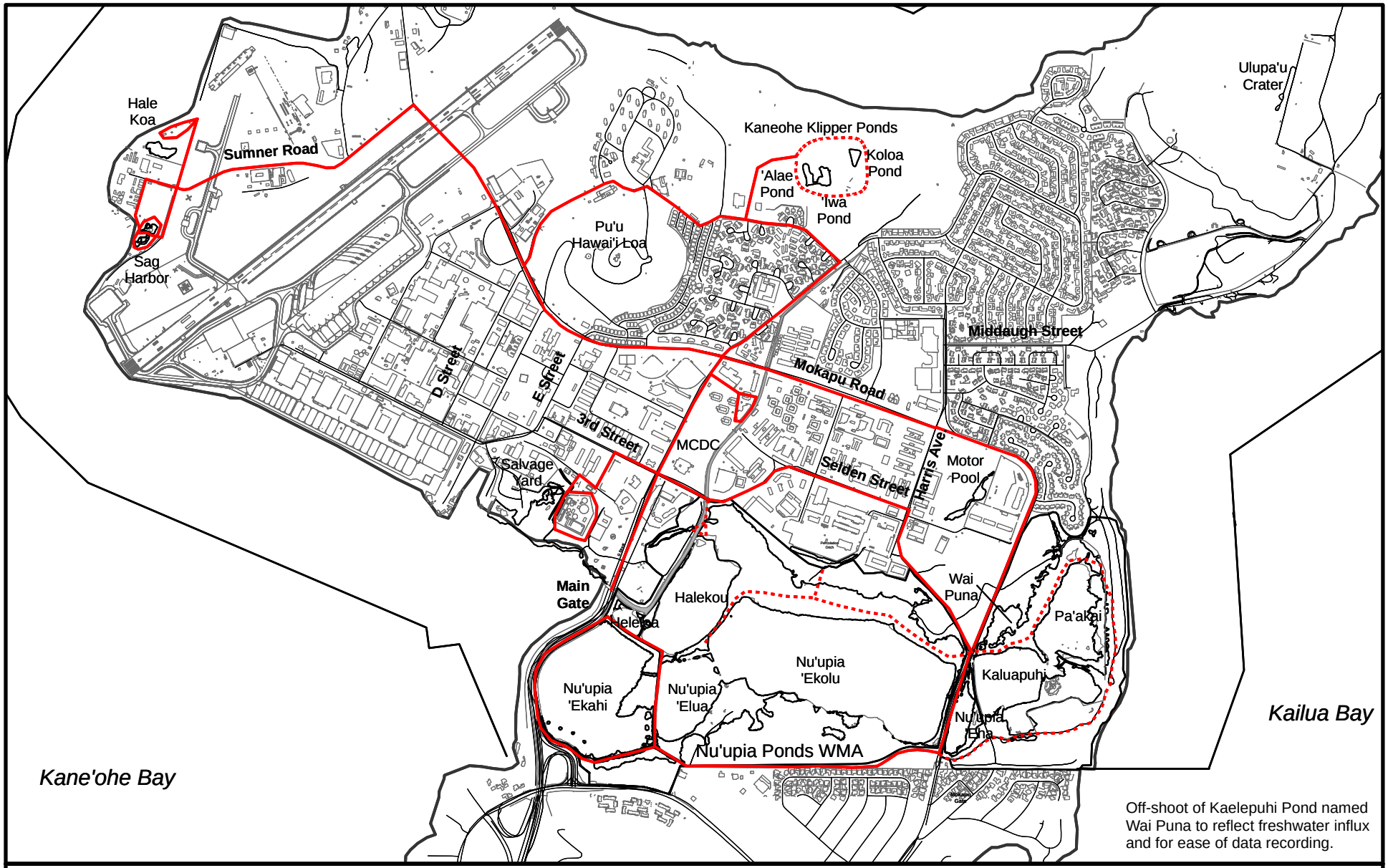


Figure 10a
MCBH-KB State Waterbird Count Route

Final MCBH INRMP Update (2007-2011)
November 2006

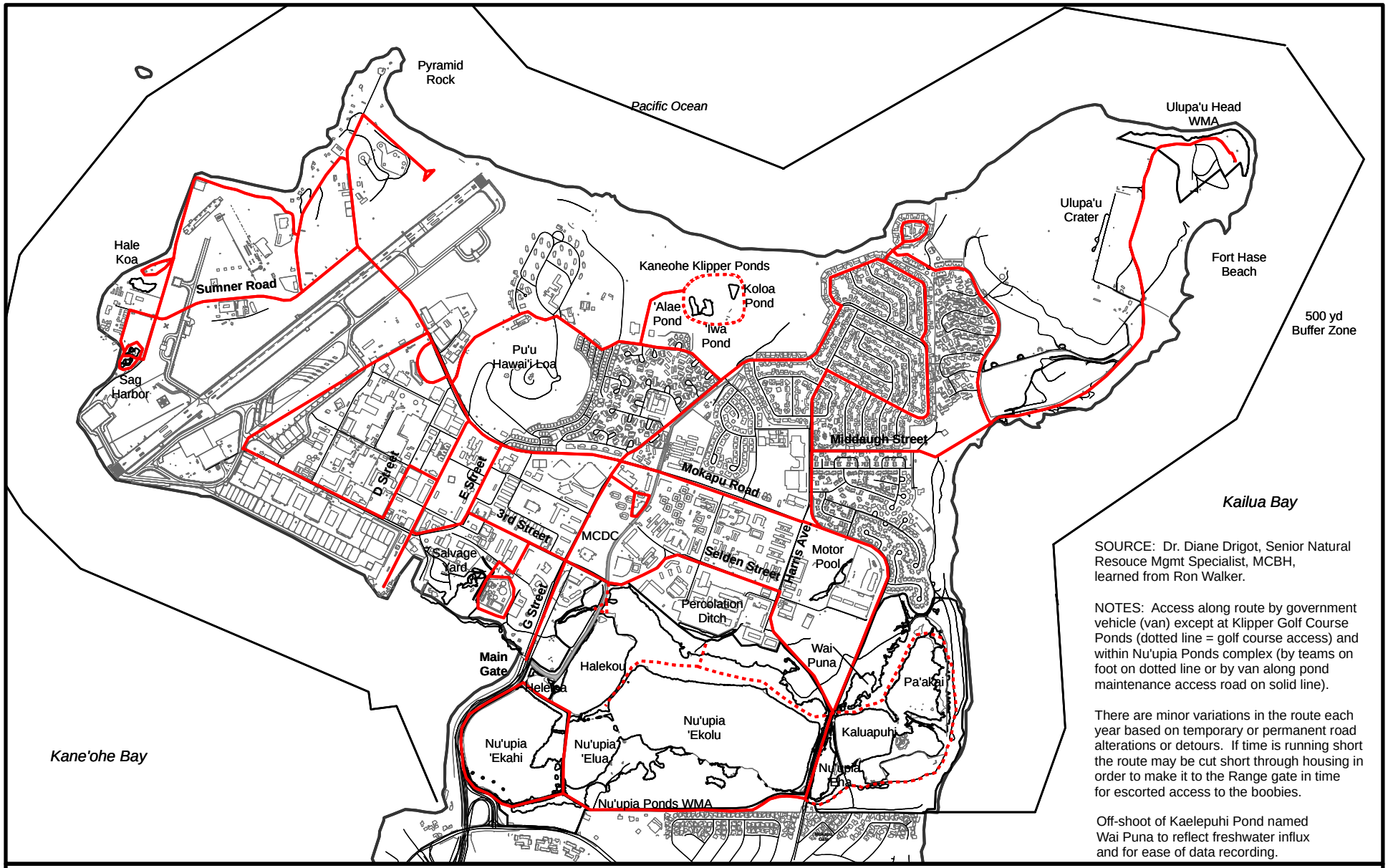
Legend

MCDC = Mokapu Central Drainage Channel
WMA = Wildlife Management Area
Travel by vehicle
Travel by foot

Source: MCBH EGIS Data Repository

N

Miles
0 0.125 0.25 0.5



SOURCE: Dr. Diane Drigot, Senior Natural Resouce Mgmt Specialist, MCBH, learned from Ron Walker.

NOTES: Access along route by government vehicle (van) except at Klipper Golf Course Ponds (dotted line = golf course access) and within Nu'upia Ponds complex (by teams on foot on dotted line or by van along pond maintenance access road on solid line).

There are minor variations in the route each year based on temporary or permanent road alterations or detours. If time is running short the route may be cut short through housing in order to make it to the Range gate in time for escorted access to the boobies.

Off-shoot of Kaelepuhi Pond named Wai Puna to reflect freshwater influx and for ease of data recording.

Figure 10b. MCBH-KB Audubon Annual Christmas Bird Count Route

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

MCDC = Mokapu Central Drainage Channel
WMA = Wildlife Management Area
Travel by vehicle
Travel by foot

Source: MCBH EGIS Data Repository

N

Miles
0 0.15 0.3 0.6

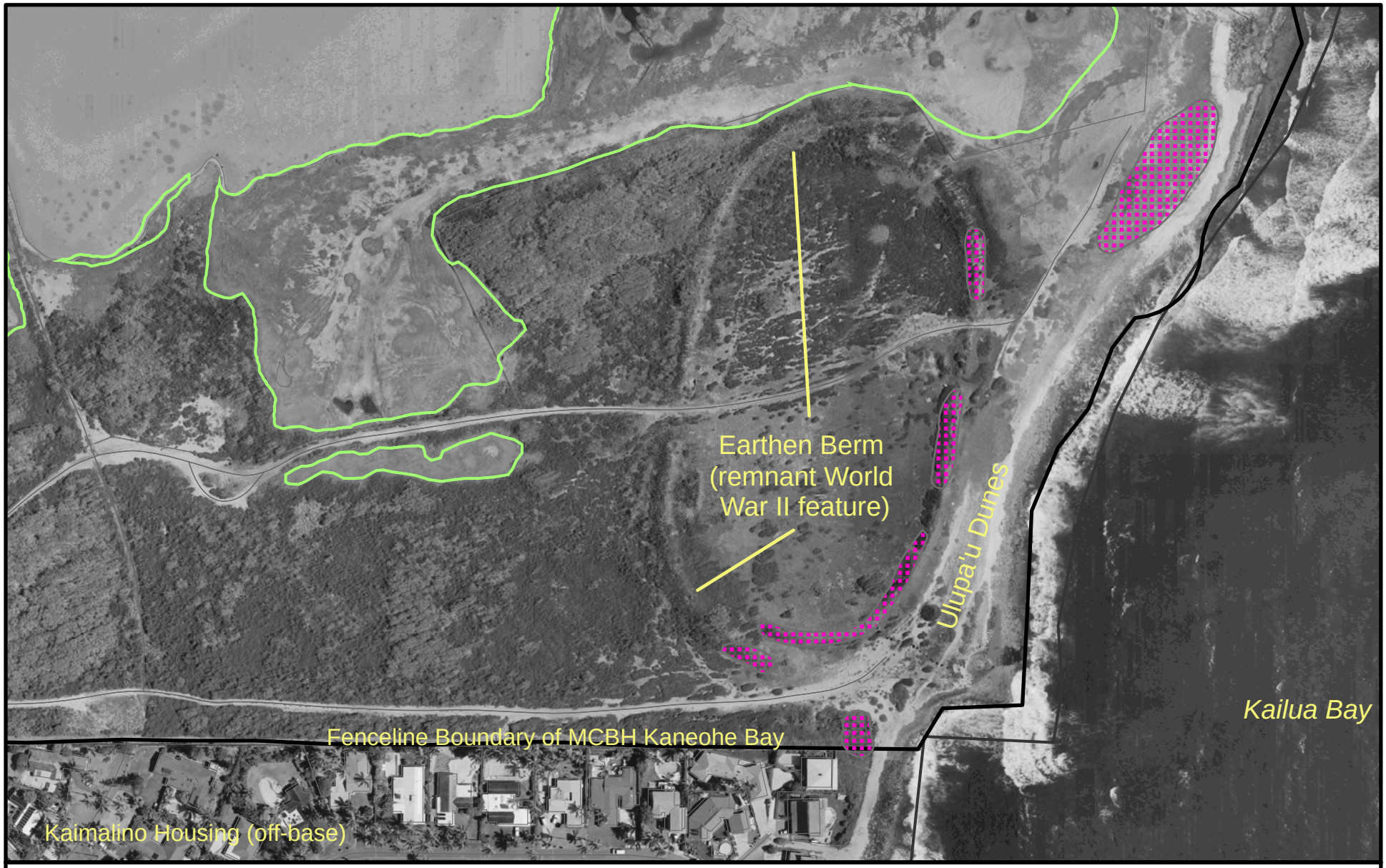


Figure 10c
MCBH-KB Bird Surveys - Nu'upia Ponds Vicinity
Shearwater Nesting Burrow Locations (2006)

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

- nesting burrows
- ACOE Jurisdictional Wetlands (Ching 2002)
- Wildlife Management Area

Source: MCBH EGIS Data Repository;
Aerial photo from MCBH files (2001)

N

0 0.01 0.02 0.04 Miles

Figure 10d
MCBH-KB Bird Surveys - Nu'upia Ponds Vicinity
Hawaiian Stilt Nesting and Foraging Locations (2006)

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

- foraging
- nesting
- nesting/foraging
- ACOE Jurisdictional Wetlands (Ching 2002)
- Wildlife Management Area

N

0 0.05 0.1 0.2 Miles

Figure 10e
MCBH-KB Bird Surveys - Hale Koa and Sag Harbor
Hawaiian Stilt Nesting and Foraging Locations (2006)

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

- foraging
- nesting
- ACOE Jurisdictional Wetlands (Ching 2002)

Source: MCBH EGIS Data Repository;
Aerial photo from MCBH files (2001)

N

0 0.015 0.03 0.06 Miles

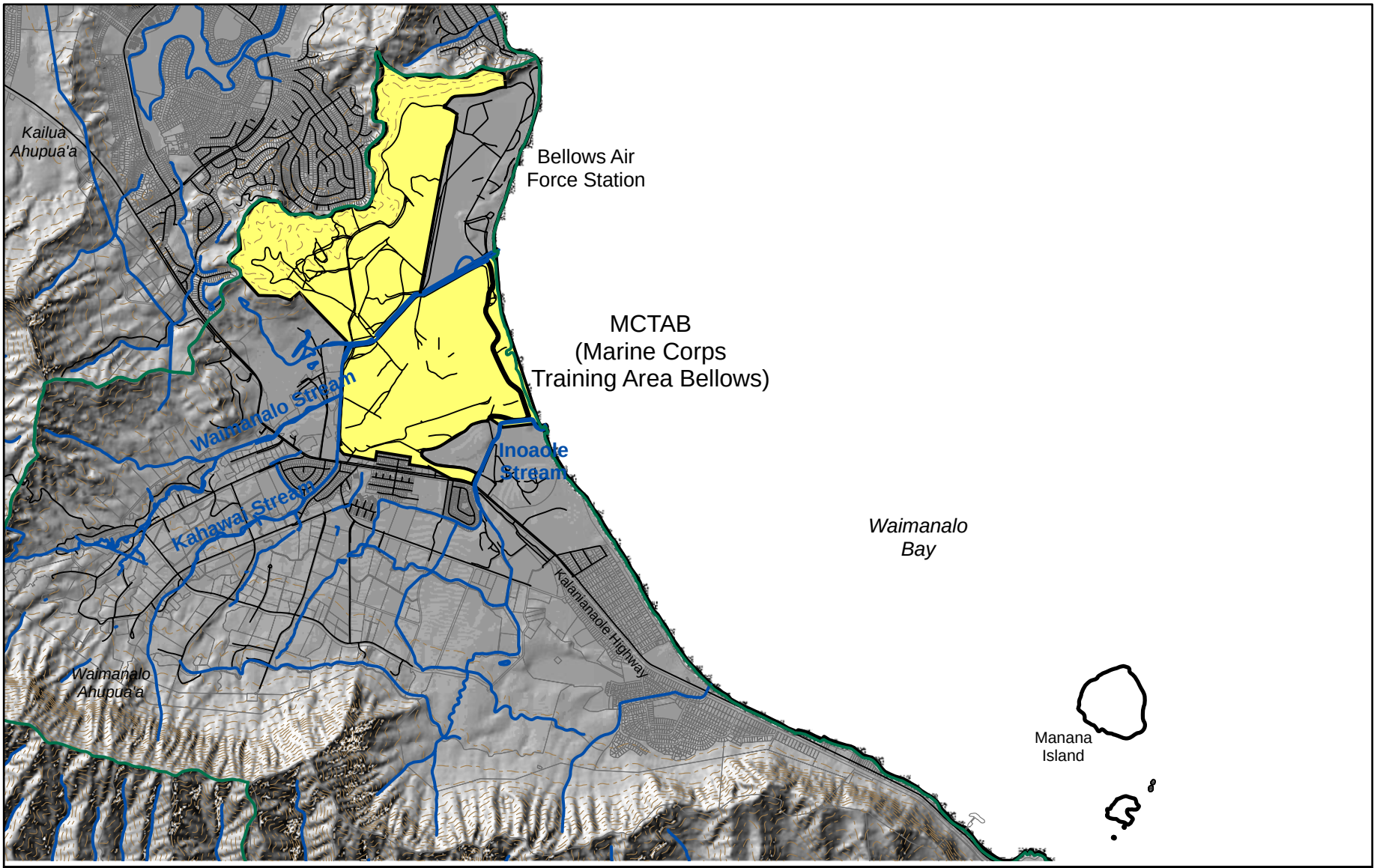


Figure 11
Marine Corps Training Area Bellows and Vicinity

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

- Ahupuaa Boundary
- Streams
- 100 ft contours
- Installation Area

Source: MCBH EGIS Data Repository; State of Hawaii Data Repository

N

0 0.25 0.5 1 Miles

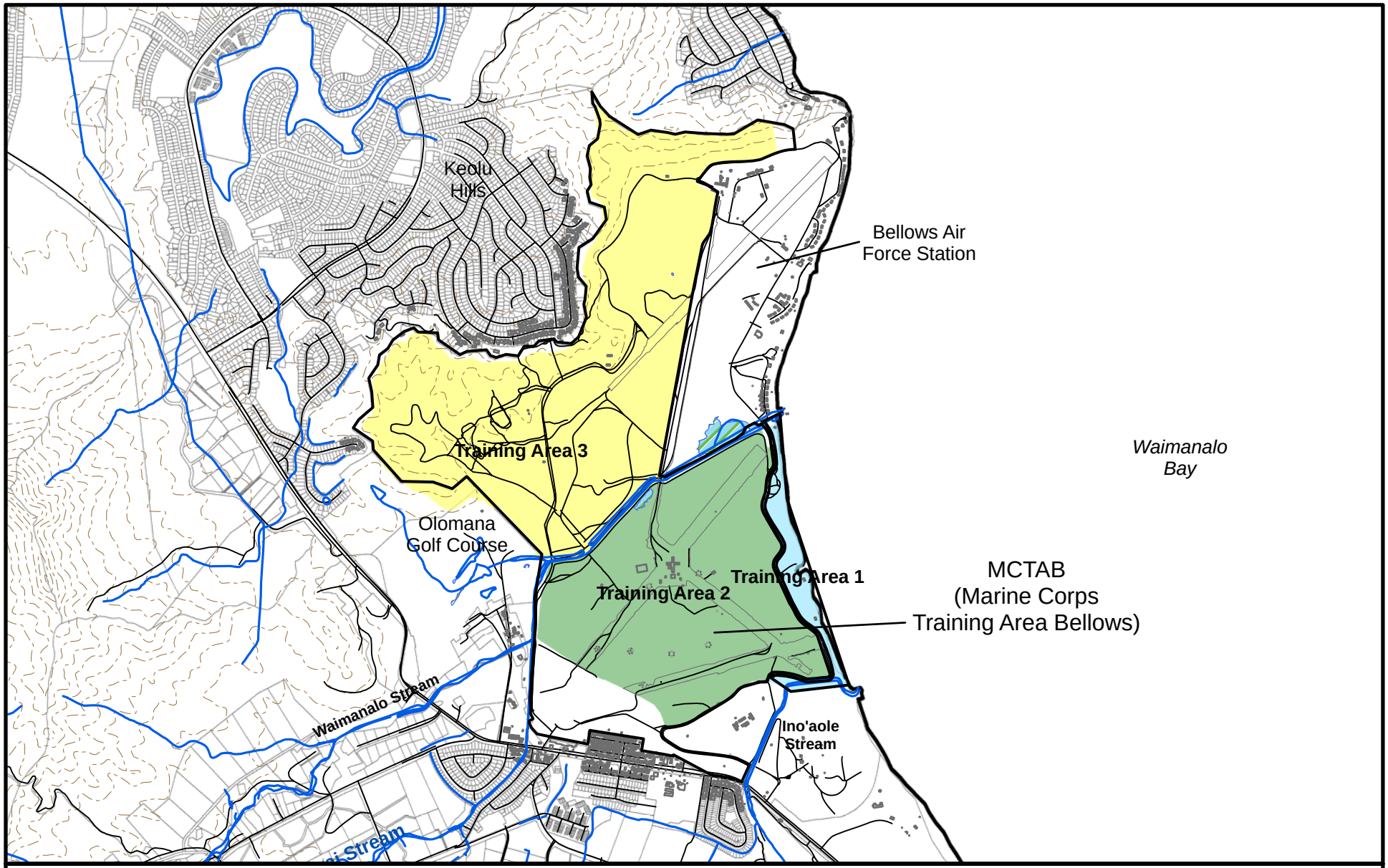


Figure 12
Marine Corps Training Area Bellows (MCTAB) Site Map

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

- Streams
- Wetlands
- 100 ft contours
- Training Area 1
- Training Area 2
- Training Area 3

Source: MCBH EGIS Data Repository; State of Hawaii Data Repository

N

0 0.2 0.4 0.8 Miles

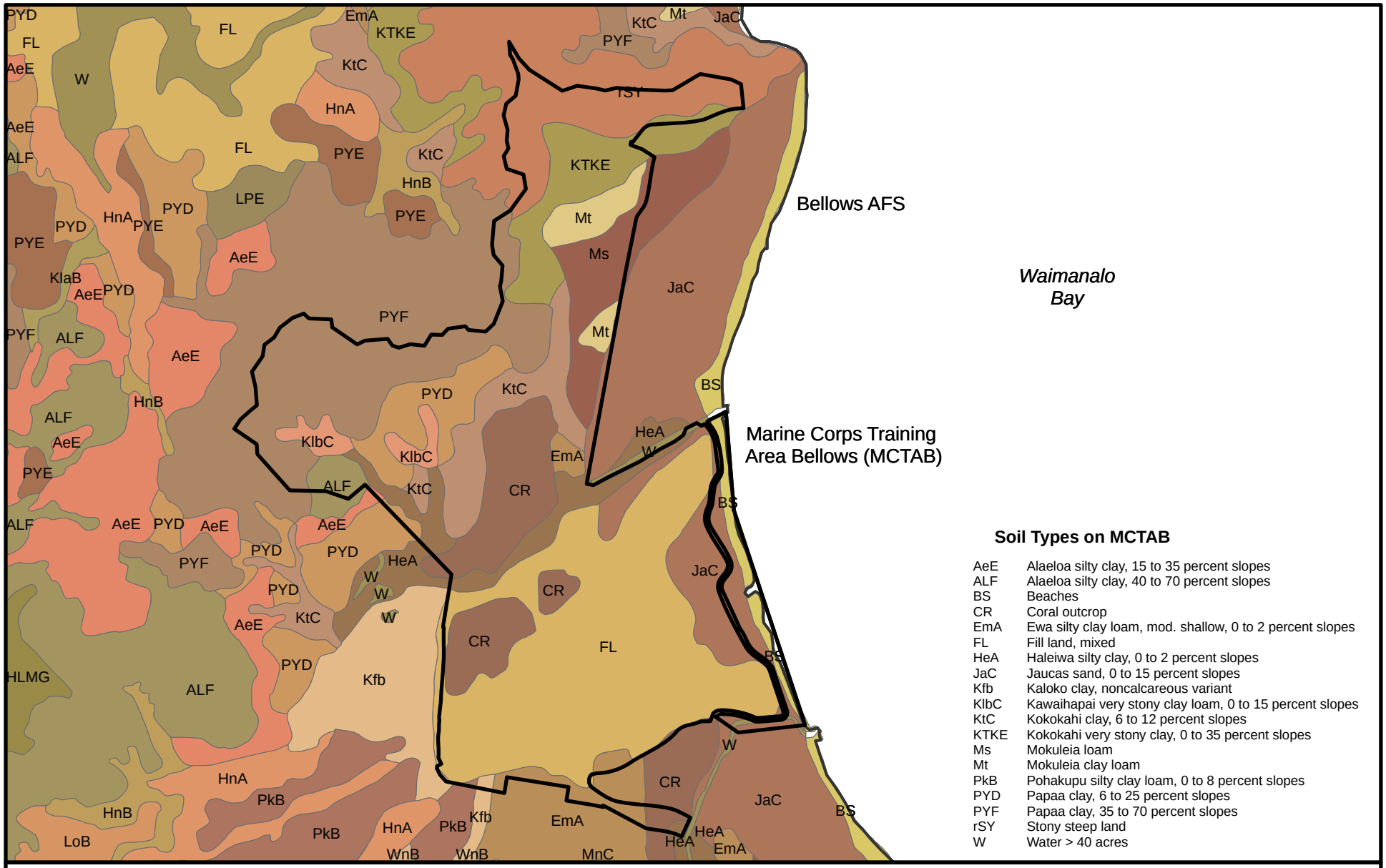


Figure 13
MCTAB Soils

Final MCBH INRMP Update (2007-2011)
November 2006

Source: MCBH EGIS Data Repository;
State of Hawaii Data Repository (Soil types from NRCS (SCS) Soil Survey of O`ahu (Foote et al. 1972) (http://www.ctahr.hawaii.edu/soilsurvey/5is/oahu.htm))

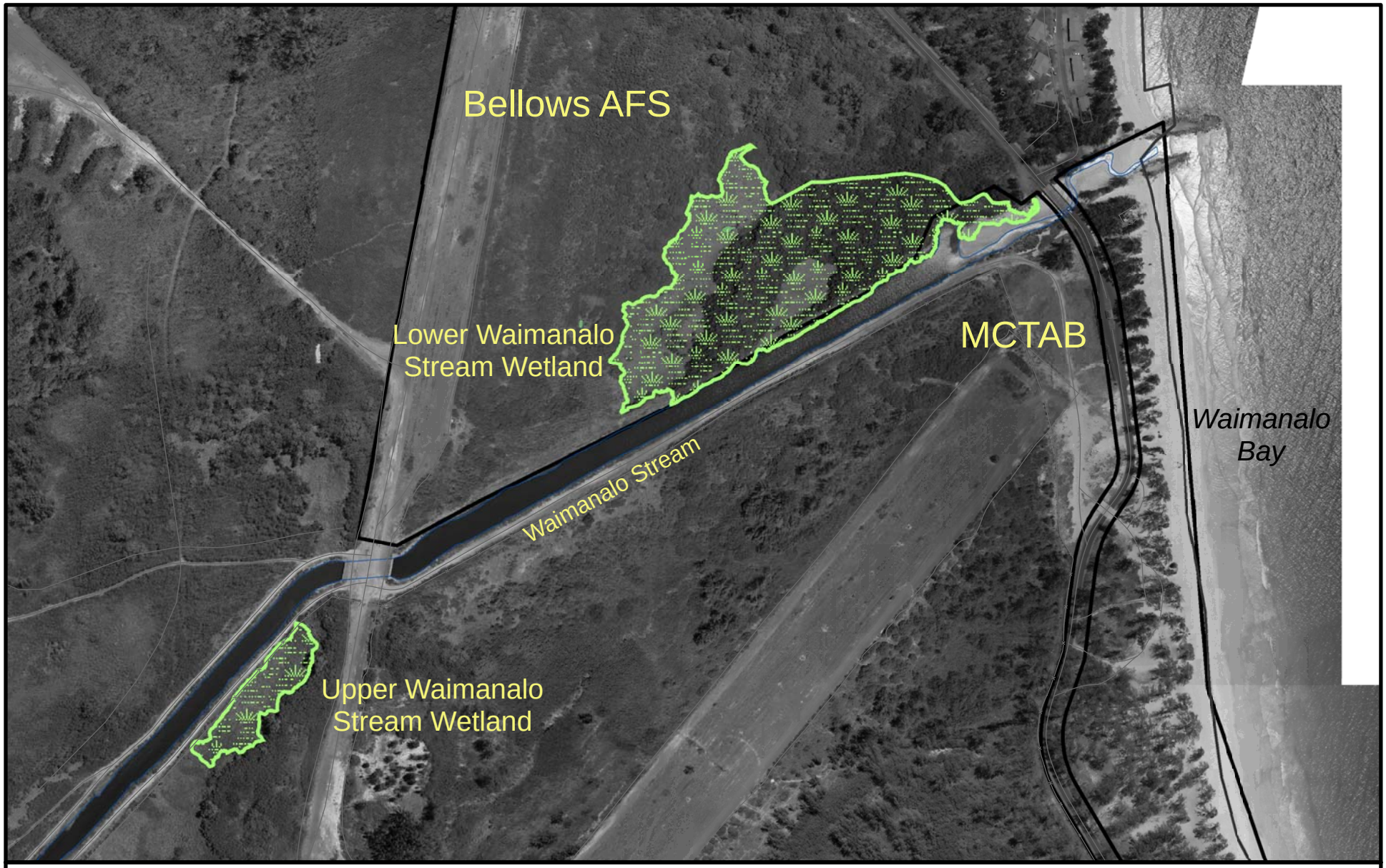


Figure 14a
MCTAB Wetlands - Overview

Final MCBH INRMP Update (2007-2011)
November 2006

Legend
= ACOE Jurisdictional Wetlands (Ching 2002)

Source: MCBH EGIS Data Repository;
Aerial photo from MCBH files (2001)

N

0 0.03 0.06 0.12 Miles

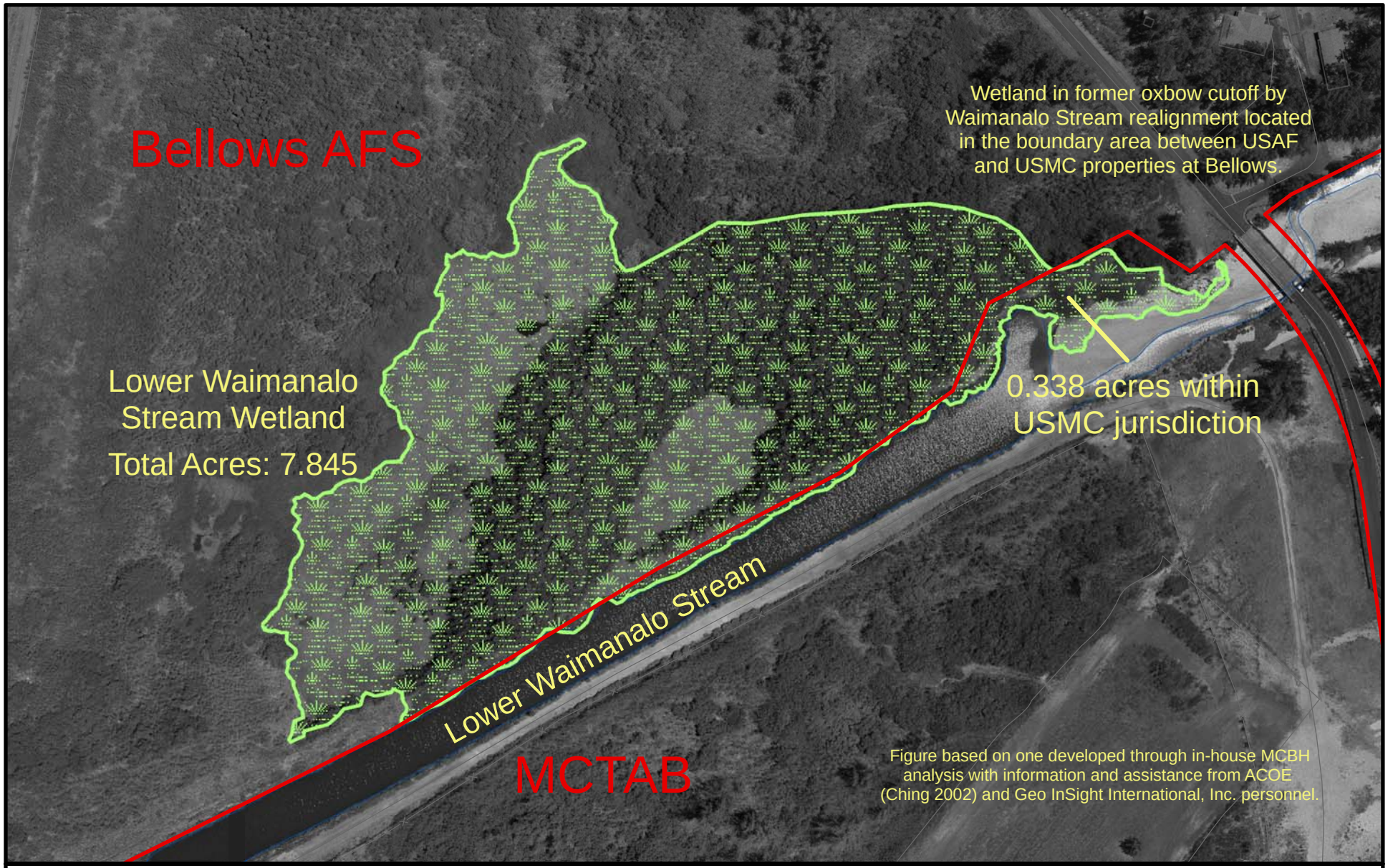


Figure 14b
MCTAB Wetlands - Boundary/Jurisdictional Issue

Final MCBH INRMP Update (2007-2011)
November 2006

Legend
= ACOE Jurisdictional Wetlands (Ching 2002)
= Surveyed Property Boundary

Source: MCBH EGIS Data Repository; Aerial photo from MCBH files (2001)

N

0 0.025 0.05 Miles

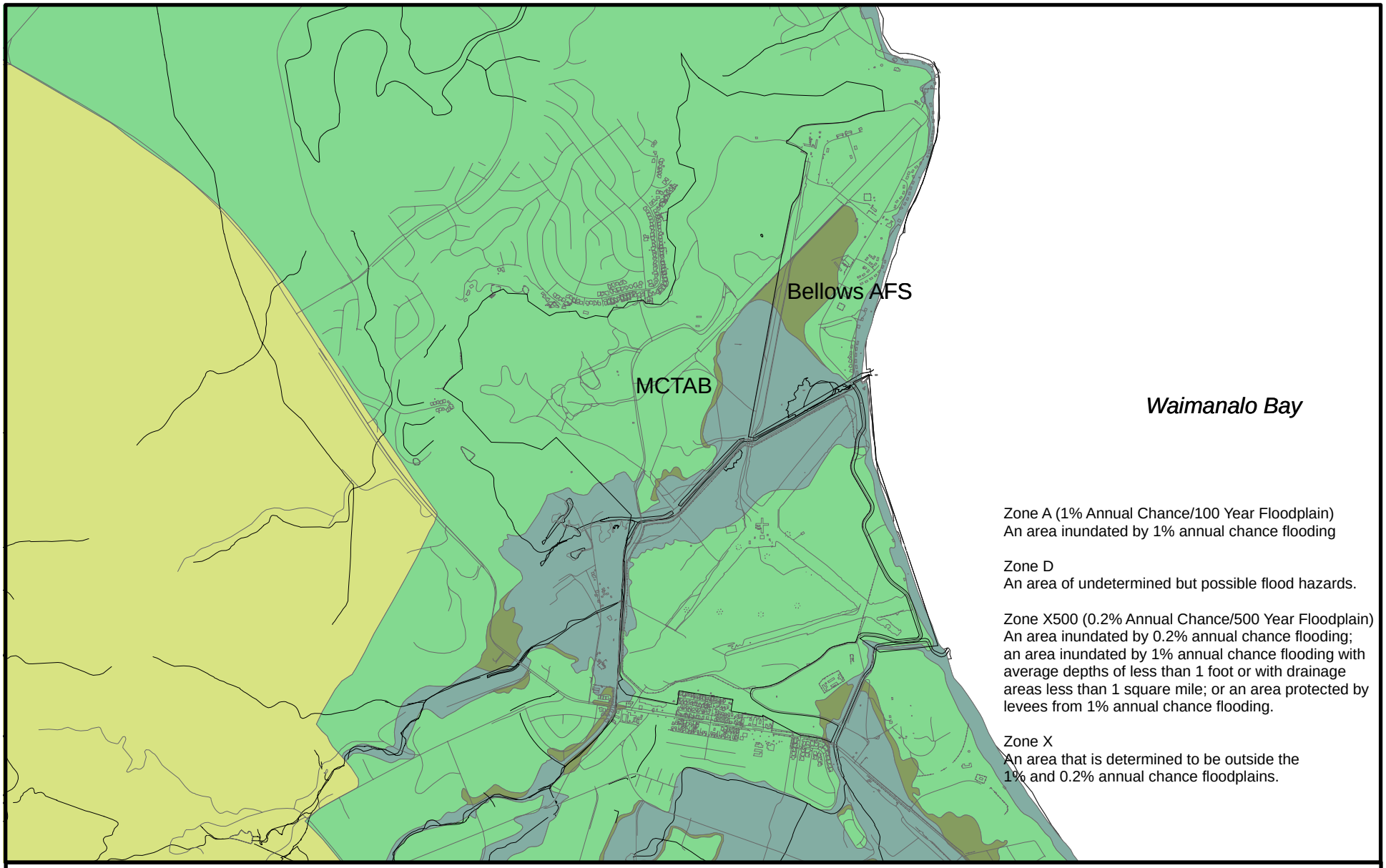


Figure 15
MCTAB FEMA Flood Insurance Rate Map (FIRM)

Final MCBH INRMP Update (2007-2011)
November 2006

Legend
FIRM ZONE

A
X
D
X500

Source: MCBH EGIS Data Repository; FEMA (digital data from Hawaii DBEDT, received from Pacific Disaster Center 1996)

N

Miles
0 0.125 0.25 0.5 0.75

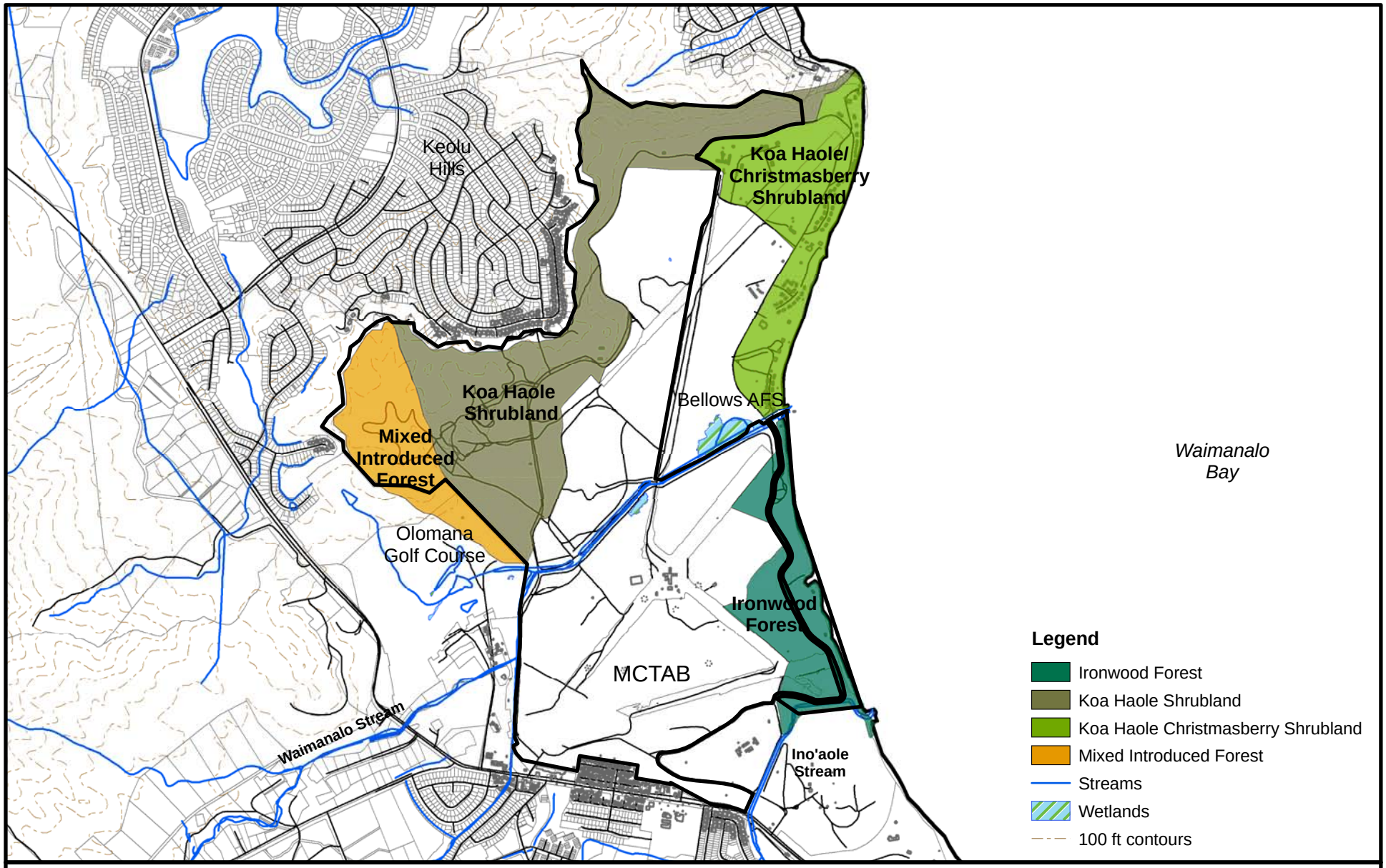


Figure 16
Marine Corps Training Area Bellows Vegetation

Final MCBH INRMP Update (2007-2011)
November 2006

Source: MCBH EGIS Data Repository;
State of Hawaii Data Repository;
Botanical Survey Bellows Air Force Station (Char 1995)
Note: Vegetation boundaries approximate

N

0 0.15 0.3 0.6 Miles

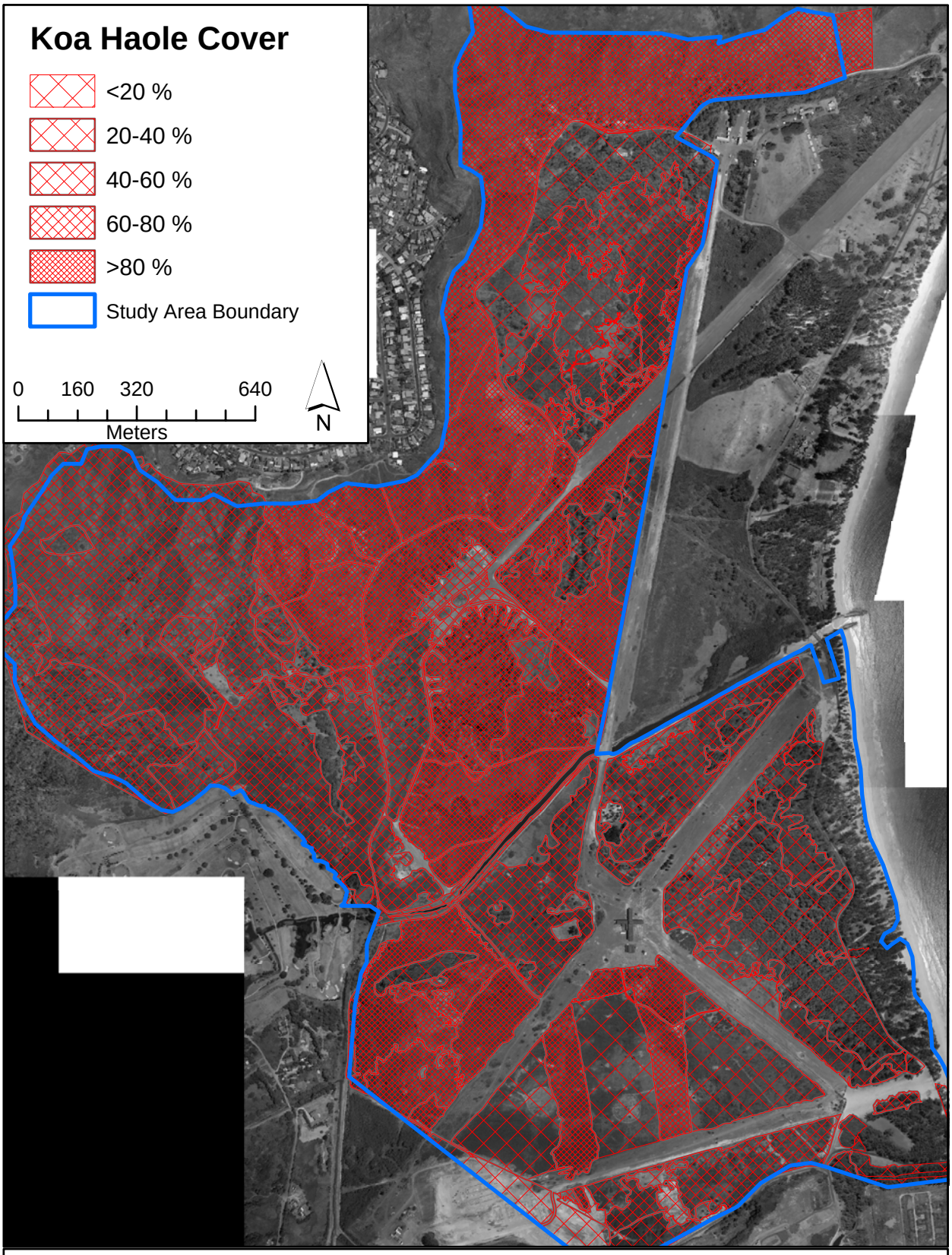


Figure 18a
MCTAB Invasive Species: Koa Haole Cover

Final MCBH INRMP Update (2007-2011)
November 2006

Source: Figure 2, GIS Mapping and Control of Invasive Species/Erosion/ Brushfire Control on MCBH Training Lands (GII 2004)

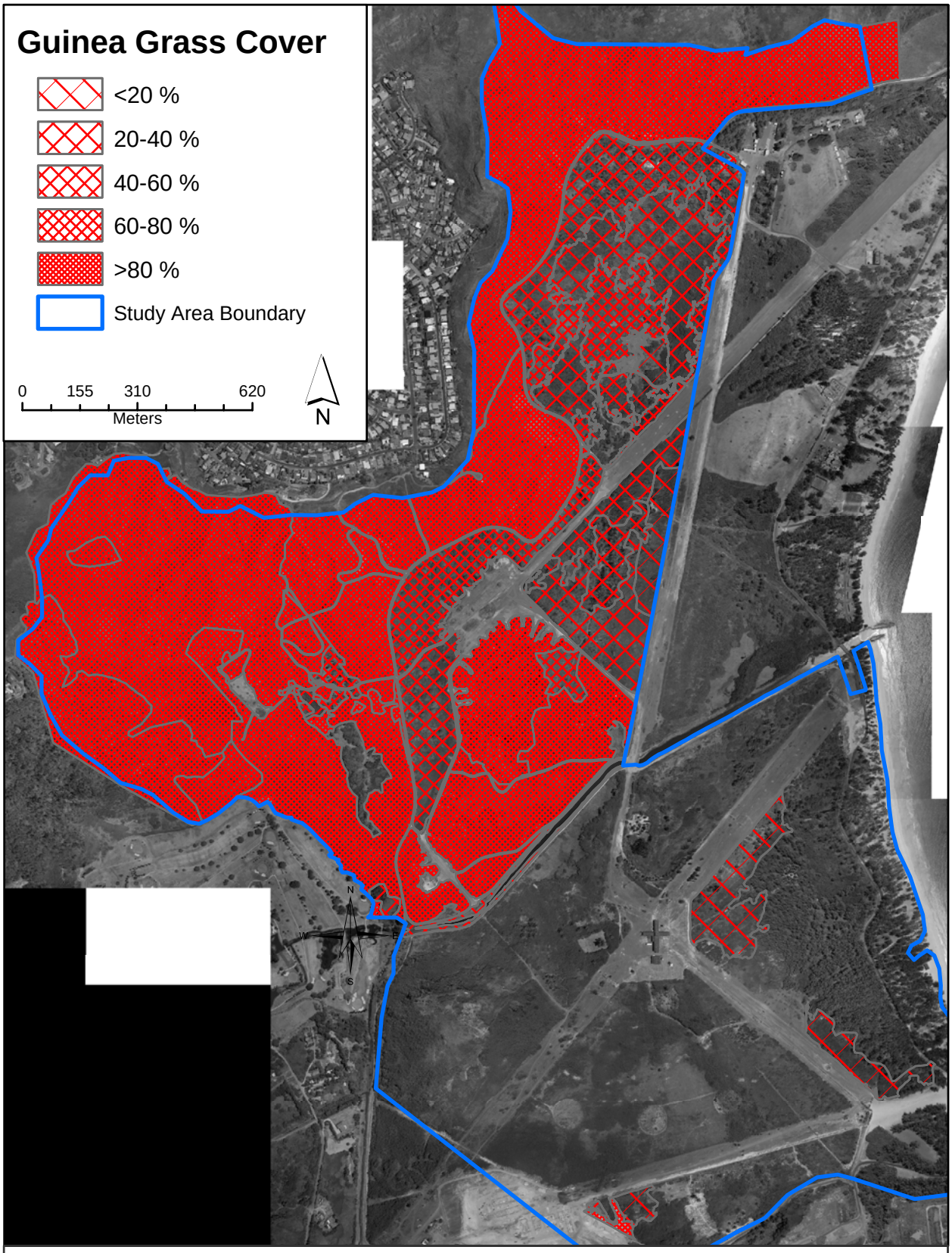


Figure 17b
MCTAB Invasive Species: Guinea Grass Cover

Final MCBH INRMP Update (2007-2011)
November 2006

Source: Figure 3, GIS Mapping and Control of Invasive Species/Erosion/ Brushfire Control on MCBH Training Lands (GII 2004)

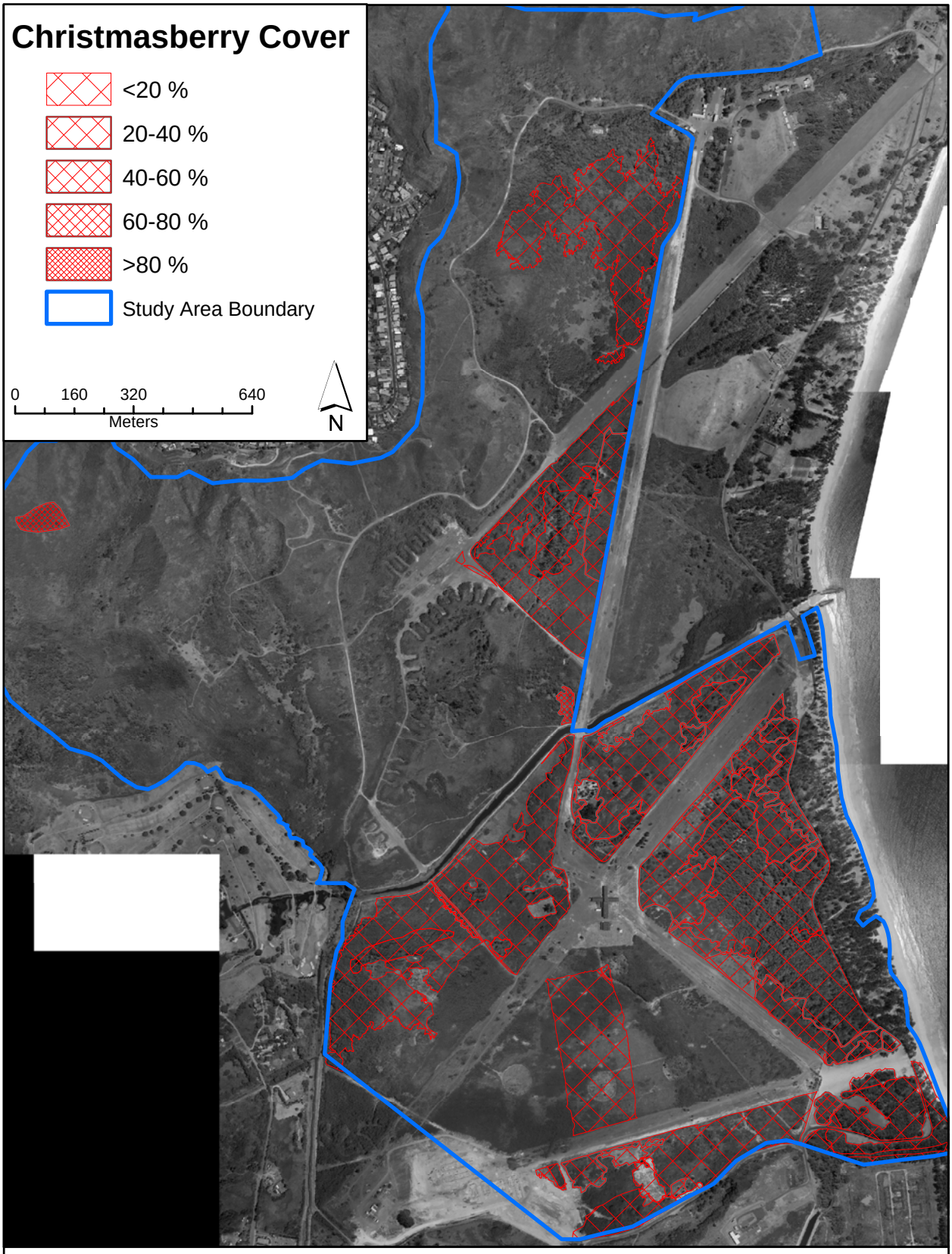


Figure 17c
MCTAB Invasive Vegetation: Christmasberry Cover

Final MCBH INRMP Update (2007-2011)
November 2006

Source: Figure 4, GIS Mapping and Control of Invasive Species/Erosion/ Brushfire Control on MCBH Training Lands (GII 2004)

Figure 17d
MCTAB Invasive Vegetation: Kiawe Cover

Final MCBH INRMP Update (2007-2011)
November 2006

Source: Figure 5, GIS Mapping and Control of Invasive Species/Erosion/ Brushfire Control on MCBH Training Lands (GII 2004)

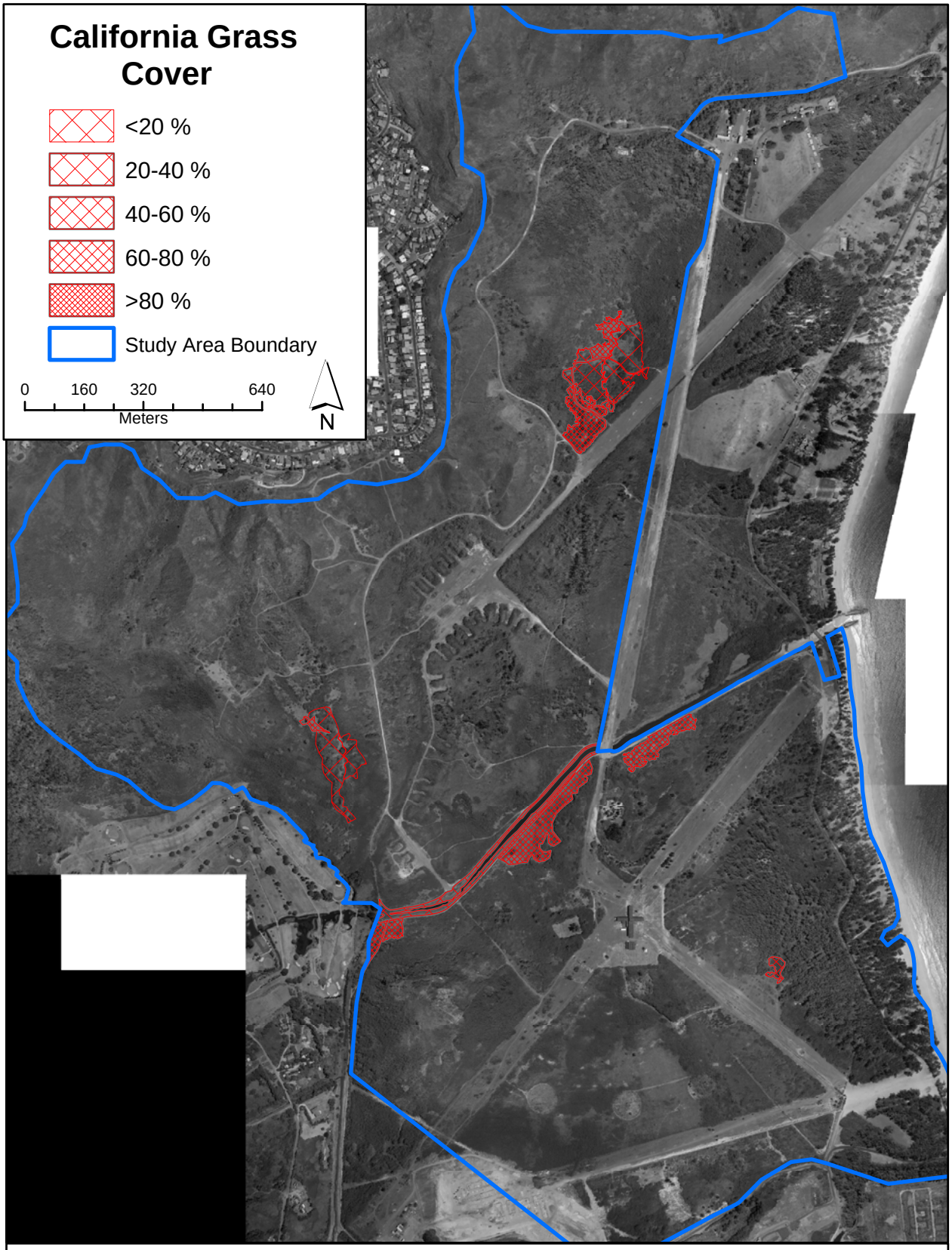


Figure 17e
MCTAB Invasive Vegetation: California Grass Cover

Final MCBH INRMP Update (2007-2011)
November 2006

Source: Figure 6, GIS Mapping and Control of Invasive Species/Erosion/ Brushfire Control on MCBH Training Lands (GII 2004)

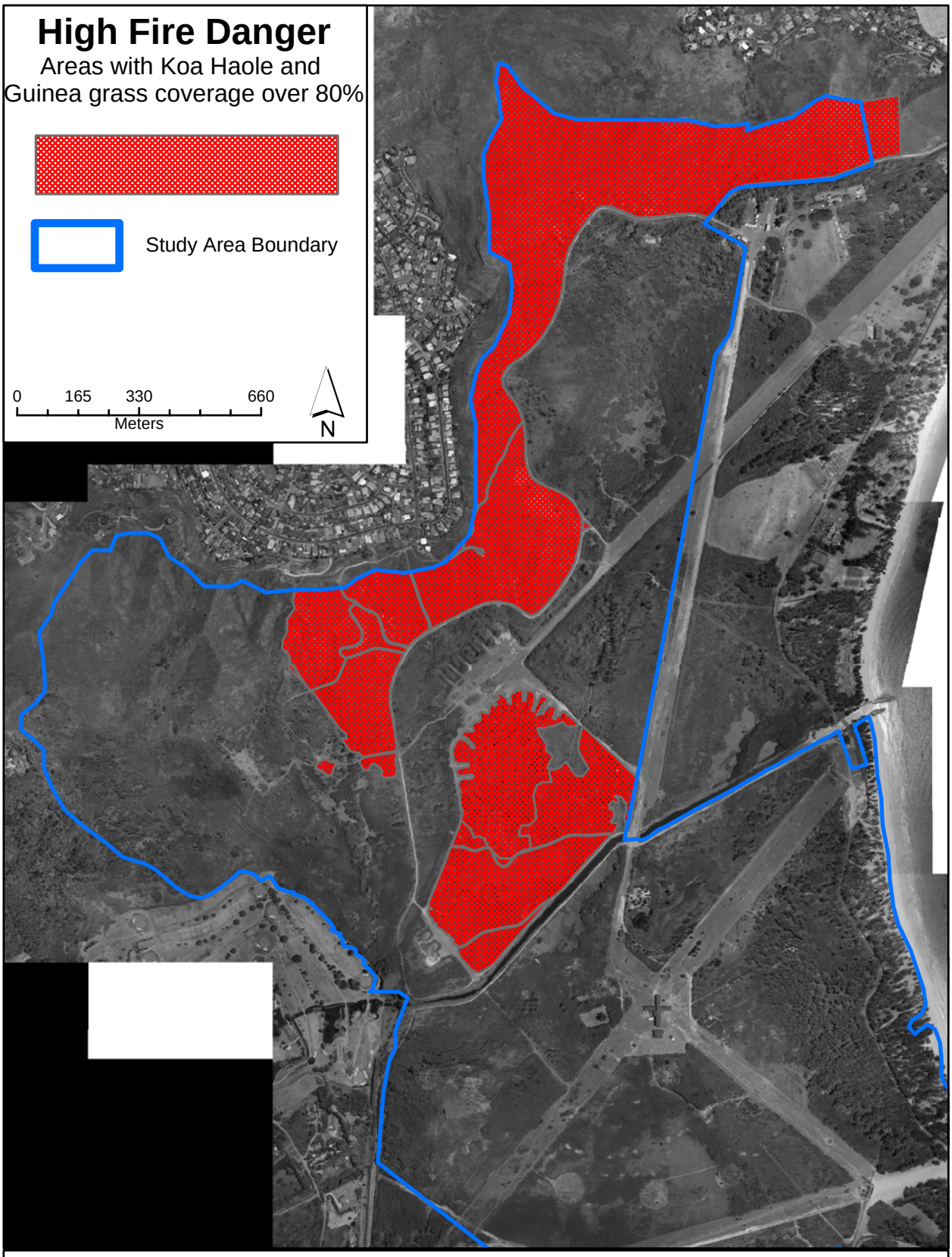
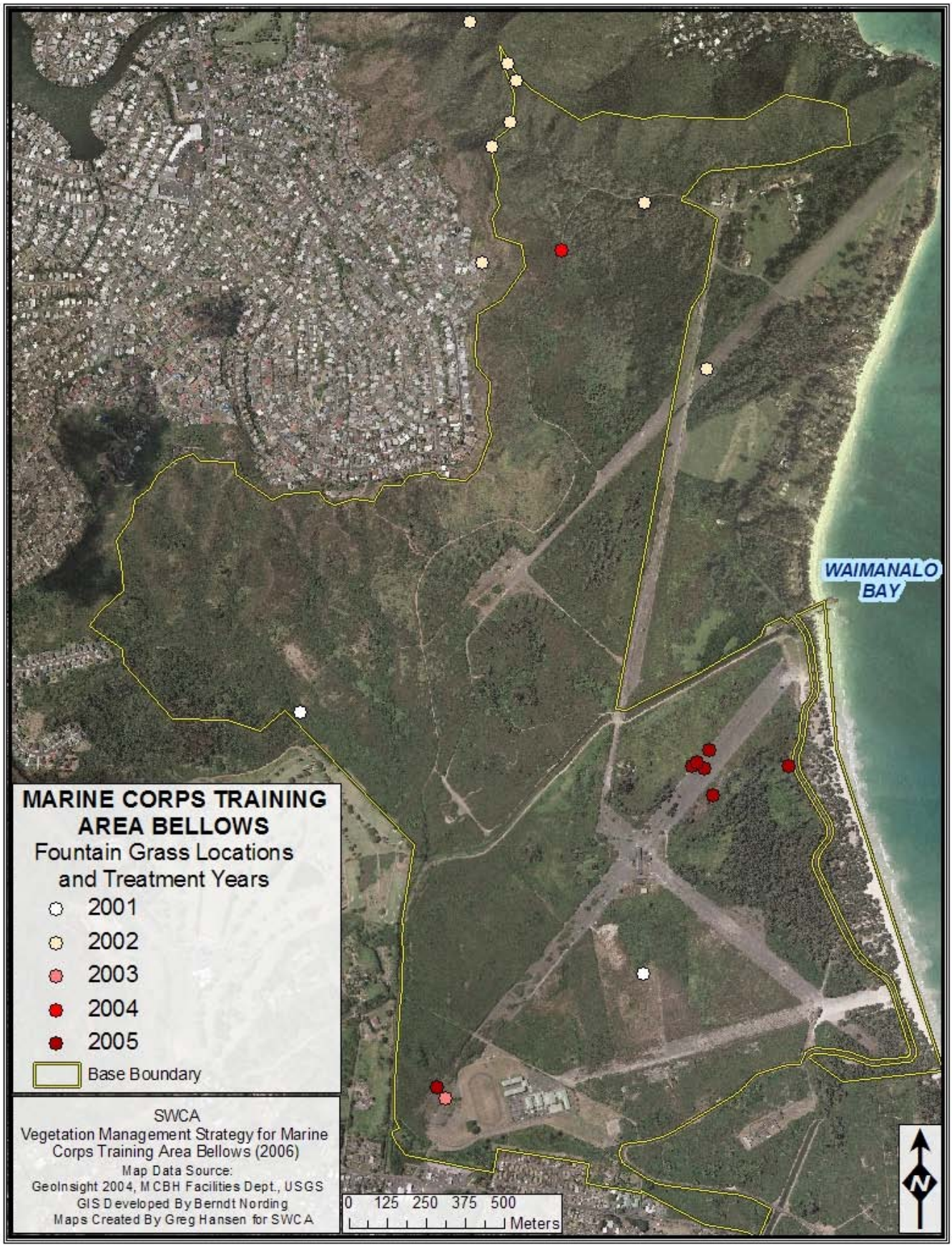


Figure 17f
MCTAB Invasive Vegetation: High Fire Danger

Final MCBH INRMP Update (2007-2011)
November 2006

Source: Figure 7, GIS Mapping and Control of Invasive Species/Erosion/ Brushfire Control on MCBH Training Lands (GII 2004)

Figure 17g. Locations where Fountain Grass was Found and Treated at MCTAB between 2001 and 2005 (Figure 9 from SWCA 2006, in prep.)



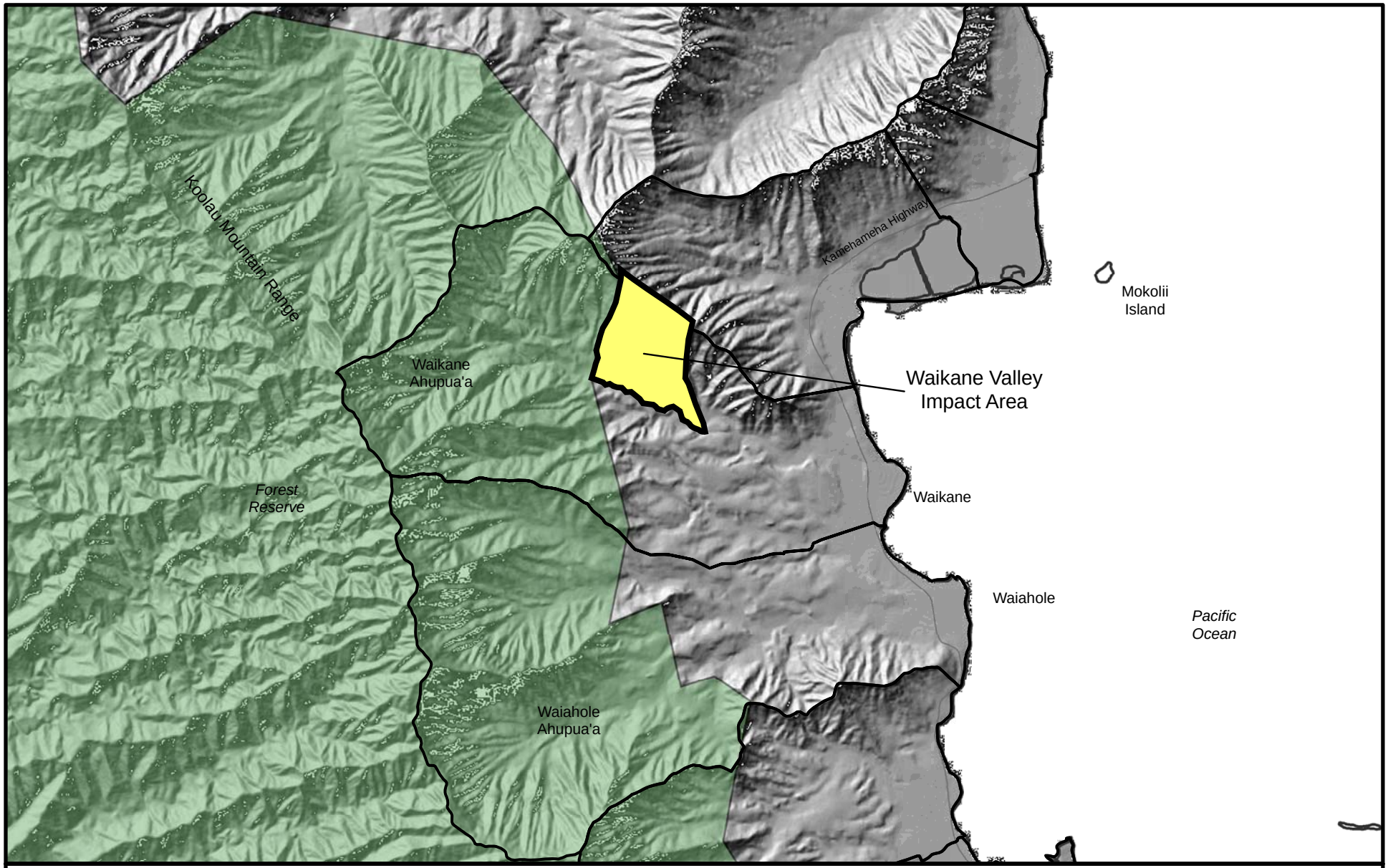


Figure 18
Waikane Valley Impact Area and Vicinity

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

- Installation Boundary
- Ahupuaa Boundary
- O'ahu 'Elepaio Critical Habitat

Source: MCBH EGIS Data Repository; State of Hawaii Data Repository

N

0 0.3 0.6 1.2 Miles

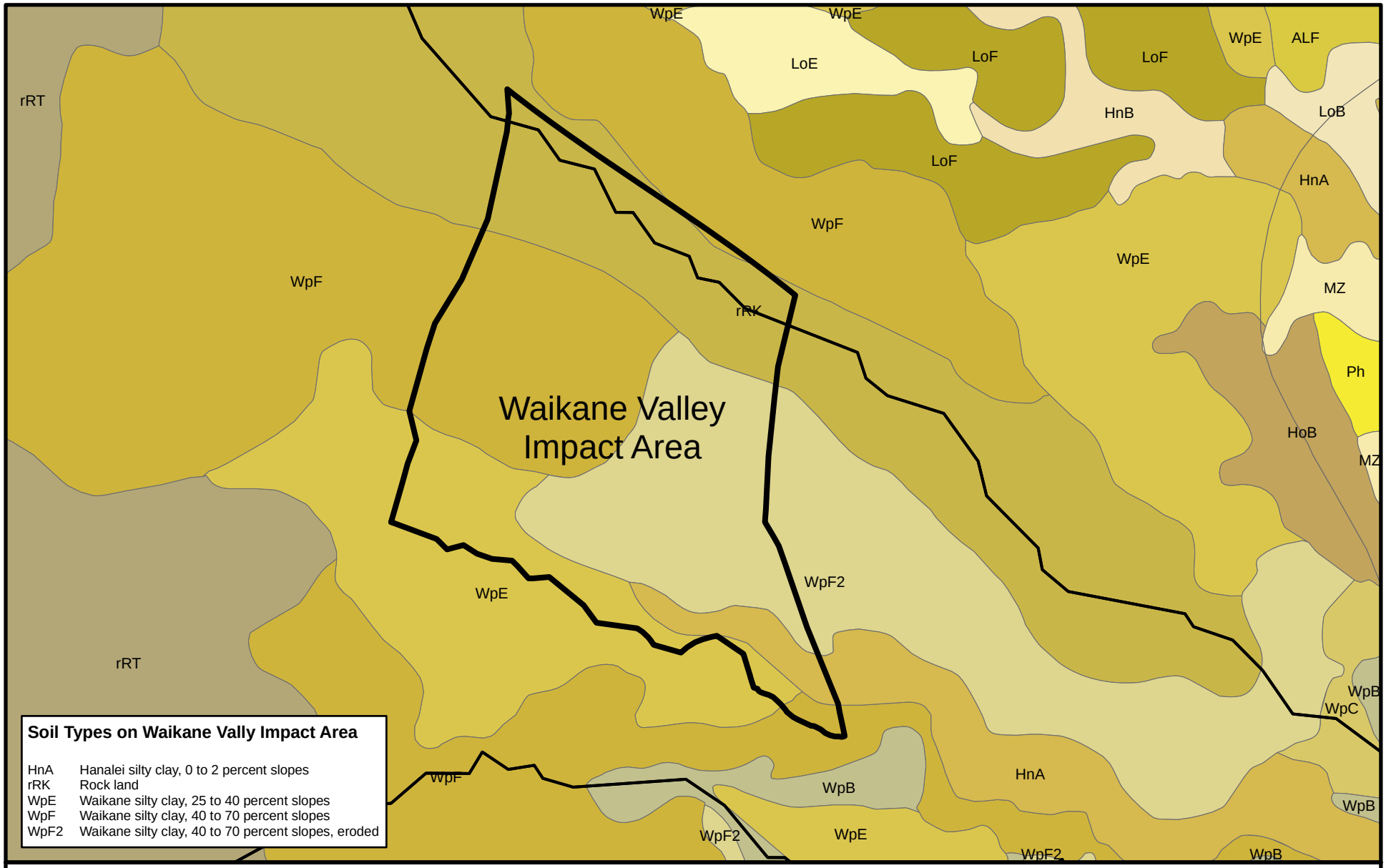


Figure 19
Waikane Valley Impact Area Soils

Final MCBH INRMP Update (2007-2011)
November 2006

Source: MCBH EGIS Data Repository;
State of Hawaii Data Repository (Soil types from
NRCS (SCS) Soil Survey of O`ahu (Foote et al. 1972)
(http://www.ctahr.hawaii.edu/soilsurvey/5is/oahu.htm))

N

0 0.05 0.1 0.2 Miles

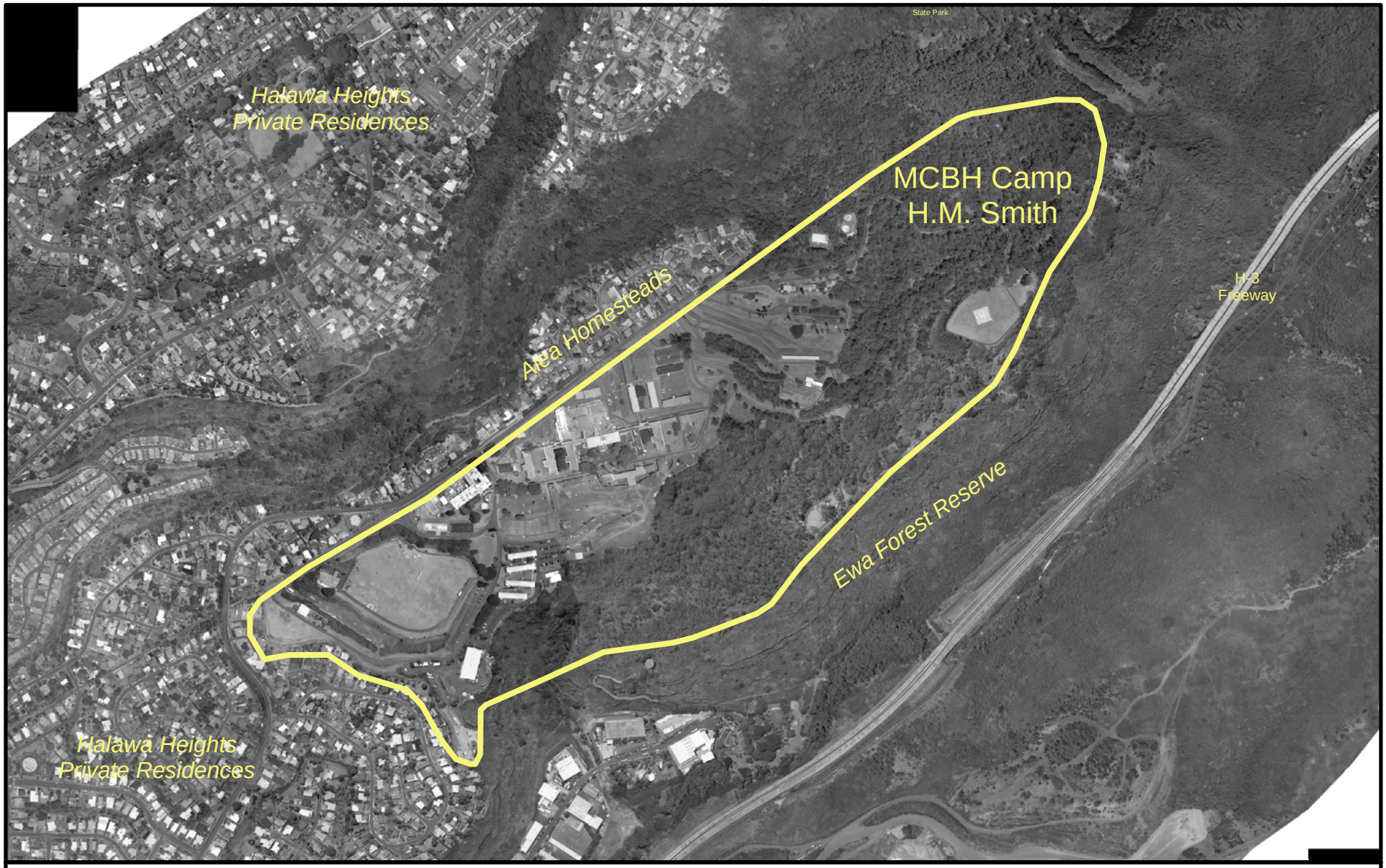


Figure 20
MCBH-Camp H.M. Smith (MCBH-CS) and Vicinity

Final MCBH INRMP Update (2007-2011)
November 2006

Source: MCBH EGIS Data Repository;
Aerial photo from MCBH files (2001)

N

Miles
0 0.05 0.1 0.2

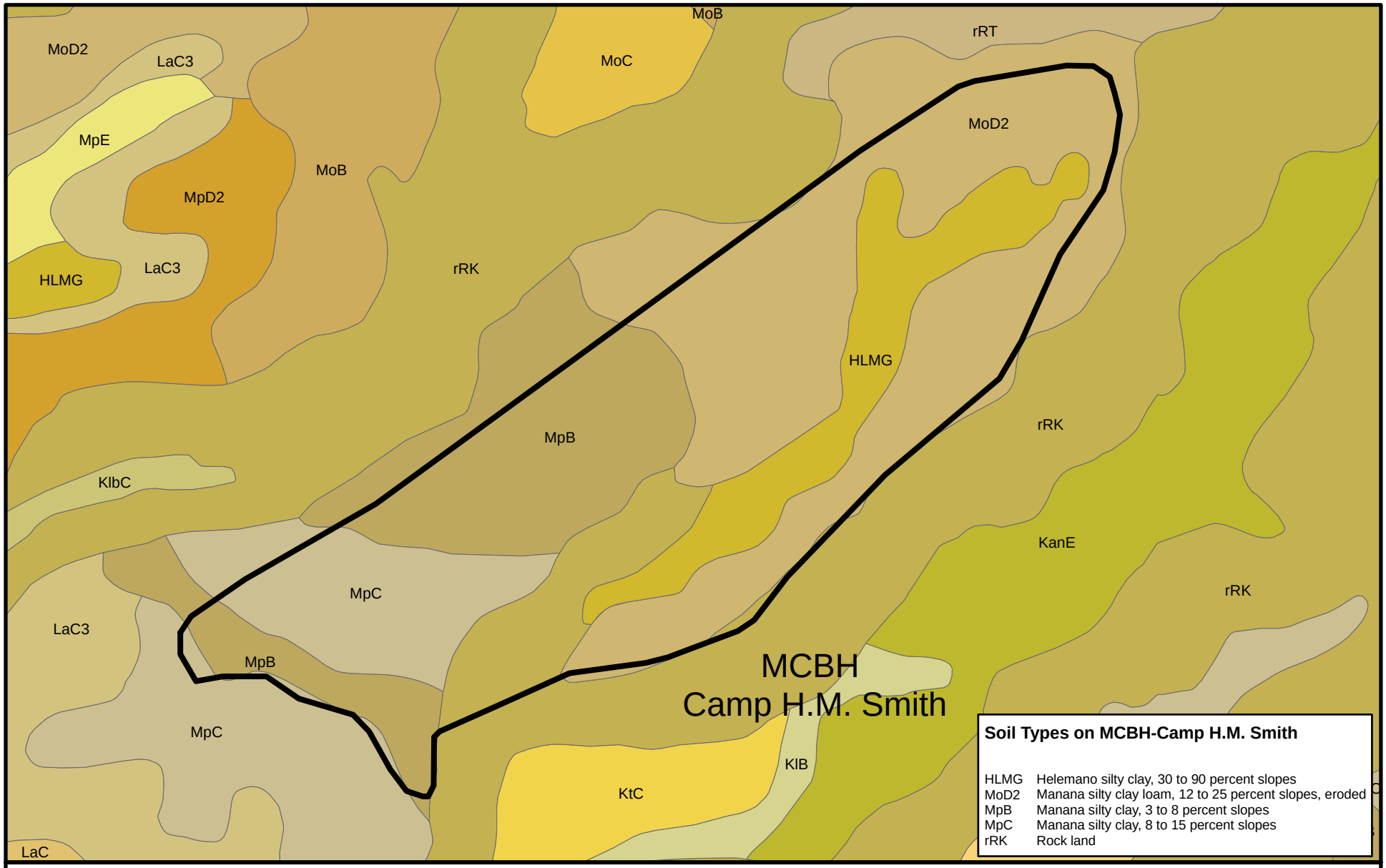


Figure 21
MCBH-Camp H.M. Smith (MCBH-CS) Soils

Final MCBH INRMP Update (2007-2011)
November 2006

Source: MCBH EGIS Data Repository;
State of Hawaii Data Repository (Soil types from
NRCS (SCS) Soil Survey of O`ahu (Foote et al. 1972)
(http://www.ctahr.hawaii.edu/soilsurvey/5is/oahu.htm))

N

Miles
0 0.05 0.1 0.2

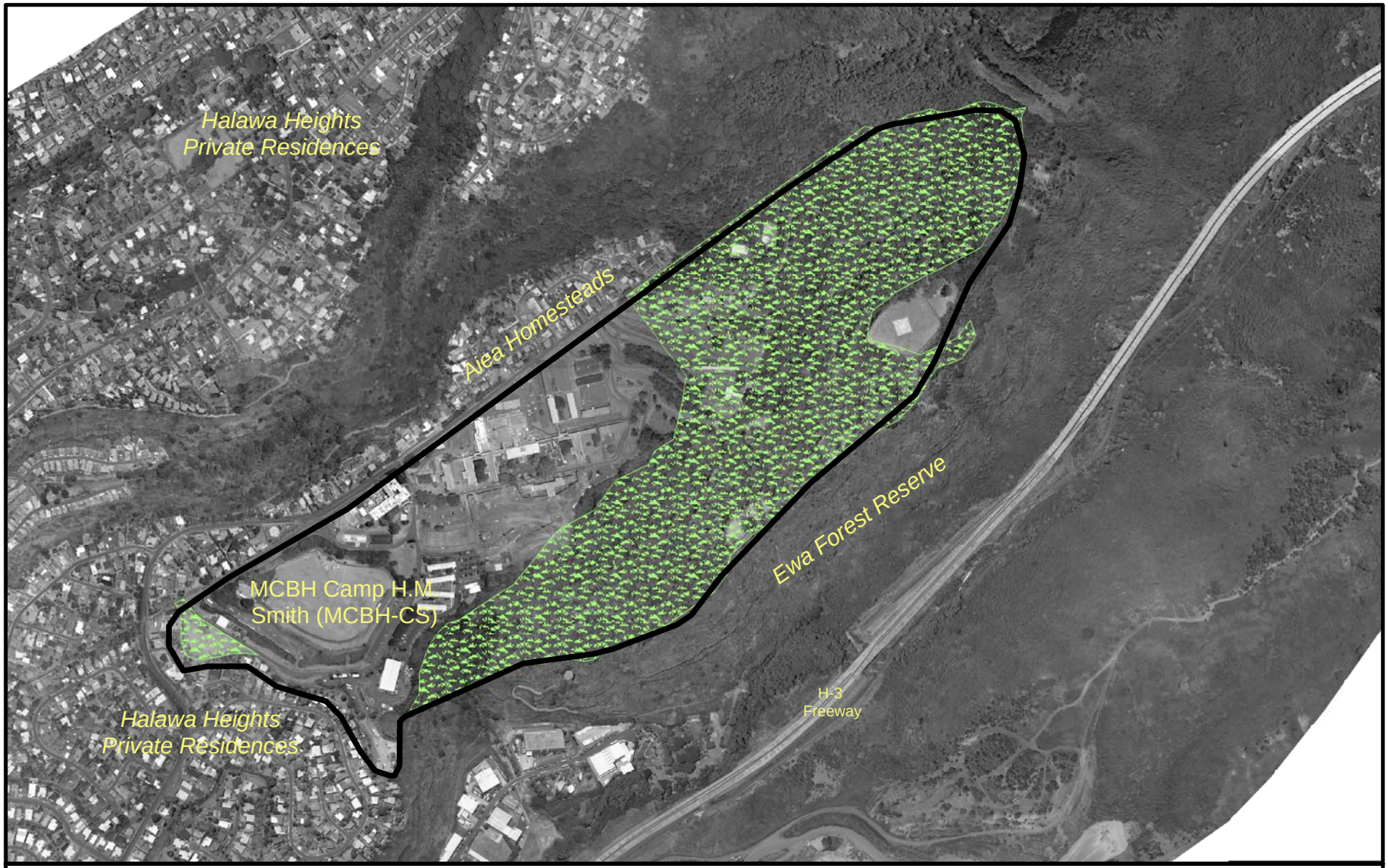


Figure 22
MCBH-Camp H.M. Smith (MCBH-CS) Vegetation

Final MCBH INRMP Update (2007-2011)
November 2006

Legend

Forested Area (boundaries apprx)

Source: MCBH EGIS Data Repository;
Aerial photo from MCBH files (2001);
Vegetation from MCBH Master Plan (Wilson Okamoto & Associates, Inc. 1999)

N

Miles
0 0.05 0.1 0.2

Figure 23
MCBH-Puuloa Training Facility and Vicinity

Final MCBH INRMP Update (2007-2011)
November 2006

Source: MCBH EGIS Data Repository;
Aerial photo from MCBH files (2001)

N

Miles
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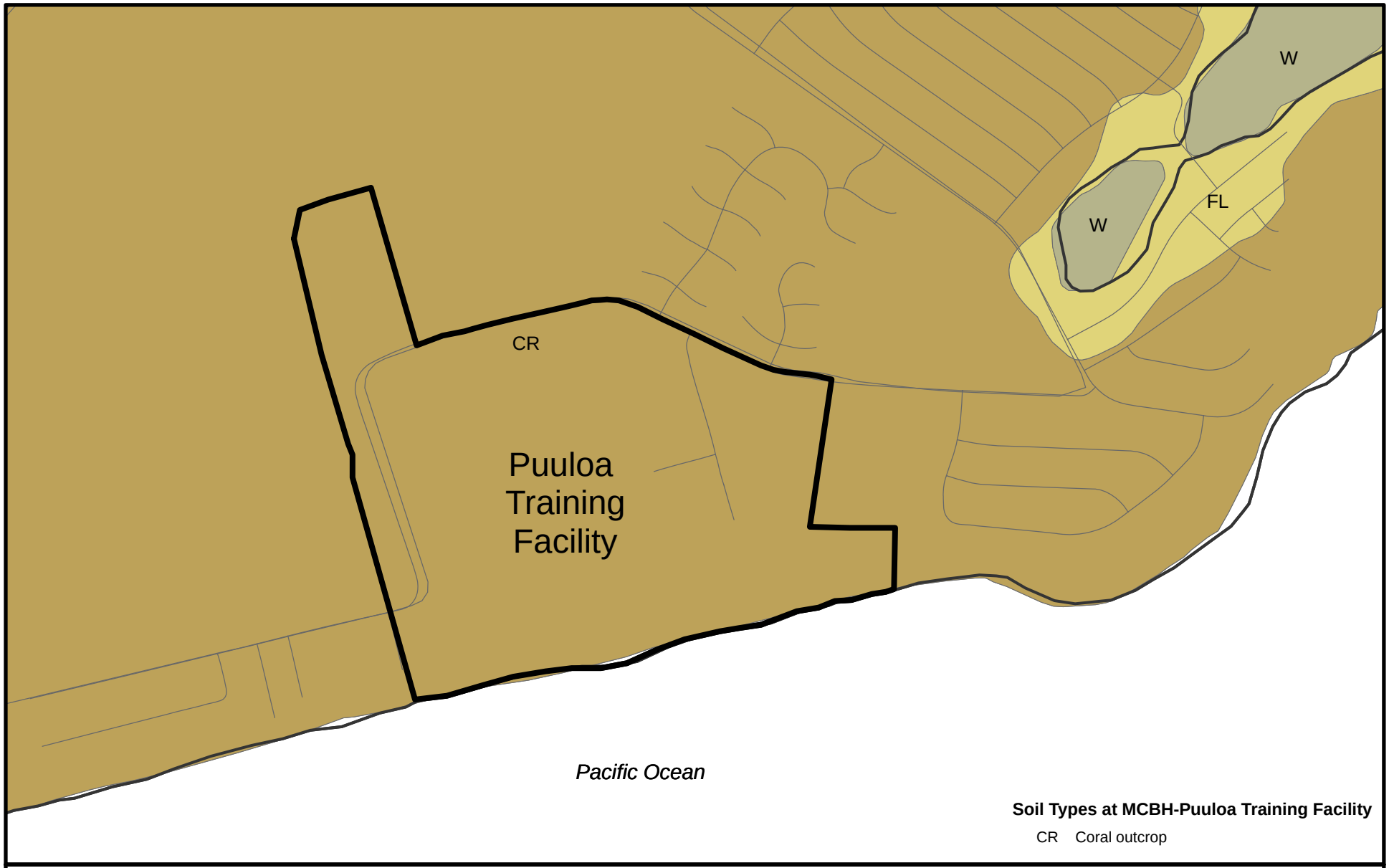

Figure 24
MCBH-Puuloa Training Facility Soils

Final MCBH INRMP Update (2007-2011)
November 2006

Source: MCBH EGIS Data Repository;
State of Hawaii Data Repository (Soil types from
NRCS (SCS) Soil Survey of O`ahu (Foote et al. 1972)
(http://www.ctahr.hawaii.edu/soilsurvey/5is/oahu.htm))

N

Miles
0 0.04 0.08 0.16

APPENDIX C
UPDATED SPECIES INVENTORY

The following tables contain species lists for those MCBH properties represented in this updated INRMP. Lists are included for: (C1) mammals and reptiles, (C2) birds, (C3) fish, (C4) invertebrates, and (C5) plants. The tables are updates of those originally compiled for the 2001 INRMP/EA from various plans, studies and reports with the goal of developing a single, comprehensive list of all species of management concern, including those species of protection and of control concern (i.e., pest or invasive species). They have been updated with information gathered from surveys and studies over the last five years. For example, a 2003 study at Waikane Valley provides updated information about biological resources found at the training area (Guinther et al. 2003). Draft data from the FY03-funded USFWS-led marine resources survey (still in progress) has been at MCBH-KB has been used to update the marine resources inventory for the 500-yard seaward security buffer zone around MCBH-KB (USFWS 2006, in prep). As before, it is recognized that this list may be incomplete due to the lack of floral and faunal studies for some properties. This is the result of the project-driven nature of most studies (e.g., surveys concentrated on particular areas of impact felt by specific projects undergoing environmental review, rather than on the entire MCBH parcel). As described in the 2001 INRMP/EA, there are, to date, no scientifically-verified sightings of listed endangered plants anywhere on MCBH properties, other than in cultivated settings (e.g., *Sesbania tomentosa*).

The lists included in this INRMP reflect the most current and available scientific information (e.g., presence on a particular property, scientific names[1], regulatory status). The standard references used included:

American Ornithologists Union. 2000. *The A.O.U. Check-list of North American Birds, Seventh Edition*. http://www.aou.org/aou/birdlist.html.

Hoover, J.P. 1998. *Hawai'i's Sea Creatures: A Guide to Hawai'i's Marine Invertebrates*. Mutual Publishing, Honolulu. 366 pp.

McKeown, S. 1996. *A Field Guide to Reptiles and Amphibians in the Hawaiian Islands*. Diamond Head Publishing, Los Osos, CA. 172 pp.

Randall, J.E. 1996. *Shore Fishes of Hawaii*. Natural World Press, Oregon. 216 pp.

Staples, G.W. and R.H. Cowie. 2001. *Hawai'i's Invasive Species*. Mutual Publishing and Bishop Museum Press, Honolulu. 116 pp.

Tinker, S.W. 1991. *Fishes of Hawaii*. Hawaiian Service, Inc. Honolulu. 532 pp.

[1] For example, edits have been made to some species names to reflect the most current and available scientific information. Names in parentheses in Appendix C are older or synonymous scientific names that may be found in the reports listed below.

Wagner, W.L., Herbst, D.R. and S.H. Sohmer. 1990. *Manual of the Flowering Plants of Hawai'i*. Vols 1 & 2. Bishop Museum Press, Honolulu. 1853 pp.

Whitaker, J.O. Jr. 1996. *National Audubon Society Field Guide to North American Mammals*. Alfred A. Knopf Press, New York. 937 pp.

Yamamoto, M.N. and A.W. Tagawa. 2000. *Hawai'i's Native and Exotic Freshwater Animals*. Mutual Publishing, Honolulu. 200 pp.

The following information is included for each species (where applicable): scientific name, common name, Hawaiian name, regulatory status (e.g., endangered/threatened at the Federal or state level), origin (e.g., endemic, native, introduced), the properties on which the species has been documented, whether or not the species is considered invasive, and a source code that identifies the primary source(s) of data for the observation. Definitions describing the terms used in the "Origin" column can be found in the Glossary (Appendix H). Those species that are protected or regulated under Federal or State laws are of particular concern to MCBH natural resource management, including those protected under the Endangered Species Act and the Migratory Bird Treaty Act, and those regulated as noxious weeds. Specific management actions for these species are identified in Section 7, as appropriate. A species is listed as invasive on MCBH properties if it meets the criteria for invasive as defined in EO 13112 as being "an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health." For the plant list (Table C5), a plant is considered "cultivated" if it has been deliberately planted in either a landscape project or a demonstration restoration site.[2]

Definition of Source Codes for Species Lists[3]:

1. Fish and Wildlife Management Plan (Rauzon 1992a, 1992b)
2. MCBH Master Plan 1999 (Wilson Okamoto and Associates, Inc. 1999)
3. Strategic Integrated Resources Management Planning for Selected Properties of Marine Corps Base Hawaii: Camp H.M. Smith, Puuloa Training Facility, and a Portion of Waikane Valley (Tuggle and Wilcox 1998)
4. Draft Environmental Assessment: Marine Corps Amphibious Training in Hawaii (BCH 1999)
5. Final Environmental Impact Statement, Land Use and Development Plan, Bellows Air Force Station, Waimanalo, HI (BCH 1995)
6. Final Integrated Natural Resources Management Plan for Hickam AFB Oahu, Bellows AFS Oahu, Hickam POL Pipeline Oahu, Kaala AFS Oahu, Kaena Point STS Oahu, Kokee AFS Kauai, Palehua Solar Observatory Oahu (15th Air Base Wing Installations) (Air Force Center for Environmental Excellence 1997)
7. Botanical Survey of Selected Areas of MCBH, Kane'ohe, O'ahu, Hawai'i (Herbst 1998)
8. Environmental Study of Nu'upia Ponds Wildlife Management Area, Marine Corps Base Hawaii, Kaneohe Bay (Cox and Jokiel 1997)
9. Fish Communities of the Nu'upia Fishponds, Nu'upia Wildlife Management Area, Mokapu, O'ahu, Hawai'i (Brock 1994 in R.M. Towill 1995)
10. Environmental Assessment for New Family Housing Construction at Camp H.M. Smith, Oahu, Hawaii (United States Department of the Army 1994)

[2] These plants are summarized in Appendix E of the 2001 INRMP/EA.
[3] Sources are not listed in any particular order.

11. Biological Surveys in the Nuʻupia Ponds Wildlife Management Area in Association with the November 1984 Opening of the Paʻakai/Kailua Bay Channel (AECOS Inc. 1985)

12. Fish and Wildlife Management Plan for Marine Corps Air Station, Kaneʻohe Bay, Volumes 1 & 2 (USFWS 1984a)

13. Mokapu: Manual for Watershed Health and Water Quality (Wilcox et al. 1998)

14. MCBH Landscape Plan: Environmental Enhancement Project, Front Gate Static Display Park, Marine Corps Base Hawaii, Mokapu Peninsula (Geo InSight International, Inc. and Hawaii Design Associates, Inc. 2000)

15. MCBH Landscape Plan: MILCON P-286 (Mokapu Wetland Basin)

16. MCBH Landscape Plan: MILCON P-438/P-439 (Barracks)

17. Planting Site Report, Final Report, Watershed Restoration Program, Marine Corps Base Hawaii (SRGII 2001b)

18. A Natural Resources Survey of the Nearshore Waters of Mokapu Peninsula, Kaneohe Marine Corps Air Station (Henderson 1992)

19. MCBH Landscape Plan: Klipper Golf Course Ponds (HDA 2004)

20. Natural Resources Management Plan, Camp H.M. Smith, USMC, Oahu, Hawaii (US Department of the Navy 1990)

21. MCBH Invasive Species Management Study (Garrison et al. 2002)

22. Klipper Golf Course Improvements Marine Corps Base Hawaii, Kaneohe Bay. Environmental Assessment. (Helber Hastert & Fee, Planners 1997)

23. Biological Assessment and Habitat Characterization of Waimanalo Stream: Establishing Environmental Goals and a TMDL for Watershed Management (Prepared for the Hawaii State Department of Health, Environmental Planning Office by G. Smith. March 1998)

24. Final Environmental Assessment for Fencing/Warning Signs and Demolition Work for FY87 MCON Project P-106, Land Acquisition, Waikane, Oahu, Hawaii (Belt Collins & Associates 1991)

25. MCBH Pest Management Plan, Volume 1, Kaneohe Bay (PACNAVFACENGCOM Aug 2000)

26. Environmental Study of Nuʻupia Ponds Wildlife Management Area, Marine Corps Base Hawaiʻi, Kaneʻohe Bay (Prepared for Department of Army, United States Army Engineer District, Pacific Ocean Division, April 1995)

27. Cave Faunal Survey and Environmental Assessment for the Reburial of the Mokapu Collection Aboard Marine Corps Base Hawaii, Kaneohe Bay, Oahu, Hawaii, Final Report (Howarth and Preston 2005)

28. Biological Resources Report for a Proposed Marine Corps Jungle Warfare Training Area in Waikane Valley on Windward Oʻahu (Guinther et al. 2003)

29. Nonindigenous Marine Species in Kaneʻohe Bay, Oʻahu, Hawaiʻi. (Coles et al. 2002)

30. GIS Mapping and Control of Invasive Species/ Erosion/Brushfire Control on MCBH Training Lands (GII 2004).

31. USFWS-led Marine Resources Survey (USFWS 2006, Draft, in prep.)

Table C1: Updated Species Inventory - Mammals and Reptiles

Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Mammals											
Marine											
Globicephalus macrorhynchus	Short-finned pilot whale				X						21
Megaptera novaeangliae	Humpback whale	Kahola	Endangered (US)	Migratory	X	X					4
Monachus schauinslandi	Hawaiian monk seal	'Ilio-holo-i-ka-uaua	Endangered (US)	Endemic	X	X					4,5
Physeter catodon (P. macrocephalus)	Sperm whale		Endangered (US)		X						21
Stenella longirostris	Hawaiian spinner dolphin				X	X					4
Terrestrial											
Canis familiaris	Feral dog			Introduced	X	X	X	X	X		1,5,20,28
Felis catus (F. domesticus)	Feral cat			Introduced	X	X	X	X	X	X	3,5,6,20,28
Herpestes javanicus (H. auropunctatus)	Small Indian mongoose			Introduced	X	X	X	X	X	X	5,13,20,28
Mus musculus (M. domesticus)	House mouse			Introduced	X	X		X	X		5,20,25
Oryctolagus cuniculus	Feral/domestic rabbit			Introduced				X			3
Rattus exulans	Polynesian rat			Introduced				X	X		20
Rattus norvegicus	Norwegian rat			Introduced	X			X	X		20,25
Rattus rattus	Roof rat			Introduced	X			X	X		20,25
Rattus sp.	Rat			Introduced		X		X	X	X	3,5,20
Sus scrofa	Feral pig			Introduced		X	X	X	X	X	3,5,6,28
Reptiles											
Anolis carolinensis	Green anole lizard			Introduced				X	X		20
Bufo marinus	Cane toad, Giant toad, Bufo	Poloka		Introduced	X	X		X	X		6,13,20
Chelonia mydas	Green sea turtle	Honu	Threatened (US)	Migratory	X	X			X		4,5,6,20
Eretmochelys imbricata	Hawksbill sea turtle	`Ea	Endangered (US)	Migratory	X	X					4,5,6
Hemidactylus frenatus	House gecko			Introduced				X	X		20
Hemidactylus garnotii	Indo-pacific gecko, Fox gecko			Polynesian Introduction				X	X		20
Hemiphyllodactylus typus	Tree gecko			Indigenous?				X	X		20
Lampropholis delicata	Metallic skink			Introduced				X	X		20
Lepidodactylus lugubris	Mourning gecko			Indigenous?				X	X		20
Rana catesbeiana	Bullfrog	Poloka iana		Introduced	X		X				13,28
Rana spp.	Frog			Introduced		X					6
Rhamphotyphlops braminus (Typhlina bramina)	Blind snake			Introduced				X	X		20

Table C2: Updated Species Inventory - Birds

Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Birds											
Waterbirds											
Anas platyrhynchos	Mallard			Introduced	X					X*	1,12
Anas wyvilliana	Hawaiian duck	Koloa moali	Endangered (US)	Endemic	X	X					5,6
Ardea herodios	Great blue heron			Visitor	X						1
Bubulcus ibis	Cattle egret			Introduced	X	X		X	X	X*	1,5,6,20
Egretta caerulea	Little blue heron			Visitor	X						1
Egretta thula	Snowy egret			Visitor	X						1
Fulica alai	Hawaiian coot	'Alae ke'oke'o	Endangered (US)	Endemic	X	X					5,6
Gallinoula chloropus sandvicensis	Hawaiian gallinule, Common moorhen	'Alae 'ula	Endangered (US)	Endemic	X	X					5,6
Himantopus rnexicanus knudseni	Hawaiian stilt	Ae'o	Endangered (US)	Endemic	X	X					5,6,11,31
Nycticorax nycticorax hoactli	Black-crowned night heron	'Auku'u		Indigenous	X	X					5,6,11,31
Land birds											
Acridotheres tristis	Common myna			Introduced	X	X	X	X	X	X	1,4,5,12,20,28
Alauda arvensis	Skylark			Introduced	X	X					1,5,6,12
Amandava amandava	Red avadavat			Introduced		X					5
Asio flammeus sandwichensis	Short-eared owl	Pueo	Endangered (HI)	Endemic	X	X	X	X	X		1,3,5,12,20
Cardinalis cardinalis	Northern cardinal			Introduced	X	X	X	X	X	X	3,4,5,6,12,20,28
Carpodacus mexicanus	House finch			Introduced	X	X	X	X	X	X*	1,4,5,12,20,28
Cettia diphone	Japanese bush warbler			Introduced	X	X	X	X			5,6,20,28
Columba livia	Rock dove/pigeon			Introduced	X	X		X	X	X*	1,5,6,12,20
Copsychus malabaricus	White-rumped shama			Introduced	X	X	X	X			1,4,5,6,12,20,28
Estrilda astrild	Common waxbill			Introduced	X	X	X			X	4,5,6,28
Euplectes franciscanus	Orange bishop			Introduced	X						1
Francolinus erckelii	Erckel'sfrancolin			Introduced	X					X	4
Gallus gallus	Red junglefowl			Introduced			X				28
Garrulax canorus	Hwamei			Introduced		X	X				5,28
Geopelia striata	Barred dove, zebra dove			Introduced	X	X	X	X	X	X*	3,4,5,6,12,20,28
Hemignathus chloris	O'ahu 'amakihi	O'ahu 'Amakihi		Endemic				X			2,20
Leiothrix lutea	Red-billed leiothrix			Introduced	X	X	X				1,5,12,28
Lonchura malabarica	Warbling silverbill, Indian silverbill			Introduced		X					6
Lonchura atricalpilla (L. malacca)	Chestnut munia			Introduced		X					6

Table C2: Updated Species Inventory - Birds

Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Birds											
Lonchura punctulata	Ricebird, nutmeg mannikin			Introduced	X	X	X	X	X		1,3,4,5,12,20
Callipepla californica (Lophortyx californicus)	California quail			Introduced	X						1,12
Mimus polyglottos	Northern mockingbird			Introduced	X	X		X	X		1,4,5,6,12,20
Padda oryzivora	Java sparrow			Introduced	X	X		X	X	X*	1,5,6
Paroaria coronata	Red-crested cardinal			Introduced	X	X		X	X		4,5,6,12,20
Passer domesticus	House sparrow			Introduced	X	X		X	X		1,5,6,12,20
Phasianus colchicus	Ring-necked pheasant			Introduced	X	X	X				1,5,6,12,28
Pycnonotus cafer	Red-vented bulbul			Introduced	X	X	X	X	X	X	1,4,5,6,12,20,28
Pycnonotus jocosus	Red-whiskered bulbul			Introduced			X				28
Serinus mozambicus	Yellow-fronted canary			Introduced		X					5,6
Sicalis flaveola	Saffron finch			Introduced		X					6
Streptopelia chinensis	Spotted dove			Introduced	X	X	X	X	X		3,5,6,12,20,28
Tyto alba	Common barn owl			Introduced	X	X		X	X		1,5,6,12,20
Zosterops japonicus	Japanese white-eye			Introduced	X	X	X	X	X	X*	3,4,5,6,12,20,28
Seabirds											
Anous minutus melanogenys	Black noddy	Noio		Endemic	X						1,12,31
Anous stolidus pileatus	Brown noddy	Noio koha		Indigenous	X						1,4,12
Fregata minor palmerstoni	Great frigatebird	'Iwa		Indigenous	X	X					1,6
Gygis alba	White tern	Manu-o-ku		Indigenous	X						1,12
Phaethon lepturus	White-tailed tropicbird	Koa'e kea		Indigenous	X						4,12
Phaethon rubricauda	Red-Tailed Tropicbird	Koa'e 'ula		Indigenous	X						12
Phoebastria immutabilis (Diomedea immutablis)	Laysan albatross	Moli		Indigenous	X	X					4,5
Puffinus auricularis newelli	Newell's/Townsend's shearwater	'A'o	Threatened (US)	Indigenous	X	X					5,6
Puffinus pacificus chlororhunchus	Wedge-tailed shearwater	'Ua'u kani		Indigenous	X	X					5,6,30
Sterna fuscata	Sooty tern	'Ewa'ewa		Indigenous	X						1
Sula dactylatra	Masked booby	'A		Indigenous	X	X					1,6
Sula leucogaster	Brown booby	'A		Indigenous	X	X					1,6,12
Sula sula rubripes	Red footed booby	'A		Indigenous	X	X					1,6,12,30

Table C2: Updated Species Inventory - Birds

Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Birds											
Migratory											
Anas acuta	Northern pintail	Koloa mapu	Protected	Migratory	X	X					5,12
Anas americana	American wigeon		Protected	Migratory	X						1,12
Anas clypeata	Northern shoveler	Koloa moha	Protected	Migratory	X	X					1,5,12
Anas crecca	Green-winged teal		Protected	Migratory	X						1,12
Arenaria interpres	Ruddy turnstone	'Akekeke	Protected	Indig/Mig	X	X			X		1,2,5,12,20,30
Aythya affinis	Lesser scaup		Protected	Migratory	X						1,12
Aythya marila	Greater scaup		Protected	Migratory	X						1
Branta bernicla	Brant		Protected	Migratory	X						1
Branta canadensis	Canada goose		Protected	Migratory	X						4
Bucephala albeola	Bufflehead		Protected	Migratory	X						1
Calidris alba	Sanderling	Hunakai	Protected	Indig/Mig	X	X			X		2,5,6,20,31
Calidris alpina	Dunlin		Protected	Migratory	X						1,12
Catoptrophorus semipalmatus	Willet		Protected	Migratory	X						1
Charadrius semipalmatus	Semipalmated plover		Protected	Migratory	X						1,12
Falco peregrinus	Peregrine falcon		Protected	Migratory	X						1
Gallinago gallinago	Common snipe		Protected	Migratory	X						1,12
Heteroscelus incanus	Wandering tattler	'Ulili	Protected	Indig/Mig	X	X			X		1,2,5,6,20,31
Larus atricilla	Laughing gull		Protected	Migratory	X						1,12
Larus delawarensis	Ring-billed gull		Protected	Migratory	X						1
Larus pipixcan	Franklin's gull		Protected	Migratory	X						1,12
Limnodromus spp.	Dowitcher		Protected	Migratory	X						1,12
Lophodytes cucullatus	Hooded merganser		Protected	Migratory	X						1
Numenius phaeopus	Whimbrel		Protected	Migratory	X						1
Numenius tahitiensis	Bristle-thighed curlew	Kioea	Protected	Migratory	X						1
Pandion haliaetus	Osprey		Protected	Migratory	X						1,12
Pluvialis fulva	Pacific golden plover	Kolea	Protected	Indig/Mig	X	X		X	X		3,5,6,20,30
Pluvialis squatarola	Black-bellied plover		Protected	Migratory	X						1,12
Sterna antillarum	Least tern		Protected	Migratory	X						1,12
Sterna bergii	Great crested tern		Protected	Migratory	X						1
Sterna caspia	Caspian tern		Protected	Migratory	X						1,12
Sterna fuscata	Sooty tern	'Ewa'ewa	Protected	Migratory	X						1,12
Tringa flavipes	Lesser yellowlegs		Protected	Migratory	X						1,12
Tringa melanoleuca	Greater yellowlegs		Protected	Migratory	X						1,12

Table C3: Updated Species Inventory - Fish

Family	Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Source Code
						MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Fish												
Acanthuridae	*Acanthurus achilles*	Achilles tang	Paku`iku`i			X	X					1,5,6,31
Acanthuridae	*Acanthurus blochii*	Ringtail surgeonfish	Pualu				X					5,6,31
Acanthuridae	*Acanthurus dussumieri*	Eyestripe surgeonfish	Palani			X						1,31
Acanthuridae	*Acanthurus glaucopareius*	Lesson's, orange-tail surgeon fish				X	X					1,4,5,6
Acanthuridae	*Acanthurus guttatus*	White-spotted surgeon fish, spotted tang	Api			X						1,31
Acanthuridae	*Acanthurus leucopareius*	Whitebar surgeonfish	Maikoiko			X	X					1,5,31
Acanthuridae	*Acanthurus mata*	Ring-tail surgeon fish	Pualu			X	X					1,6
Acanthuridae	*Acanthurus nigricans*	Goldrim tang				X						31
Acanthuridae	*Acanthurus nigrofuscus*	Brown surgeon, lavendar tang	Mai`i`i			X	X					1,5,6,31
Acanthuridae	*Acanthurus nigroris*	Blueline surgeon	Maiko			X	X					1,5,6,8,31
Acanthuridae	*Acanthurus olivaceus*	Orangespot surgeonfish	Na`ena`e			X	X					1,6,31
Acanthuridae	*Acanthurus triostegus*	Convict tang	Manini			X	X					1,5,31
Acanthuridae	*Acanthurus xanthopterus*	Yellowfin surgeonfish	Pualu			X						1
Acanthuridae	*Ctenochaetus hawaiiensis*	Chevron tang, black surgeon fish	Kole no kaheo			X						1
Acanthuridae	*Ctenochaetus strigosus*	Yellow-eyed, gold-ring surgeonfish	Kole			X	X					1,5,31
Acanthuridae	*Naso brevirostris*	Pale-tail, spotted unicorn fish	Kala lolo			X						1,31
Acanthuridae	*Naso hexacanthus*	Sleek, six-spined surgeon	`Opelu kala			X	X					1,6,11,13
Acanthuridae	*Naso lituratus*	Orange-spine surgeon fish	Umaumalei			X	X					1,5,6,31
Acanthuridae	*Naso unicornis*	Bluespine unicornfish	Kala			X						1,31
Acanthuridae	*Zebrasoma flavescens*	Yellow tang	Lau`ipala			X	X					1,5,31
Acanthuridae	*Zebrasoma veliferum*	Sail-fin tang	Maneoneo			X						1,31
Albulidae	*Albula spp.*	Bonefish	`O`io		Native	X						1
Antennariidae	*Antennarius commerson*	Commerson's frogfish				X						31
Apigonidae	*Apogon kallopterus*	Iridescent cardinalfish	`Upapalu makanui			X						1,31
Apigonidae	*Apogon spp.*	Cardinal fish	Uupapalu			X						1,31
Apigonidae	*Foa brachygramma*	Bay cardinalfish				X						30
Atherinidae	*Iso hawaiiensis*	Hawaiian surf sardine, small silverside				X						1
Aulostomidae	*Aulostomus chinensis*	Chinese trumpet fish	Nunu			X	X					1,5,6,30
Balistidae	*Balistes fuscus (polylepis)*	Finescale, Brown trigger fish				X						1
Balistidae	*Melicthys niger*	Black durgeon	Humuhumu `ele `ele			X	X					1,6,31
Balistidae	*Melicthys vidua*	Pinktail, Red-tailed trigger fish	Humuhumu hi`ukole			X	X					1,5,9,13,31

Table C3: Updated Species Inventory - Fish

Family	Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Source Code
						MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Fish												
Balistidae	*Rhinecanthus aculeatus*	Lagoon, black-bar trigger fish	Humuhumu nukunuku apua`a			X						8,9,13,31
Balistidae	*Rhinecanthus rectangulatus*	Reef triggerfish	Humuhumu nukunuku apua`a				X					6,31
Balistidae	*Sufflamen bursa*	Lei trigger fish	Humuhumu lei			X						1,31
Balistidae	*Sufflamen fraenatus*	Bridled triggerfish	Humuhumu mimi									31
Balistidae	*Xanthichthys mento*	Red-tail, cross-hatch				X						1
Belonidae	*Ablennes hians*	Gaping needle fish	`Aha			X						1
Belonidae	*Belone platyura (Platybelone argalus)*	Keel-tailed needle fish	`Aha				X					6
Belonidae	*Strongylura appendiculata*	Needle fish	`Aha			X	X					1,6
Belonidae	*Strongylura gigantea*	Giant needle fish	`Aha			X						1
Blenniidae	*Blennica gibbifrons*					X						31
Blenniidae	*Cirripectes vanderbilti*	Scarface blenny	Pao`o		Endemic	X						1,31
Blenniidae	*Exallias brevis*	Shortbodied blenny	Pao`o kauila			X						1,31
Blenniidae	*Istiblennius gibbifrons*	Hump-head blenny				X						1
Blenniidae	*Istiblennius zebra*	Zebra blenny	Pao`o lehei		Endemic	X						1
Blenniidae	*Plagiotremus goslinei*	Gosline's fang blenny			Endemic	X	X					1,6,31
Blenniidae	*Plagiotremus ewaensis*	Ewa fangblenny			Endemic	X						31
Blenniidae		Blenny	Pao`o			X						1
Bothidae	*Bothus mancus*	Peacock flounder	Paki`i		Native	X	X					1,6
Bothidae	*Bothus spp.*	Flounder	Paki`i			X						1
Bothidae		Lefteye flounder				X						1
Caracanthidae	*Caracanthus typicus*	Hawaiian velvetfish			Endemic	X						1,31
Carangidae	*Alectis ciliaris*	Thread-fin jack	Ulua kihi kihi			X						1
Carangidae	*Alectis indicus*	Indian thread-fin Jack	Ulua kihi kihi			X						1
Carangidae	*Carangoides ferdau*	Barred jack	Ulua `omilu			X						1
Carangidae	*Carangoides sp.*	White jack				X						11
Carangidae	*Caranx ignobilis*	White jack, Trevelly	Aukea		Native	X						1
Carangidae	*Caranx lugubris*	Black Jack				X						1,12
Carangidae	*Caranx mate*	Yellow-tailed scad	`Omaka			X						1,12
Carangidae	*Caranx melampygus*	Blue-fin trevally, Blue jack	`Omilu nukumoni			X						1,31
Carangidae	*Caranx sexfasciatus*	Big-eye trevally, six-banded jack	Pake ulua			X	X					1,6,9,13
Carangidae	*Decapterus macarellus*	Mackeral scad				X						31
Carangidae	*Decapterus pinnulatus*	Mackeral scad	Opelu			X	X					1,6,8
Carangidae	*Gnathanodon speciosus*	Golden trevally, yellow jack	Ulua pa`opa`o			X	X					1,6
Carangidae	*Naucrates ductor*	Pilot fish				X						1
Carangidae	*Scombroides laysan*	Leatherback	Lai		Native	X						1
Carangidae	*Selar crumenopthalmus*	Big-eye scad	Akule			X	X					1,6

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Fish												
Carangidae	*Seriola dumerili*	Amber jack	Kahala			X						1
Carangidae		Jack				X						1
Carcharhinidae	*Carcharhinus amblyrhynchos*	Grey reef shark	Mano			X						1
Carcharhinidae	*Carcharhinus galapagoensis*	Galapagos shark	Mano pa`ele			X						1
Carcharhinidae	*Carcharhinus melanopterus*	Blacktip reef shark	Mano			X						1
Carcharhinidae	*Carcharinus milberti*	Milbert's sandbar shark				X						1
Carcharhinidae	*Galeocerdo cuvieri*	Tiger shark	Mano pa`ele			X						1
Carcharhinidae	*Pterolamiops longimanus*	Oceanic whitetip shark				X	X					1,5,6
Carcharinidae	*Triaenodon obesus*	White-tipped reef shark	Lalakea			X						1
Chaetodontidae	*Chaetodon auriga*	Threadfin butterflyfish	Kikakapu			X						1,31
Chaetodontidae	*Chaetodon citrinellus*	Speckled, Lemon butterflyfish	Lauhau			X						1,31
Chaetodontidae	*Chaetodon ephippium*	Saddleback butterflyfish	Kikakapu			X						1,31
Chaetodontidae	*Chaetodon fremblii*	Bluestripe butterflyfish	Kikakapu kahuhili		Endemic	X	X					1,5,6,31
Chaetodontidae	*Chaetodon lineolatus*	Lined butterflyfish	Kikakapu kahuhili			X						1,31
Chaetodontidae	*Chaetodon lunula*	Racoon butterflyfish	Kikakapu			X						1,31
Chaetodontidae	*Chaetodon lunulatus*	Oval butterflyfish				X						31
Chaetodontidae	*Chaetodon miliaris*	Milletseed butterflyfish	Lau wiliwili		Endemic	X	X					1,5,31
Chaetodontidae	*Chaetodon multicinctus*	Multi-banded, pebbled butterflyfish	Kikakapu		Endemic	X	X					1,5,31
Chaetodontidae	*Chaetodon ornatissimus*	Ornate butterfly fish	Kikakapu kahuhili			X						1,31
Chaetodontidae	*Chaetodon quadrimaculatus*	Four-spot butterfly fish	Lauhau			X						1,31
Chaetodontidae	*Chaetodon spp.*	Butterfly fish				X	X					4,5,6
Chaetodontidae	*Chaetodon trifasciatus*	Three-band butterfly fish				X	X					1,6
Chaetodontidae	*Chaetodon unimaculatus*	One-spot butterfly fish	Kikakapu			X						1,31
Chaetodontidae	*Forcipiger spp.*					X						31
Chaetodontidae	*Forcipiger flavissimus*	Long-nose butterflyfish	Lauwiliwili nukunukuku oi`oi			X						1,31
Chaetodontidae	*Forcipiger longirostris*	Long-nose butterflyfish	Lauwiliwilinukunuku'oi'oi			X						31
Chaetodontidae	*Heniochus acuminatus*	Black and white butterfly				X						18
Chaetodontidae	*Holacanthus arcuatus*	Black-band angel fish				X						18
Chanidae	*Chanos chanos*	Milkfish	Awa		Indigenous	X						1
Cichlidae	*Oreochromis mossambica*	Mossambique tilapia			Introduced	X						1,23
Cichlidae	*Sarotheradon mossambicus*	Blackjaw tilapia			Introduced	X	X					1,5,6
Cichlidae	*Tilapia spp.*					X						31
Cirrhitidae	*Amblycirrhitus bimacula*	Two-spot hawk fish	Piliko`a			X						1
Cirrhitidae	*Cirrhitops fasciatus*	Redbar, banded hawk fish	Pilikoa			X						1,31
Cirrhitidae	*Cirrhitus pinnulatus*	Stocky, speckled hawkfish	Po`op`a`a			X						1,31
Cirrhitidae	*Paracirrhites arcatus*	Arceye hawk fish	Piliko`a			X						1,31

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Fish												
Cirrhitidae	*Paracirrhites forsteri*	Blackside hawk fish	Hilu piliko`a			X						1,31
Clupeidae	*Sardinella marquesensis*	Marquesan sardine	Makiawa		Introduced	X	X					1,6,8,13
Clupeidae	*Spratelloides delicatus*	Delicate round herring, sprat	Piha			X						1
Cobitidae	*Misgurnus anguillicaudatus*	Dojo loach			Introduced	X						1
Congridae	*Conger cinereus*	Mustache conger eel, white eel	Puhi uha			X						1
Dactylopteridae	*Dactyloptena orientalis*	Helmet flying gurnard	Loloa`u			X						1
Dasyatidae	*Dasyatis spp.*	Sting ray	Hihimanu			X						1
Diodontidae	*Diodon holacanthus*	Spiny pufferfish, long-spine	Kokala			X						1
Diodontidae	*Diodon hystrix*	Spot-fin, giant porcupine fish	Kokala			X						1
Eleotridae	*Eleotris sandwicensis*	Sleeper fish	O`opu `akupa		Endemic	X	X*	X				1,3,23
Elopidae	*Elops hawaiensis*	Hawaiian tarpon, Hawaiian ladyfish	Awa`aua		Native	X						13
Engraulidae	*Encrasicholina purpurea*	Hawaiian anchovy	Nehu		Endemic		X					6
Engraulidae	*Stolephorus buccaneer (Encrasicholina punctifer)*	Buccaneer, Round-headed anchovy				X						1
Exocoetidae		Flying fish	Malolo			X						1
Fistularidae	*Fistularia commersonii*	Blue-spotted cornetfish	Nunu peke			X						1,31
Gobiidae	*Gobiidae spp.*					X						31
Gobiidae	*Asterropteryx semipunctatus*	Half spotted goby, starry goby	`O`opu			X	X					1,8,9,13,31
Gobiidae	*Awaous guamensis*	Goby	O`opu nakea		Endemic		X	X				5,6,28
Gobiidae	*Bathygobius coalitus*	Basalt goby	`O`opu		Native	X						1
Gobiidae	*Chonophorus stamineus*	Common goby	`O`opu			X	X					1,6
Gobiidae	*Coryphopterus spp.*	gobies	`O`opu			X						31
Gobiidae	*Eviota epiphanes*	Divine dwarf	`O`opu			X						1
Gobiidae	*Gnatholepis anjerensis*	Eye bar goby				X						1
Gobiidae	*Kelloggella oligolepis*	Scaleless goby				X						1
Gobiidae	*Oxyurichthys lonchotus*	Pointed-tail goby	`O`opu-kai		Native		X					6
Gobiidae	*Psilogobius mainlandi*	Hawaiian shrimp burrow goby			Endemic	X						1,31
Gobiidae	*Stenogobius hawaiiensis*	Goby	O`opu naniha		Indigenous	X	X*	X				1,3,23
Hemiramphidae		Half-beak	Ihe`ihe			X						1
Holocentridae	*Myripristis spp.*	Mempachi, soldierfish	`U`u			X	X					6,11,31
Holocentridae	*Myripristis berndti*	Bigscale soldierfish	`U`u			X						31
Holocentridae	*Myripristis kuntee*	Epaulette soldierfish	`U`u			X						31
Holocentridae	*Neoniphon sammara*	Spot-fin, Blood-spot squirrel fish				X						1,31
Holocentridae	*Sargocentron diadema*	Crown squirrel fish	`Ala`ihi			X						11

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Fish												
Holocentridae	*Sargocentron microstomus*	Small-mouth squirrel fish				X						1
Holocentridae	*Sargocentron punctatissimum*	Peppered Squirrel fish	`Ala`ihi			X						1,31
Holocentridae	*Sargocentron - spiniferum*	Saber Squirrel fish	`Ala`ihi			X						1
Holocentridae	*Sargocentron - xantherythrum*	Yellow-red squirrel fish				X						1,31
Kuhliidae	*Kuhlia sandvicensis*	Hawaiian flagtails	`Aholehole		Endemic	X		X				1,3
Kuhliidae	*Kuhlia taeniura*	Banded flag-tail	`Aholehole			X	X					5
Kyphosidae	*Kyphosus spp.*					X						31
Kyphosidae	*Kyphosus bigibbus*	Brown chub, rudder fish	Nenue			X						1,31
Kyphosidae	*Kyphosus cinerascens*	Highfin rudderfish	Nenue			X						31
Kyphosidae	*Kyphosus vaigiensis*	Lowfin chub, rudder fish	Nenue pala			X						31
Labridae	*Anampses chrysocephalus*	Psychedelic, red-tail wrasse	Opule		Endemic	X						1,31
Labridae	*Anampses cuvier*	Spotted wrasse, pearl wrasse	Opulepule lauli		Endemic		X					5,6,31
Labridae	*Bodianus bilunulatus*	Hawaiian hogfish	`A`awa			X						1,9,13,31
Labridae	*Cheilinus rhodochrous (Oxycheilinus unifasciatus)*	Ringtail wrasse	Po`ou			X						4
Labridae	*Coris ballieui*	Lined coris	Mālamalama		Endemic	X						31
Labridae	*Cheilio inermis*	Cigar wrasse, mongoose wrasse	Kupoupou			X						1,31
Labridae	*Coris flavovittata*	Yellowstripe coris	Hihalea hilu		Endemic		X					6,31
Labridae	*Coris gaimard*	Yellowstripe coris	Hinalea akilolo			X						1,31
Labridae	*Coris venusta*	Elegant coris	Hīnālea		Endemic	X						31
Labridae	*Coris spp.*	Wrasse				X						1
Labridae	*Cymolutes lecluse*	Sharp-headed wrasse				X						31
Labridae	*Gomphosus varius*	Bird wrasse	Hinalea `i`iwi			X						1,8,13,31
Labridae	*Halicoeres ornatissimus*	Ornate wrasse	Ohua paawela			X						1,31
Labridae	*Hemipteronotus spp.*		Lae nihi			X	X					1,6
Labridae	*Labroides phthirophagus*	Hawaiian cleaner wrasse	Hinalea		Endemic	X	X					5,6,8,13,31
Labridae	*Macropharyngodon geoffrey*	Black wrasse				X						31
Labridae	*Novaculichthys taeniourus*	Rock mover wrasse	Lae nihi			X						1,31
Labridae	*Oxycheilinus bimaculatus*	Two-sport wrasse				X						31
Labridae	*Oxycheilinus unifasciatus*	Ringtail wrasse	po'ou			X						31
Labridae	*Pseudocheilinus octotaenia*	Eight-lined wrasse	Aleihi lakea			X	X					1,6,31
Labridae	*Stethojulis balteata*	Green or belted wrasse	`Omaka		Endemic	X	X					5,8,9,13,31
Labridae	*Thallasoma ballieui*	Blacktail wrasse	Hinalea luahine		Endemic	X	X					1,5,31
Labridae	*Thallasoma duperrey*	Saddle wrasse	Hinalea lauwili		Endemic	X	X					1,5,9,13,31
Labridae	*Thallasoma fuscum*	Brown, brick wrasse	`Awela			X						1
Labridae	*Thallasoma purpureum*	Surge wrasse				X						31

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Fish												
Labridae	*Thallasoma lunare*	Moon wrasse				X						1
Labridae	*Thallasoma trilobatum*	Christmas wrasse	`Awela			X	X					1,5,31
Labridae	*Xyrichtys pavo*	Peacock razorwrasse	Laenihi			X	X					1,5,6,31
Lethrinidae	*Monotaxis grandoculis*	Bigeye emporer, Grand-eyed porgy	Mu			X						1,31
Lutjanidae	*Aphareus furca*	Small-tooth jobfish, Fork-tailed snapper	Wahanui			X	X					1,5,6
Lutjanidae	*Aprion virescens*	Green jobfish	Uku			X						1,31
Lutjanidae	*Lutjanus fulvus*	Blacktail snapper	Toau		Introduced	X						1,31
Lutjanidae	*Lutjanus kasmira*	Blue-line snapper	Ta`ape		Introduced	X						1,31
Malacanthidae	*Malacanthus brevirostrus*	flagtail filefish	maka`a			X						31
Microcanthidae	*Microcanthus strigatus*	Stripey				X	X					1,6,8
Microdesmidae	*Gunnelichthys curiosus*	Curious wormfish				X						31
Mobulidae	*Manta birostris*	Manta ray	Hahalua			X	X					1,6
Monocanthidae	*Aluterus monoceros*	Unicorn filefish, one-spined leatherjacket				X						1,8,13
Monocanthidae	*Aluterus scriptus*	Scrawled filefish	Oili lepa, loulu			X						1
Monocanthidae	*Cantherhines dumerilii*	Barred filefish	`O`ili			X						31
Monocanthidae	*Cantherhines sandwichiens*	Squaretail filefish	`O`ili lepa			X						31
Monocanthidae	*Osbeckia scripta*	Blue-lined leather fish	Oilipa			X						1
Monocanthidae	*Pervagor spilosoma*	Fantail filefish	`O`ili `uwi`uwi			X						1,31
Muglidae	*Mugil cephalus*	Striped mullet	`Ama`ama		Native	X						1
Muglidae	*Neomyxus chaptalli*	Mullet	Uouoa			X	X					1,6
Muglidae	*Neomyxus leucisus*	Sharp-nose, False mullet	Uouoa			X						11
Mulllidae	*Mulloidichthys flavolineatus*	Yellowstripe goatfish	Weke`a		Indo-Pacific	X	X					1,5,18,31
Mulllidae	*Mulloidichthys vanicolensis*	Yellowfin goatfish	Weke ula				X					6,31
Mulllidae	*Parupeneus bifasciatus*	Doublebar goatfish	Munu			X	X				X	8,11,13,31
Mulllidae	*Parupeneus cyclostomas*	Gold saddle, blue goatfish	Moano kea			X	X					1,5,31
Mulllidae	*Parupeneus multifasciatus*	Manybar goat	Moano			X	X					1,6,31
Mulllidae	*Parupeneus pleurostigma*	Sidespot goatfish	Malu			X						8,9,13,31
Mulllidae	*Parupeneus porphyreus*	White saddle, red goat fish	Kumu		Endemic	X						1,31
Mulllidae	*Upeneus taeniopterus*	Band-tailed goat fish, nightmare weke	Weke pue`o				X					5
Muraenidae	*Echnida nebulosa*	Snowflake moray	Puhi kapa			X						1
Muraenidae	*Gymnomuraena zebra*	Zebra moray	Puhi			X						8,13
Muraenidae	*Gymnothorax flavimarginatus*	Yellow margin moray eel	Puhi paka			X						1,31
Muraenidae	*Gymnothorax javanicus*	Giant moray	Puhi			X						31

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Fish												
Muraenidae	*Gymnothorax meleagris*	Whitemouth moray, spotted eel	Puhi `oni`o			X	X					1,6,31
Muraenidae	*Gymnothorax petelli*	Yellow-headed moray	Puhi			X	X					1,6,8
Muraenidiae	*Gymnothorax rueppelliae*	Yellow head moray eel	Puhi`ou			X						31
Muraenidae	*Gymnothorax steindachneri*	Steindachner's moray	Puhi		Endemic	X						1
Muraenidae	*Gymnothorax undulatus*	Undulated, common moray	Puhi lau milo			X						1
Muraenidae	*Scuticaria tigrina*	Tiger moray	Puhi			X						1
Muraenidae		Moray eel				X						1
Myliobatidae	*Aetobatis narinari*	Spotted eagle ray	Hihimanu			X						1
Nomeidae	*Nomeus gronovii*	Man-o-war fish				X						1
Ophichthidae	*Ophichthus spp.*	Snake eel	Puhi			X	X					1,4,6
Opiphidae	*Brotula spp.*	Brotula, cusk eel	Pala hoana			X						1
Ostraciidae	*Lactoria fornasini*	Thornback, five-horned cow fish	Makukana		Native	X						1
Ostraciidae	*Ostracion maleagris*	Speckled box fish, spotted trunkfish	Moa			X						1
Poeciliidae	*Gambusia affinis*	Mosquitofish			Introduced	X						1
Poeciliidae	*Mollienisia latipunctata*	Sailfin molly			Introduced	X						1
Poeciliidae	*Poecilia mexicana*	Top minnow, Short-fin Molly, Mexican Molly			Introduced	X	X					1,4,6
Poeciliidae	*Poecilia reticulata*	Guppy, rainbow fish, millions fish			Introduced	X		X				1,28
Poeciliidae	*Poecilia sphenops*	Liberty molly			Introduced	X						1
Poeciliidae	*Poecilia vittata*	Cuban molly			Introduced		X					6
Poeciliidae	*Xiphophorus helleri*	Green swordtail						X				28
Polynemidae	*Polydactylus sexfilis*	Thread-fin	Moi				X					6
Pomacanthidae	*Centropyge potteri*	Potter's angel fish			Endemic	X						1,31
Pomacanthidae	*Desmoholacanthus*	Bandit angel fish			Endemic	X						1
Pomacentridae	*Abudefduf abdominalis*	Hawaiian sergeant, green damsel	Mamamo		Endemic	X	X					1,4,5,8,31
Pomacentridae	*Abudefduf sordidus*	Blackspot sergeant, gray damsel	Kupipi			X	X					1,5,6
Pomacentridae	*Abudefduf vaigiensis*	Indo-Pacific sergeant	mamo			X						31
Pomacentridae	*Chromis agilis*	Agile chromis				X						31
Pomacentridae	*Chromis hanui*	Chocolate dip damselfish			Endemic							31
Pomacentridae	*Chromis leucura*	White-tail chromis				X	X					1,6
Pomacentridae	*Chromis ovalis*	Oval chromis			Endemic	X						1,31
Pomacentridae	*Chromis spp.*	Damselfish				X						1

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Fish												
Pomacentridae	*Chromis vanderbilti*	Blackfin chromis, vanderbilt's chromis				X						1,31
Pomacentridae	*Chromis verator*	Threespot chromis			Endemic	X						4,31
Pomacentridae	*Dascyllus albisella*	Hawaiian spotted damsel, domino damselfish, Hawaiian dascyllus	Alo`ilo`i		Endemic	X	X					1,5,6,31
Pomacentridae	*Plectroglyhidodon imparipennis*	Brighteye damsel				X	X					1,5,6,31
Pomacentridae	*Plectroglyhidodon johnstonianus*	Johnston damselfish				X	X					1,5,6,31
Pomacentridae	*Plectoglyhidodon sindonis*	Rock damselfish				X						31
Pomacentridae	*Stegastes fasciolatus*	Pacific gregory				X	X					1,5,31
Priacanthidae	*Heteropriacanthus cruentatus*	Glass-eye, Big-eye	`Aweoweo			X						1
Priacanthidae	*Priacanthus meeki*	Hawaiian bigeye	āweoweo			X						31
Scaridae	*Calotomus carolinus*	Stareye parrotfish	Ponuhunuhu			X						8,9,13,31
Scaridae	*Chlorurus perspicillatus*	Spectacled, large blue parrot fish	Uhu uliuli		Endemic	X						1,31
Scaridae	*Chlorurus sordidus*	Daisy, bullethead parrot fish	Uhu			X						1,9,11
Scaridae	*Scaridae spp.*	Parrotfish				X						1
Scaridae	*Scarus dubius*	Regal parrot fish	Lauia		Endemic	X						1,31
Scaridae	*Scarus formosus*	Formosan parrot fish				X						1
Scaridae	*Scarus forsteri (psittacus)*	Forster's parrot fish (palenose)	Uhu			X						1
Scaridae	*Scarus psittacus*	Palenosed parrotfish	Uhu			X						31
Scaridae	*Scarus rubroviolaceus*	Redlip parrotfish	Uhu palukaluka			X						31
Scaridae	*Scarus spp.*	Juvenile Scarus				X						1,5
Scombridae	*Acanthocybium solandri*	Wahoo	Ono			X						1
Scombridae	*Auxis thazard*	Frigate mackeral	Ke`o ke`o			X						1,8
Scombridae	*Euthynnus affinis*	Bonito	Kawakawa			X						8
Scombridae	*Katsuwonus pelamis*	Skipjack tuna	Aku			X						1
Scombridae	*Sarda orientalis*	Striped bonito										
Scombridae	*Thunnus albacares*	Yellow-fin tuna	Ahi			X						1
Scorpaenidae	*Dendrochirus barberi*	Hawaiian lionfish			Endemic	X						1,31
Scorpaenidae	*Pterois sphex*	Hawaiian turkeyfish	Nohu pinao		Endemic	X						1
Scorpaenidae	*Scorpaenodes parvipinnis*	Low fin scorpion fish				X						1
Scorpaenidae	*Scorpaenopsis cacopsis*	Titan scorpionfish, Jenkin's	Nohu		Endemic	X						1
Scorpaenidae	*Scorpaenopsis diabolus*	Devil scorpionfish	Nohu omakaha			X						1
Scorpaenidae	*Sebastapistes ballieui*	Spotfish scorpionfish			Endemic	X						31

Table C3: Updated Species Inventory - Fish

Family	Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Source Code
						MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Fish												
Scorpaenidae	*Sebastapistes corniorta*	Speckled scorpion fish	Nohu			X						1,31
Scorpaenidae	*Taenianotus triacanthus*	Leaf scorpionfish	Nohu				X					6,31
Scorpaenidae		Scorpionfish				X						1,9,13
Serranidae	*Cephalopholis argus*	Peacock grouper	Roi		Introduced	X						1,31
Sphyaenidae	*Sphyraena barracuda*	Great barracuda	Kaku		Indigenous	X						1,31
Sphyaenidae	*Sphyraena helleri*	Heller's barracuda	Kawale`a			X						1
Sphyrnidae	*Sphyrna-lewini*	Hammerhead	Mano kihikihi			X						1
Syngnathidae	*Hippocampus kuda*	Sea horse		Threatened (US)		X						1
Syngnathidae		Pipe fish				X	X					1,5,6
Synodontidae	*Saurida gracilis*	Slender Lizardfish	`Ulae		Native	X						1,31
Synodontidae	*Synodus variegatus*	Reef, variegated lizardfish	`Ulae									31
Tetradontidae	*Arothron hispidus*	Stripedbelly puffer	`O`opu hue		Native		X					6,31
Tetradontidae	*Arothron meleagris*	White-spotted puffer	`O`opu hue			X	X					1,5,31
Tetradontidae	*Canthigaster amboinensis*	Spider-eye puffer, ambon toby	Puu olai				X					6,31
Tetradontidae	*Canthigaster coronata*	Crowned toby	Puu olai			X						1,31
Tetradontidae	*Canthigaster janthinopterus (jactator)*	White-spotted puffer				X	X					1,6,31
Tetradontidae	*Canthigaster rivulata*	maze puffer				X						31
Tripterygiidae	*Enneapterygius atriceps*	Hawaiian three-finned blenny, black-head blenny			Endemic	X						1,8,9,13
Zanclidae	*Zanclus cornutus*	Moorish idol	Kihikihi			X	X					1,5,6,31

X* = Recorded upstream of MCTAB in Smith, G. 1998. Biological Assessment and Habitat Characterization of Waimanalo Stream: Establishing Environmental Goals and a TMDL for Watershed Management. 36pp. Since these species are amphidromous (spend portions of their life cycle at sea) they must pass through MCTAB portions of Waimanalo Stream in order to be found in the upper regions where they were recorded. Thus, while they have not been recorded at MCTAB, they are included in this list.

Table C4: Updated Species Inventory - Invertebrates

Phylum	Class/Common Group	Scientific Name	Common Name	Hawaiian Name	Origin	Property					Invasive	Source Code
						MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Invertebrates												
Annelida	Polychaetes	*Capitella sp.*				X						11
Annelida	Polychaetes	*Eulalia sanguinea*			Introduced	X						29
Annelida	Polychaetes	*Hydroides elegans*			Introduced	X						29
Annelida	Polychaetes	*Myzobdella sp.?*	Fish leech					X				28
Annelida	Polychaetes	*Namalycastis abiuma*	Fresh water polychaete			X						13
Annelida	Polychaetes	*Polydora sp.*	Polychaetes			X						11
Annelida	Polychaetes	*Pomtolaios krausii*			Introduced	X						29
Annelida	Segmented worms	*Errantia spp.*				X						18
Annelida	Segmented worms	*Sabellastarte sanctijosephi*	Feather duster worm		Indo-Pacific	X						11,18,31
Annelida	Segmented worms	*Sabellastarte spectabilis*	Feather duster worm		Introduced	X						29
Annelida	Segmented worms	*Salmacina dysteri*	Sea frost worm		Introduced	X						29
Annelida	Segmented worms	*Sedentaria spp.*				X						18
Annelida		*Naineris laevigata*	Grube			X						11
Arthropoda	Amphipod	*Corophium insidiosum*				X						11
Arthropoda	Amphipod	*Elasmopus rapax*			Introduced	X						29
Arthropoda	Amphipod	*Leucothoe micronesiae*			Introduced	X						29
Arthropoda	Amphipod	*Paraleucothoe flindersi*			Introduced	X						29
Arthropoda	Amphipod	*Stenothoe gallensis*			Introduced	X						29
Arthropoda	Arachnida, spider	*Cheiracanthium diversum*	Pale leaf spider			X						13
Arthropoda	Arachnida, spider	*Oxyopidae spp.*	Lynx spider			X						13
Arthropoda	Arachnida, spider	*Phidippus audax*	Jumping spider			X						13
Arthropoda	Arachnida, spider	*Pholcidae sp.*	Cellar spider			X						27
Arthropoda	Arachnida, spider (aquatic)	*Tetragnatha sp.*	Web spinning spider			X						13
Arthropoda	Barnacles	*Balanus amphitrite*	Amphitrite's rock barnacle		Introduced	X						11,18
Arthropoda	Barnacles	*Balanus eburneus*			Introduced?*	X						18
Arthropoda	Barnacles	*Balanus sp.*	Barnacle			X						18
Arthropoda	Barnacles	*Balanus trigonus*	Trigonate barnacle		Indo-Pacific	X						18
Arthropoda	Barnacles	*Chthamalus proteus*			Introduced	X						29
Arthropoda	Box crabs	*Calappa bicornis*	Horned box crab			X						18
Arthropoda	Box crabs	*Calappa calappa*	Large box crab	Pokipoki	Indo-Pacific	X						18
Arthropoda	Box crabs	*Calappa hepatica*	Common box crab, Hepatic box crab	Pokipoki	Indo-Pacific	X						18
Arthropoda	Chilopoda, centipede	*Scolopendra subspinipes*	Giant centipede			X						27
Arthropoda	Coral shrimp	*Stenopus hispidus*	Banded coral shrimp			X						18
Arthropoda	Crabs	*Metopograpsus thukuhar*	Common mangrove graspid		Indigenous	X						11,13
Arthropoda	Crabs	*Pilumnus oahuensis*			Introduced	X						29
Arthropoda	Crabs	*Scylla serrata*	Samoan crab		Samoa (1920s)	X	X					6,9

Table C4: Updated Species Inventory - Invertebrates

Phylum	Class/Common Group	Scientific Name	Common Name	Hawaiian Name	Origin	Property					Invasive	Source Code
						MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Invertebrates												
Arthropoda	Crabs	*Thalamita crenulata*	Epibenthic crabs			X						9
Arthropoda	Crabs	*Thalamita edwardsi*				X						9,11
Arthropoda	Crabs	*Thalamita integra*				X						9,11
Arthropoda	Crabs	*Thalamita spp.*	Blue-claw swimming crab			X						11,13,18
Arthropoda	Crabs	*Xanthid sp.*				X						9
Arthropoda	Crangonidae	*Carangonidae spp.*				X						18
Arthropoda	Crustacea, Isopoda	*Ligia sp.*	Isopod			X						11,13
Arthropoda	Crustacea, Amphipoda	*Talorchestia sp.*	Sand flea			X						13
Arthropoda	Diploposa	*Spirobolellus spp.*	Millipede			X						27
Arthropoda	Frog crabs	*Ranina ranina*	Kona crab	Papa`i kua loa		X						18
Arthropoda	Ghost crabs	*Ocypode ceratophthalma*	Horned-eyed ghost crab			X						18
Arthropoda	Hermit crabs	*Paguridae spp.*				X						18
Arthropoda	Hippolytidae	*Hippolysmata kukenthali*	Leech?			X						18
Arthropoda	Hippolytidae	*Saron marmoratus*	Marbled shrimp		Indo-Pacific	X						18
Arthropoda	Insecta, dragonfly	*Anax junius*	Green darner			X						13
Arthropoda	Insecta, parasitic wasp	*Chacidoidea sp.*	Chalcid wasp			X						27
Arthropoda	Insects, dragonfly	*Crocothemis servilia*	Scarlet skimmer			X						13
Arthropoda	Insecta, cricket	*Cycloptilodes americanus*	Saussure's scaly cricket			X						27
Arthropoda	Insecta, true bug	*Cydnidae sp.*	Burrower bug			X						27
Arthropoda	Insecta, springtail	*Cyphoderus similis*	Springtail			X						27
Arthropoda	Insecta, beetle (aquatic)	*Enochrus nebulosa*	Water scavenger beetle			X						11
Arthropoda	Insecta, fly (aquatic)	*Ephydra riparia*	Shorefly			X						11,13
Arthropoda	Insecta, earwig	*Euborellia annulipes*	Ringlegged earwig			X						27
Arthropoda	Insecta, cockroach	*Euthyrrhapha pacifica*	Pacific cockroach			X						27
Arthropoda	Insecta, fly (aquatic)	*Hydrophorus pacificus*	Longlegged fly			X						11
Arthropoda	Insecta, moth	*Hyposmocoma sp.*			Endemic	X						27
Arthropoda	Insecta, damselfly	*Ischnura ramburii*	Rambur's forktail			X						13
Arthropoda	Insecta, butterfly	*Lampides boeticus*	Bean butterfly			X						11
Arthropoda	Insecta, psocid	*Liposcelis divinatorius*	Book louse			X						27
Arthropoda	Insecta, true bug (aquatic)	*Mesovelia mulsanti*	Water treader			X						13
Arthropoda	Insecta, dragonfly	*Orthemis ferruginae*	Roseate skimmer			X						13
Arthropoda	Insecta, grasshopper	*Oxya japonica*	Japanese grasshopper			X						13
Arthropoda	Insecta, dragonfly	*Pantala flavescens*	Globe skimmer			X						13
Arthropoda	Insecta, cockroach	*Periplaneta americana*	American cockroach			X						27
Arthropoda	Insecta, casebearing moth	*Phereoeca allutella*	Household casebearer			X						27
Arthropoda	Insecta, fly	*Phoridae sp.*	Phorid fly, coffin fly, scuttle fly			X						27
Arthropoda	Insecta, psocid	*Psyllipsocus minutissimus*	Bark louse			X						27

Table C4: Updated Species Inventory - Invertebrates

Phylum	Class/Common Group	Scientific Name	Common Name	Hawaiian Name	Origin	Property					Invasive	Source Code
						MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Invertebrates												
Arthropoda	Insecta, fly	*Pulicivora spp.*	Phorid fly, coffin fly, scuttle fly			X						27
Arthropoda	Insecta, cockroach	*Pycnoscelus indicus*	Burrowing cockroach			X	X	X	X	X	X	13
Arthropoda	Insecta, beetle	*Scolytinae sp.*	Bark and Ambrosia beetles			X						27
Arthropoda	Insecta, flea	*Siphonaptera sp.*	Flea			X						27
Arthropoda	Insecta, ant	*Solenopsis sp.*	Stinging ant, fire ant			X						27
Arthropoda	Insecta, fly (aquatic)	*Telmatoscopus albipunctatus*	Filter fly			X						11
Arthropoda	Insecta, true bug (aquatic)	*Trichocorixa blackburni*	Water boatman			X						11
Arthropoda	Insecta, true bug (aquatic)	*Trichocorixa reticulata*	Water boatman			X						11
Arthropoda	Insecta, beetle (aquatic)	*Tropisternus salsamentus*	Water scavenger beetle			X						11,13
Arthropoda	Land barnacles	*Chthamalus spp.*				X						13,18
Arthropoda	Leaf-jawed prawns	*Gnathophylum fasciolatum (G. americanum)*	Bumblebee shrimp			X						18
Arthropoda	Leaf-jawed prawns	*Hymenocera picta*	Harlequin shrimp		Indo/Eastern-Pacific	X						18
Arthropoda	Limu spider crabs	*Simocarcinus simplex*	Simple collector crab	Kumulipoa, papa`i lim	Indo-Pacific	X						18
Arthropoda	Malacostrata	*Amphipod spp.*	Amphipods			X						18
Arthropoda	Malacostrata	*Caprellid spp.*	Skeleton shrimp			X						18
Arthropoda	Malacostrata	*Isopod spp.*	Isopods			X						18
Arthropoda	Malacostrata	*Mysid spp.*	Mysids			X						18
Arthropoda	Malacostraca	*Porcellionides pruinosus*	Pill bug			X						27
Arthropoda	Malacostrata	*Tanaid spp.*				X						18
Arthropoda	Mantis shrimp	*Gonydactylus falcatus*	Common mantis shrimp		Introduced	X						18, 29
Arthropoda	Mantis shrimp	*Squillidae spp.*				X						18
Arthropoda	Mole crabs	*Emirita pacifica*	Sand turtle			X						18
Arthropoda	Palaemonidae	*Palaemonidae spp.*				X						18
Arthropoda	Parthenope crabs	*Lambrus longispinus*	Long-spined parthenope			X						18
Arthropoda	Parthenope crabs	*Parthenope horrida*	Horrid parthenope crab			X						18
Arthropoda	Pebble crabs	*Carpilius maculatus*	Seven-eleven crab, Spotted pebble crab	`Alakuma	Indo-Pacific	X						18
Arthropoda	Pebble crabs	*Xanthidae spp.*				X						18
Arthropoda	Porcelain crabs	*Petrolisthes coccineus*	Red porcelain crab	Kumimi maka`o		X						18
Arthropoda	Processidae	*Processa processa*				X						18
Arthropoda	Crabs	*Trapezia ferruginea*	Rusty guard crab		Native	X						31
Arthropoda	Crabs	*Trapezia intermedia*	Common guard crab			X						31
Arthropoda	Crabs	*Trapezia tigrina*	Red spotted guard crab			X						31
Arthropoda	Rock crabs	*Grapsid spp.*				X						18

Table C4: Updated Species Inventory - Invertebrates

Phylum	Class/Common Group	Scientific Name	Common Name	Hawaiian Name	Origin	Property					Invasive	Source Code
						MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Invertebrates												
Arthropoda	Rock crabs	*Grapsus grapsus tenuicrustatus*	`A`ama	`A`ama		X						18
Arthropoda	Rock crabs	*Percnon planissimum*	Flat rock crab	Papa		X						18
Arthropoda	Rock crabs	*Plagusia depressa*	Tuburculate rock crab, Scaly rock crab			X						18
Arthropoda	Shrimps	*Alpheus crassimanus*	Pistol shrimp			X						9
Arthropoda	Shrimps	*Andamanensis palaemonella*	Shrimp			X						13
Arthropoda	Shrimps	*Atyoida bisulcata*	Mountain shrimp	O`pae kala`ole	Endemic		X	X				3,6
Arthropoda	Shrimps	*Macrobrachium grandimanus*	O'pae oeha'a	O'pae oeha'a	Endemic		X*	X				3,23
Arthropoda	Shrimps	*Macrobrachium lar*	Pacific prawn					X				28
Arthropoda	Shrimps	*Palaemon debilis*	Feeble shrimp	`Opae huna	Indo-Pacific	X						9,11,13
Arthropoda	Shrimps	*Palaemon pacificus*	Tiger shrimp		Indo-Pacific	X						11
Arthropoda	Shrimps	*Stenopus hispidus*	Coral banded shrimp			X						31
Arthropoda	Slipper lobsters	*Parribacus antarcticus*	Sculpted slipper lobster	Ula-papapa		X						18
Arthropoda	Slipper lobsters	*Scyllarides squammosus*	Scaly slipper lobster	Ula-papapa		X						18
Arthropoda	Snapping shrimp	*Alpheus heeia*				X						18
Arthropoda	Snapping shrimp	*Alpheus lobidens polynesica*				X						18
Arthropoda	Snapping shrimp	*Alpheus mackayi*				X						18
Arthropoda	Snapping shrimp	*Alpheus pacificus*				X						18
Arthropoda	Snapping shrimp	*Alpheus rapax*	Snapping shrimp		Indo-Pacific	X						18
Arthropoda	Snapping shrimp	*Alpheus spp.*				X						18,31
Arthropoda	Snapping shrimp	*Synalpheus spp.*				X						18
Arthropoda	Spider crabs	*Pynogonid spp.*	Spider crab			X						18
Arthropoda	Spiny lobsters	*Panulirus japonicus*	Japanese spiny lobster	Ula		X						18
Arthropoda	Spiny lobsters	*Panulirus marginatus*	Spiny lobster	Ula		X						18
Arthropoda	Swimming crabs	*Charybdis hawaiiensis*	Hawaiian swimming crab			X						18
Arthropoda	Swimming crabs	*Podopthalmus vigil*	Long-eyed swimming crab	Mo`ala		X						18
Arthropoda	Swimming crabs	*Portunus sanguinolentus*	Haole crab, White crab	Kuhonu	Indo-Pacific	X						9,18
Arthropoda	Swimming crabs	*Thalamita admete*				X						11,18
Arthropoda	Swimming crabs	*Thalamita crenata*	Crenate swimming crab			X						11,18
Arthropoda	True lobsters	*Enoplometopus occidentalis*	Red reef lobster, Western lobster		Indo-Pacific	X						18
Chordata	Sea squirts/ Tunicates	*Ascidia interrupta*				X						18
Chordata	Sea squirts/ Tunicates	*Ascidia spp.*				X						18
Chordata	Sea squirts/ Tunicates	*Ascidia sp.*			Introduced	X						29
Chordata	Sea squirts/ Tunicates	*Ascidia sydneiensis*	Yellow-green sea squirt		Introduced?*	X						18
Chordata	Sea squirts/ Tunicates	*Botryllidae spp.*				X						18

Table C4: Updated Species Inventory - Invertebrates

Phylum	Class/Common Group	Scientific Name	Common Name	Hawaiian Name	Origin	Property					Invasive	Source Code
						MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Invertebrates												
Chordata	Sea squirts/ Tunicates	*Didemnidae spp.*				X						18
Chordata	Sea squirts/ Tunicates	*Didemnum perlucidum*	Didemnid tunicate		Introduced	X						29
Chordata	Sea squirts/ Tunicates	*Diplosoma listerianum*	Didemnid tunicate		Introduced	X						29
Chordata	Sea squirts/ Tunicates	*Didemnum spp.*	Orange colonial tunicate			X						31
Chordata	Sea squirts/ Tunicates	*Didemnum spp.*	White colonial tunicate			X						31
Chordata	Sea squirts/ Tunicates	*Polycarpa spp.*				X						31
Chordata	Sea squirts/ Tunicates	*Herdmania pallida*	Sea-squirt		Introduced	X						29
Chordata	Sea squirts/ Tunicates	*Microcosmus exasperatus*	Sea-squirt		Introduced	X						29
Chordata	Sea squirts/ Tunicates	*Phallusia nigra*	Ascidian		Introduced	X						29
Chordata	Sea squirts/ Tunicates	*Polyandrocarpa sagamiensis*	Tunicate		Introduced	X						29
Chordata	Sea squirts/ Tunicates	*Polyclinum constellatum*	Tunicate		Introduced	X						18,29
Cnidaria	Colonial anemones	*Zoanthus pacificus*		Limu-make-o-hana		X						18
Cnidaria	Colonial corals	*Anthelia edmondsoni*	Blue octocoral		Endemic		X					5,31
Cnidaria	Hydrozoa	*Halocordyle disticha (Pennaria tiarella)*	Christmas tree hydroid		Introduced	X						18
Cnidaria	Hydrozoa	*Obelia dichotoma*			Introduced	X						29
Cnidaria	Hydrozoa	*Pennaria disticha*			Introduced	X						29
Cnidaria	Jellyfish	*Charybdea spp.*	Box jellyfish	Pololia		X	X					6,18
Cnidaria	Jellyfish	*Phyllorhiza punctata*	White spotted jellyfish			X						18
Cnidaria	Jellyfish	*Thysanostoma flagellatum*	Pelagic jellyfish			X						18
Cnidaria	Jellyfishes	*Cassiopea medusa*	Upside-down jelly			X						9
Cnidaria	Sea Anemone	*Aiptasia pulchella*	Common brown anenome			X						18
Cnidaria	Siphonophore	*Physalia physalis*	Portuguese man-o-war	Pa`imalau		X	X					6,18
Cnidaria	Soft Corals	*Carijoa riisei*	Snowflake coral		Introduced	X						29
Cnidaria	Soft Corals	*Isaurus elongatus*				X						18
Cnidaria	Soft Corals	*Palythoa spp.*				X						18
Cnidaria	Stony Corals	*Cycloseris sp.*				X						18
Cnidaria	Stony Corals	*Cyphastrea ocellina*	Ocellated coral			X						18,31
Cnidaria	Stony Corals	*Fungia scuteria*	Mushroom coral	`Ako`ako`a kohe		X						18
Cnidaria	Stony Corals	*Lepastrea sp.*				X						18
Cnidaria	Stony Corals	*Leptastrea purpurea*	Crust coral		Indo-Pacific	X	X					4,5,31
Cnidaria	Stony Corals	*Leptoseris sp.*				X						18
Cnidaria	Stony Corals	*Montipora capitata*	Rice coral		Endemic	X	X					4,5,18,31
Cnidaria	Stony Corals	*Montipora dilitata*	Hawaiian coral		Endemic	X						18
Cnidaria	Stony Corals	*Montipora flabellata*	Blue rice coral		Endemic*	X	X					5,18,31
Cnidaria	Stony Corals	*Montipora patula*	Spreading coral		Endemic*	X	X					4,5,31
Cnidaria	Stony Corals	*Monitpora studeri*	Branching rice coral			X						31

Table C4: Updated Species Inventory - Invertebrates

Phylum	Class/Common Group	Scientific Name	Common Name	Hawaiian Name	Origin	Property					Invasive	Source Code
						MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Invertebrates												
Cnidaria	Stony Corals	*Palythoa cesia*	Zooanthid coral, rubber coral			X						31
Cnidaria	Stony corals	*Pavona duerdeni*	Duerden's coral		Endemic*	X						4,18,31
Cnidaria	Stony corals	*Pavona varians*	Corrugated coral			X						18,31
Cnidaria	Stony corals	*Pocillopora damicornis*	Lace coral		Indo/East-Pacific	X	X					4,5,18,31
Cnidaria	Stony corals	*Pocillopora eydouxi*	Antler coral		Indo-Pacific	X	X					5,18,31
Cnidaria	Stony corals	*Pocillopora ligulata*				X						18,31
Cnidaria	Stony corals	*Pocillopora meandrina*	Cauliflower coral		Western Pacific, East Indian Ocean	X	X					4,5,18,31
Cnidaria	Stony corals	*Porites brighami*	Brigham's coral			X	X					5,18,31
Cnidaria	Stony corals	*Porites compressa*	Finger coral	Pohaku puna	Endemic*	X	X					4,5,18,31
Cnidaria	Stony corals	*Porites duerdeni*	Thick hawaiian finger coral			X						18
Cnidaria	Stony corals	*Porites evermanni*	Evermann's coral	Pohaku puna	Endemic?*	X						18,31
Cnidaria	Stony corals	*Porites lobata*	Lobe coral	Pohaku puna	Indo-Pacific	X	X					4,5,31
Cnidaria	Stony Corals	*Psammocora stellata*				X						18,31
Cnidaria	Stony Corals	*Psammocora verrilli*	Hawaiian petaloid coral			X						18
Cnidaria	Zoanthid (Colonial Anemones)	*Palythoa caesia*	Blue-gray zoanthid		Indo-Pacific	X	X					5,18,31
Cnidaria	Zoanthid (Colonial Anemones)	*Zooanthus spp.*				X						31
Echinodermata	Brittle stars	*Ophiuroidea*	Unidentified brittle star			X						31
Echinodermata	Sea cucumbers	*Actinopyga mauritiana*	Orange sea cucumber			X						18,31
Echinodermata	Sea cucumbers	*Chiridota rigda*				X						18
Echinodermata	Sea Cucumbers	*Holothuria atra*	Black sea cucumber	Loli okuhi kuhi		X	X					4,5,18,31
Echinodermata	Sea cucumbers	*Holothuria cinerascens*	Ashy sea cucumber	Loli pua		X						18
Echinodermata	Sea cucumbers	*Holothuria edulis*	Edible sea cucumber	Loli	Indo-Pacific	X						18
Echinodermata	Sea cucumbers	*Holothuria fuscorubra*				X						18
Echinodermata	Sea cucumbers	*Holothuria monocaria*				X						18
Echinodermata	Sea cucumbers	*Holothuria pervicax*	Stubborn sea cucumber	Loli ka`e	Indo-Pacific	X						18,31
Echinodermata	Sea Cucumbers	*Holothuria whitmaei*	Teated sea cucumber	Loli	Indo-Pacific	X						4,5
Echinodermata	Sea cucumbers	*Opheodesoma spectabilis*	Conspicuous sea cucumber	Weli	Indo-Pacific	X						18,31
Echinodermata	Sea cucumbers	*Stichopus chloronotus*	Sea cucumber			X						18
Echinodermata	Sea cucumbers	*Stichopus horrens*	Warty sea cucumber	`Unae		X						18
Echinodermata	Sea urchins	*Colobocentrotus atratus*	Rock urchin	Ha`uke`uke		X						18
Echinodermata	Sea urchins	*Diadema paucispinum*	Long-spined urchin	Wana halula			X					5
Echinodermata	Sea urchins	*Echinometra mathaei*	Rock-boring urchin, White short-spine urchin	`Ina kea		X	X					5,18

Table C4: Updated Species Inventory - Invertebrates

Phylum	Class/Common Group	Scientific Name	Common Name	Hawaiian Name	Origin	Property					Invasive	Source Code
						MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Invertebrates												
Echinodermata	Sea urchins	*Echinometra oblongata*	Oblong urchin, Black short-spine urchin	`Ina		X						18,31
Echinodermata	Sea urchins	*Echinothrix calamaris*	Banded urchin	Wana			X					5,31
Echinodermata	Sea urchins	*Echinothrix diadema*	Long-spine urchin	Wana		X						4,18,31
Echinodermata	Sea urchins	*Exhinometra mathaei*	Rock-boring urchin	`Ina kea		X	X					4,5,6,31
Echinodermata	Sea urchins	*Exhinostrephus aciculatus*	Needle-spined urchin			X	X					4,5,31
Echinodermata	Sea urchins	*Eucidaris metularia*	Ten-lined urchin			X						31
Echinodermata	Sea urchins	*Heterocentrotus spp.*	Pencil urchin	Ha`uke`uke`ula`ula		X	X					5,18
Echinodermata	Sea urchins	*Heterocentrotus mammillatus*	Pencil urchin	Ha`uke`uke`ula`ula			X					5,31
Echinodermata	Sea urchins	*Metalia spatagus*	Sea beaver			X						18
Echinodermata	Sea urchins	*Tripneustes gratilla*	Pillow urchin	Hawa `e maoli		X	X					4,5,18,31
Echinodermata	Starfishes	*Acanthaster planci*	Crown of thorns starfish			X						31
Echinodermata	Starfishes	*Culcita novaeguineae*	Cushion sea star			X						31
Echinodermata	Starfishes	*Gnathophiuroida spp.*				X						18
Echinodermata	Starfishes	*Linckia diplax*					X					5
Echinodermata	Starfishes	*Linckia multiflora*	Spotted linckia	Hoku kai			X					5,31
Echinodermata	Starfishes	*Ophiactis savignyi*	Brittle star			X						18
Echinodermata	Starfishes	*Ophiocoma sp.*				X						18
Echiura	Proboscis worms	*Echiura spp.*				X						18
Ectoprocta	Bryzoan	*Amathia distans*	White bushy bryozoan		Introduced	X						29
Ectoprocta	Bryzoan	*Bugula neritina*			Introduced	X						29
Ectoprocta	Bryzoan	*Bugula robusta*			Introduced	X						29
Ectoprocta	Bryzoan	*Schizoporella errata*	Erratic bryozoan		Introduced	X						18,29
Ectoprocta	Bryzoan	*Watersipora edmondsoni*			Introduced	X						29
Mollusca	Atyids	*Atys spp.*				X						18
Mollusca	Atyids	*Haminoea spp.*				X						18
Mollusca	Bivalves: Ark shells	*Arcidae spp.*				X						18
Mollusca	Bivalves: Glycymeridids	*Glycymeris spp.*				X						18
Mollusca	Bivalves: Mussels	*Mytilidae spp.*				X						18
Mollusca	Bivalves: Oysters	*Crassostrea gigas*	Japanese oyster		Japan (1926)	X						13,18
Mollusca	Bivalves: Oysters	*Ostrea hanleyana*				X						18
Mollusca	Bivalves: Oysters	*Ostrea sandvicensis*	Hawaiian oyster		Endemic	X						18,31
Mollusca	Bivalves: Oysters	*Pinctata radiata*	Pearl Harbor oyster			X						31
Mollusca	Bivalves: Pen shells	*Pinna muricata*	Prickly pen shell			X						18
Mollusca	Bivalves: Rock oysters	*Chama isostoma*	Rock oysters			X						18
Mollusca	Bivalves: Saddle oysters	*Anomia nobilis*	Saddle oysters			X						18
Mollusca	Bivalves: Scallops	*Pectinidae spp.*	Scallops			X						18

Table C4: Updated Species Inventory - Invertebrates

Phylum	Class/Common Group	Scientific Name	Common Name	Hawaiian Name	Origin	Property					Invasive	Source Code
						MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Invertebrates												
Mollusca	Bivalves: Thorny oysters	*Spondylus spp.*	Thorny oysters			X						18
Mollusca	Bivalves: Toothed pearl shells	*Isognomon spp.*	Toothed pearl shells			X						18
Mollusca	Boring clams	*Gastrochaena spp.*				X						18
Mollusca	Bubble shells	*Bulla vernicosa*	Bubble shell, sea slug			X						18
Mollusca	Buccinids	*Buccinidae spp.*				X						18
Mollusca	Bullinids	*Bullinidae spp.*				X						18
Mollusca	Calytraeids	*Crepidula aculeata*	Slipper limpets		Introduced	X						18, 29
Mollusca	Calytraeids	*Crucibulum spinosum*	Spiny cup-and-saucer shell		Introduced, origin unreported	X						18
Mollusca	Cerithids	*Bittium nesioticum*				X						18
Mollusca	Cerithids	*Bittium spp.*				X						18
Mollusca	Cerithids	*Bittium zebrum (synonym of Cerithium zebrum)*	Zebra horn			X						18
Mollusca	Cerithids	*Cerithium spp.*				X						18
Mollusca	Chitons	*Ischnochiton petaloides*	Flat chiton			X						18
Mollusca	Chitons	*Rhyssoplax linsleyi*	Hawaiian chiton			X						18
Mollusca	Clams	*Ctena bella*				X						18
Mollusca	Clams	*Lucinidae spp.*				X						18
Mollusca	Cockles	*Cardiidae spp.*				X						18
Mollusca	Cockles	*Trachycardium orbita*	Rounded cockle	Pupu kupa		X						18
Mollusca	Colubrarids	*Colubraridae spp.*				X						18
Mollusca	Columbellids	*Columbellidae spp.*				X						18
Mollusca	Cones	*Conus abbreviatus*	Abbreviated cone			X						18
Mollusca	Cones	*Conus chaldaeus*				X						18
Mollusca	Cones	*Conus ebraeus*	Hebrew cone		Indo-Pacific	X						18,31
Mollusca	Cones	*Conus flavidus*	Yellow pacific cone		Indo-Pacific	X						31
Mollusca	Cones	*Conus leopardus*	Leopard cone, Thousand spotted cone			X						18
Mollusca	Cones	*Conus lividus*	Spiteful cone		Indo-Pacific	X						31
Mollusca	Cones	*Conus marmoreus*	Cone shell			X						31
Mollusca	Cones	*Conus nussatella*	Nussatella cone			X						18
Mollusca	Cones	*Conus pennaceus*	Penniform cone		Indo-Pacific	X						18
Mollusca	Cones	*Conus pulicarius*	Flea cone		Indo-Pacific	X						18
Mollusca	Cones	*Conus spp.*				X						18
Mollusca	Cones	*Conus striatus*	Striated cone		Indo-Pacific	X						18
Mollusca	Coralliophilids	*Coralliophidae spp.*				X						18
Mollusca	Costellarids	*Costellarid spp.*				X						18

Table C4: Updated Species Inventory - Invertebrates

Phylum	Class/Common Group	Scientific Name	Common Name	Hawaiian Name	Origin	Property					Invasive	Source Code
						MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Invertebrates												
Mollusca	Cowries	*Cypraea caputserpentis*	Snakehead cowrey			X						18
Mollusca	Cowries	*Cypraea maculifera*	Reticulated cowrey			X						18
Mollusca	Cowries	*Cypraea mauritiana*	Humpback cowrey			X						18
Mollusca	Cowries	*Cypraea moneta*	Money cowrey			X						18
Mollusca	Cowries	*Cypraea talpa*	Mole cowrey			X						31
Mollusca	Cowries	*Cypraen tigris*	Tiger cowrey			X						18,30
Mollusca	Eulimids	*Eulimidae spp.*				X						18
Mollusca	Frog shells	*Bursidae spp.*				X						18
Mollusca	Heart clams	*Carditodae spp.*				X						18
Mollusca	Helmet shells	*Cassididae spp.*				X						18
Mollusca	Hipponicids	*Hipponicidae spp.*				X						18
Mollusca	Hipponicids	*Hipponix pilosus*				X						18
Mollusca	Jellyfishes	*Aurelia aurita*	Moon jelly	Pololia			X					6
Mollusca	Lasaeids	*Lasaeidae spp.*				X						18
Mollusca	Limpets	*Cellana exarata*	Black-foot opihi	`Opihi makaiauli	Endemic	X						18
Mollusca	Limpets	*Cellana sandwicensis*	Yellowfoot `opihi	`Opihi alinalina	Endemic	X						18
Mollusca	Littorines	*Littorina pintado*	Dotted periwinkle	Pipipi kolea		X						18
Mollusca	Littorines	*Littorina scabra*	Snail				X					6
Mollusca	Littorines	*Littorina spp.*				X						18
Mollusca	Littorines	*Peasiella tantilla*				X						18
Mollusca	Marginellids	*Marginellidae spp.*				X						18
Mollusca	Miter shells	*Mitra coffea*	Coffee miter			X						18
Mollusca	Miter shells	*Mitra mitra*	Episcopal miter		Indo-Pacific	X						18
Mollusca	Miter shells	*Mitra papalis*	Papal miter		Indo-Pacific	X						18
Mollusca	Miter shells	*Mitra pele*				X						18
Mollusca	Miter shells	*Mitra spp.*				X						18
Mollusca	Muricids	*Muricid spp.*				X						18
Mollusca	Nassarids	*Nassarius spp.*				X						18
Mollusca	Naticids	*Naticidae spp.*				X						18
Mollusca	Nerites	*Nerita picea*	Black nerite	Pipipi		X						18
Mollusca	Nerites	*Nerita polita*	Polished nerite	Kupe`e		X						18
Mollusca	Nerites	*Nerita spp.*				X						18
Mollusca	Nerites	*Theodoxus neglectus*			Endemic	X						11,18
Mollusca	Nudibranchs	*Chromodoris spp.*				X						18
Mollusca	Nudibranchs	*Hexabranchus aureomarginatus*				X						18
Mollusca	Nudibranchs	*Hexabranchus sanguineus*	Spanish dancer		Indo-Pacific	X						18
Mollusca	Nudibranchs	*Hypselodoris spp.*				X						18

Table C4: Updated Species Inventory - Invertebrates

Phylum	Class/Common Group	Scientific Name	Common Name	Hawaiian Name	Origin	Property					Invasive	Source Code
						MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Invertebrates												
Mollusca	Nudibranchs	*Melibe pilosa*	Throw-net nudibranch		Indo-Pacific	X						18
Mollusca	Nudibranchs	*Phestilla siboogae*				X						18
Mollusca	Nudibranchs	*Phyllidia varicosa*	Varicose phyllidia		Indo-Pacific	X						18
Mollusca	Nudibranchs	*Trippa spp.*				X						18
Mollusca	Octopi	*Octopus spp.*				X						31
Mollusca	Octopi	*Octopus cyanea*	Day octopus	He`e mauli		X						18
Mollusca	Octopi	*Octopus ornatus*	Night octopus	He`e puloa		X						18
Mollusca	Olive shells	*Olividae spp.*				X						18
Mollusca	Periwinkles	*Fasciolaridae spp.*				X						18
Mollusca	Pheasant shells	*Tricolia variabilis*				X						18
Mollusca	Plakobranchids	*Elysia spp.*				X						18
Mollusca	Plakobranchs	*Plakobranchus ocellatus*	Ringed sap-sucking slug		Indo-Pacific	X						18
Mollusca	Pyramidellids	*Pyramidellidae spp.*				X						18
Mollusca	Rissoids	*Rissoidae spp.*				X						18
Mollusca	Sea hares	*Aplysia dactylomela*	White speckled sea hare	Kualakai		X						18
Mollusca	Sea hares	*Aplysia parvula*	Small sea hare	Kualakai		X						18
Mollusca	Sea hares	*Dolabella auricularia*	Eared sea hare	Kualakai		X						18
Mollusca	Sea hares	*Dolabrifera dolobrifera*	Common sea hare	Kualakai		X						18
Mollusca	Sea hares	*Stylocheilus longicauda*	Lined sea hare			X						18
Mollusca	Sea slugs	*Aglajidae spp.*				X						18
Mollusca	Sea slugs	*Chelidonura hirundinina*	Blue swallowtail slug			X						18
Mollusca	Shipworms	*Teredinidae spp.*				X						18
Mollusca	Shipworms	*Teredo clappi*				X						18
Mollusca	Smooth cockles	*Ervilia sp.*				X						18
Mollusca	Snails	*Lymnaidae*	Pond snail			X						13
Mollusca	Snails	*Melanoides sp.*	Thiarid snail		Indigenous		X					6
Mollusca	Snails	*Melanoides tuberculata*	Melanid snail					X				28
Mollusca	Snails	*Thiaridae*	Snail			X						13
Mollusca	Snails	*Unidentified species*	Apple snail		Introduced		X					6
Mollusca	Spiny chitons	*Acanthochiton spp.*				X						18
Mollusca	Strombids	*Strombus maculatus*	Spotted stromb	Pupu mamaiki		X						18
Mollusca	Tellen shells	*Macoma spp.*				X						18
Mollusca	Tellen shells	*Tellina spp.*				X						18
Mollusca	Terebra shells	*Terebra crenulata*				X						18
Mollusca	Terebra shells	*Terebridae spp.*				X						18
Mollusca	Thaidids	*Drupa morum*	Mulberry drupe	Makaloa		X						18
Mollusca	Thaidids	*Drupa ricina*	Spotted drupe	Makaloa		X						18
Mollusca	Thaidids	*Drupa spp.*				X						18

Table C4: Updated Species Inventory - Invertebrates

Phylum	Class/Common Group	Scientific Name	Common Name	Hawaiian Name	Origin	Property					Invasive	Source Code
						MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility		
Invertebrates												
Mollusca	Thaidids	*Morula granulata*	Granular drupe	Maka`awa	Indo-Pacific	X						18
Mollusca	Thaidids	*Morula spp.*				X						18
Mollusca	Thaidids	*Morula uva*	Grape morula		Indo-Pacific	X						18
Mollusca	Thaidids	*Thais intermedia*				X						18
Mollusca	Top shells	*Euchelus gemmatus*	Spire top shell			X						18
Mollusca	Top shells	*Trochidae spp.*				X						18
Mollusca	Top shells	*Trochus intextus*	Woven top	Ha`upu	Pacific	X						18,31
Mollusca	Trapeziids	*Trapexium oblongatum*				X						18
Mollusca	Triphorids	*Triphorid sp.*				X						18
Mollusca	Triton shells	*Charonia tritonis*	Triton's trumpet	Pu, `ole		X						18
Mollusca	Triton shells	*Cymatidae spp.*				X						18
Mollusca	Tun shells	*Tonna perdix*	Partridge tun	Pu`oni`oni`o	Indo-Pacific	X						18
Mollusca	Turbin shells	*Leptothyra candida*				X						18
Mollusca	Turbin shells	*Leptothyra verruca*	Wart turbans			X						18
Mollusca	Turbin shells	*Turbo sandvicensis*	Hawaiian turban	`Alilea pupu mahina	Endemic	X						18
Mollusca	Turrids	*Turidae spp.*				X						18
Mollusca	Venerid clams	*Lioconcha hieroglyphica*				X						18
Mollusca	Venerid clams	*Venerupis philippinaarum (Tapes japonica)*	Bay edible clam			X						18
Mollusca	Venerid clams	*Veneridae spp.*				X						18
Mollusca	Vermetids	*Dendropoma spp.*				X						18
Mollusca	Vermetids	*Eualetes tulipa*			Introduced	X						29
Mollusca	Vermetids	*Serpulorbis variabilis*	Variable worm snail	Kauna`oa		X						18
Mollusca	Vermetids	*Vermetus alii*				X						18
Mollusca	Wentletraps	*Epitonium spp.*				X						18
Mollusca	Wood boring clams	*Martesia striata*	Wood borin clams			X						18
Porifera	Sponges	*Chondrosia chucalla*	Black pincushion sponge		Indo-Pacific	X						18
Porifera	Sponges	*Unidentified species*	Black pincushion sponge			X						18
Porifera	Sponges	*Dysidea sp.*			Introduced	X						29
Porifera	Sponges	*Mycale armata*			Introduced	X						29
Porifera	Sponges	*Mycale cecilia*			Introduced	X						29
Porifera	Sponges	*Unidentified species*	Black finger sponge			X						18
Porifera	Sponges	*Unidentified species*	Purple sponge			X						18
Porifera	Sponges	*Unidentified species*	Yellow sponge			X						18
Porifera	Sponges	*Unidentified species*	Misc. sponges				X					5
Sipuncula	Peanut worms	Sipucula spp.				X						18

X* = Recorded upstream of MCTAB in Smith, G. 1998. (Biological Assessment and Habitat Characterization of Waimanalo Stream). Since these species are amphidromous (spend portions of their life cycle at sea) they must pass through MCTAB portions of Waimanalo Stream in order to be found in the upper regions where they were recorded. Thus, while they have not been recorded at MCTAB, they are included in this list.

Table C5: Updated Species Inventory - Plants

Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Cultivated	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility			
Plants												
Abutilon grandifolium	Hairy abutilon	Ma'o		Introduced	X							7
Abutilon incanum	Hoary abutilon, Flowering maple	Ma'o		Indigenous	X	X						5,7
Acacia confusa	Formosan Koa			Introduced	X	X				X	X	5,16
Acacia farnesiana	Klu, kolu	Klu, kolu		Introduced	X	X				X		1,5,11
Acacia koa	Koa	Koa		Endemic			X	X				3,24,28
Achyranthes aspera	Devil's Horsewhip			Introduced	X	X			X			5,7,21
Achyranthes splendens var. rotundata		`Ewa hinahina	Endangered (US)	Endemic	X						X	17
Adenanthera pavonina	Red sandalwood, Coral bean tree			Introduced		X				X		5
Adiantum raddianum	Maiden-hair fern			Introduced			X					28
Agave sisalana	Sisal	Malina		Introduced	X	X				X		5,13
Ageratum conyzoides	Maile hohono			Introduced	X	X						5,7
Albizia lebbeck	Siris tree			Introduced		X				X		5
Aleurites moluccana	Kukui, Atui, Candlenut			Polynesian Introduction		X	X	X				5,20,24,28
Alocasia cucullata	Chinese taro			Introduced			X					28
Alocasia macrorrhiza	Variegated ape	'Ape		Polynesian Introduction	X		X				X	16,24,28
Aloe vera	Common aloe			Introduced	X							7,31
Alpina purpurata	Red ginger			Introduced			X					28
Alternanthera pungens	Khaki weed			Introduced	X	X				X		5,7,30
Alysicarpus vaginalis	Alysicarpus			Introduced	X	X						5,7
Amaranthus spinosus	Spiny amaranth	Pakai kuku		Introduced	X	X						1,5,11
Amaranthus viridus	Slender amaranth	Pakai		Introduced	X	X						5,7
Anagallis arvensis	Scarlet pimpernel			Introduced	X	X						1,4,5,11,31
Andropogon virginicus	Broomsedge		Noxious Weed (HI)	Introduced		X	X			X		3,5,28
Antigonon leptopus	Mexican creeper			Introduced	X							1,11,12
Araucaria heterophylla	Norfolk Island pine			Introduced				X				20
Archontophoenix alexandrae	Alexandria palm			Introduced			X					28
Archontophoenix cunninghamiana	King palm			Introduced	X						X	16
Ardisia crenata	Hilo holly			Introduced			X			X		28
Ardisia elliptica	Shoebutton ardisia			Introduced			X			X		28
Arecastrum romanzoffianum	Queen palm			Introduced	X						X	16
Argemone glauca	Hawaiian poppy	Pua kala		Endemic	X							7
Artemesia australis	Wormwood	Ahinahina		Endemic	X						X	17
Arundina graminifolia	Bamboo orchid			Introduced			X					24
Asparagus setaceus	Asparagus fern			Introduced		X						5
Asystasia gangetica	Chinese violet			Introduced	X	X			X	X*		1,4,5,11,21,31
Atriplex semibaccata	Australian saltbush			Introduced	X				X			1,4,12,21,31

Table C5: Updated Species Inventory - Plants

Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Cultivated	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility			
Plants												
Atriplex suberecta	Saltbush			Introduced	X					X		11,13,31
Azara spp.	Azara			Introduced		X						5
Bacopa monnieri	Bacopa	'Ae 'ae		Indigenous	X	X					X	1,5,11,19
Batis maritima	Pickleweed	'Akulikuli-kai		Introduced	X	X			X	X	X	1,4,5,11,20,31
Bauhina sp.	Orchid tree			Introduced			X					28
Bidens alba var. radiata	White-flowered bidens			Introduced	X	X	X			X		4,5,7,28,31
Bidens pilosa	Spanish needle, beggar's tick	Ki, ki nehe		Introduced	X	X				X		1,5,7,31
Bidens sandvicensis	Ko'oko'olau	Ko'oko'olau		Endemic		X						5
Bischofia javanica		Koka		Introduced			X					28
Blechnum occidentale	Bechnum fern			Introduced			X					3,24,28
Boerhavia coccinea	Red-flowered boerhavia, Hog feed			Introduced	X	X				X		4,5,7,31
Boerhavia repens (B. diffusa)	Alena			Indigenous	X							7,11,31
Bolboschoenus maritimus (Scirpus maritimus)	Makai, Kaluha	Makai, Kaluha		Indigenous	X						X	4,11,19
Bothriochloa barbinodis	Fuzzy top			Introduced	X	X						4,5
Bothriochloa pertusa	Pitted beardgrass			Introduced	X	X						5,7
Bouganvillea spectabilis				Introduced	X						X	31
Brachiaria mutica	California grass, paragrass			Introduced	X	X	X			X		1,3,5,11,28,30, 31
Broussonetia papyrifera	Paper mulberry	Wauke		Polynesian Introduction	X							7
Bryophyllum daigremontianum				Introduced	X							7
Calophyllum inophyllum	Alexandrian laurel	Kamani		Polynesian Introduction	X	X					X	17,31
Calyptocarpus vialis	Hierba del cabello			Introduced	X	X						5,7
Canavalia cathartica	Moanaloa			Introduced		X						5
Canavalia sericea	Silky jackbean	Pohue		Introduced	X							4,7,31
Canna indica	Canna			Introduced			X			X		28
Capparis sandwichiana	Caper	Maiapilo	Species of Concern (HI), Vulnerable	Endemic	X							7,12
Capsicum frutescens	Bird pepper	Nioi		Introduced		X						5
Carcia papaya	Papaya	Mikana, pawpaw		Introduced		X						5
Cassytha filiformis		Kauna'ao pehu		Indigenous			X					28
Casuarina equisetifolia	Common ironwood	Paina		Introduced	X	X		X	X	X		3,4,5,20,30,31
Casuarina glauca	Saltmarsh/Longleaf ironwood			Introduced		X				X		5,31
Casuarina litorea	Ironwood			Introduced	X							1,13
Catharanthus roseus	Madagascar periwinkle			Introduced			X			X		28
Cenchrus ciliaris	Buffelgrass			Introduced	X	X				X		5,7,31

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Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Cultivated	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility			
Plants												
Cenchrus echinatus	Common sandbur	'Ume'alu		Introduced	X	X						1,5,11,30,31
Centaurium erythraea	Bitter herb			Introduced		X						5
Centella asiatica	Asiatic pennywort	Pohe kula		Introduced			X					24
Chamaecrista nictitans (Cassia leschenaultiana)	Partridge pea	Lauki		Introduced	X	X	X					1,5,7,12,28
Chamaesyce degeneri (Euphorbia degeneri)	Beach spurge	Koko, `akoko		Endemic	X	X						4,7,11,13,17, 31
Chamaesyce hirta (Euphorbia hirta)	Hairy spurge, garden spurge	Koko kahiki		Introduced	X	X						1,4,5,7,12,31
Chamaesyce hypericifolia (C. glomerifera)	Graceful spurge			Introduced	X	X						1,5,7,11,13,31
Chamaesyce prostrata (Euphorbia prostrata)	Prostrate spurge			Introduced	X	X						1,4,5,7,11,12,3 1
Chamaesyce thymifolia				Introduced	X							7
Chenopodium album	Lamb's quarters			Introduced	X							1,11,12
Chenopodium murale	Nettle-leaved goosefoot	'Aheahea		Introduced	X	X						1,5,7
Chenopodium oahuense	'Aheahea, 'aweoweo	'Aheahea, 'aweoweo		Endemic	X							4,7,31
Chloris barbata (C. inflata)	Swollen fingergrass	Mau'ulei		Introduced	X	X			X	X	X	1,4,5,11,12,20
Chloris divaricata	Australian star grass			Introduced	X							1,11,12
Chloris spp.	Fingergrass			Introduced	X				X			2,31
Christella parasitica	Downy wood fern, Oak fern			Introduced			X					3,28
Chrysopogon aciculatus	Golden beardgrass	Pilipili- ' ula	Noxious Weed (US)	Indigenous		X	X					5,24,28
Cibotium chamissoi		Hapu'u i`i		Endemic			X					28
Cibotium glaucum	Hawaiian tree fern	Hapu'u		Endemic	X						X	16
Citharexylum caudatum	Fiddlewood			Introduced		X	X			X		5,28
Clidemia hirta	Koster's curse		Noxious Weed (HI)	Introduced			X			X		28
Clusia rosea	Autograph tree, copey			Introduced		X				X		5
Coccinia grandis	Ivy/scarlet-fruited gourd		Noxious Weed (HI)	Introduced	X	X				X		5,7,31
Coccoloba uvifera	Sea grape			Introduced	X							1,4,11,31
Cocculus trilobus	Huehue			Indigenous		X						5
Cocos nucifera	Coconut	Niu, ololani		Polynesian Introduction	X	X	X	X	X			4,5,7,20,28,31
Codiaeum variegatum	Croton 'Norma'			Introduced	X						X	16
Coix lachryma-jobi	Job's tears			Introduced			X					24,28
Commelina benghalensis	Hairy honohono, spiderwort		Noxious Weed (US)	Introduced	X	X				X		1,5

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Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Cultivated	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility			
Plants												
Commelina diffusa	Dayflower, spiderwort	Honohono		Introduced	X	X	X			X		1,5,11,24,28, 31
Conocarpus erectus	Button mangrove			Introduced	X						X	31
Conyza bonariensis	Hairy horseweed	Ilioha		Introduced	X	X						1,5,11
Conyza canadensis	Horseweed	Lani wela		Introduced	X							31
Cordia subcordata	Kou	Kou		Polynesian Introduction, Indigenous?	X						X	7
Cordyline fruticosa (C. terminalis)	Ti	Ti, ki		Polynesian Introduction	X		X				X	16,24,28
Coronopus didymus	Swinecress			Introduced		X						5
Costus woodsonii	Red spiral ginger			Introduced			X					28
Crinum asiaticum (C. augustum)	Spider/giant lily, poison bulb; Purple crinum			Introduced	X		X				X	7,16,28,31
Crotalaria incana	Fuzzy rattlepod	Kukaehoki		Introduced	X	X						1,5,11,31
Crotalaria pallida	Smooth rattlepod, rattle-box	Pikakani		Introduced	X	X	X					1,5,12,28
Crotalaria verrucosa	Rattle-box			Introduced	X							1,7,12
Cryptostegia madagascariensis var. glaberrima	Madagascar rubbervine			Introduced	X							7
Cuscuta sandwichiana	Kauna'oa, Dodder	Kauna'oa		Endemic		X			X			5,21
Cynodon dactylon	Bermuda grass	Manienie, mahiki		Introduced	X	X		X			X	2,4,5,11,14,16, 20,22,31
Cynodon dactylon var. maritimus	Giant Bermuda grass			Introduced	X						X	1,11
Cyperus alternifolius	Umbrella plant	'Ahu'awa haole		Introduced			X					24,28
Cyperus laevigatus	Makaloa	Makaloa		Indigenous	X						X	19
Cyperus rotundus	Nutgrass, nut sedge	Kili'o'opu		Introduced	X	X				X		1,5,11
Cyperus trachysanthos		Pu`uka`a	Endangered (US)	Endemic	X						X	17
Dactylotenium aegyptium	Beach wiregrass			Introduced	X							31
Dendrobium sp.				Introduced			X					28
Desmanthus pernambucanus				Introduced	X							7
Desmanthus virgatus	Virgate/slender mimosa, dwarf koa			Introduced	X	X						1,4,5,11,31
Desmodium incanum	Spanish clover	Ka'imi		Introduced	X	X						5,11,12
Desmodium tortuosum	Florida beggarweed			Introduced	X	X						5,7,31
Desmodium triflorum	Three-flowered beggarweed			Introduced	X	X						1,5,12
Dianella sandwicenis		`Uki `uki		Indigenous	X						X	17
Dichanthium aristatum	Wilder grass			Introduced	X							1,11,12
Dichanthium sericeum	Australian bluestem			Introduced		X						5
Dicliptera chinensis	Dicliptera			Introduced			X					28

Table C5: Updated Species Inventory - Plants

Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Cultivated	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility			
Plants												
Dicranopteris linearis		Uluhe		Indigenous			X					28
Dictyosperma album	Princess Palm			Introduced	X						X	16
Dieffenbachia maculata	Spotted dumb-cane			Introduced			X					28
Digitaria ciliaris (D. adscendens)	Hairy crabgrass			Introduced	X	X						5,7
Digitaria insularis (Trichachne insularis)	Sourgrass			Introduced	X	X						1,5,7,11,12
Digitaria spp.	Crabgrass			Introduced		X						5
Dioscorea bulbifera	Bitter yam	Hoi		Polynesian Introduction			X					28
Dodonaea viscosa	'A'ali'i	'A'ali'i		Indigenous	X	X					X	14,15
Echinochloa colona	Jungle rice grass			Introduced	X	X						1,5,12
Echinochloa crus-galli	Barnyard rice			Introduced	X							5
Eclipta alba (E. prostrata)	False daisy			Introduced	X	X						4,5,7
Eleusine indica	Wiregrass, goosegrass	Manienie ali'I		Introduced	X	X				X		1,4,5,11,31
Emilia fosbergii	Floras paintbrush	Red pualele		Introduced	X	X						1,5,11
Emilia sonchifolia	Emilia	Pualele		Introduced	X		X			X		28,31
Enterolobium cyclocarpum	Elephant ear, Ear pod tree			Introduced				X				20
Epipremnum pinnatum	Pothos			Introduced			X			X		28
Eragrostis tenella	Lovegrass			Introduced		X				X		5
Erichtites hieracifolia	Fireweed			Introduced	X							31
Erechtites valerianifolia				Introduced			X			X		28
Erigeron bellioides	Fleabane			Introduced	X							7
Erythrina sandwicensis	Wiliwili	Wiliwili		Endemic	X						X	16,17
Eucalyptus robusta	Swamp mahogany			Introduced				X				3
Eucalyptus spp.	Eucalyptus, gum tree			Introduced		X		X	X	X		5, 20
Euphorbia heterophylla	Wild poinsettia	Kaliko		Introduced	X							7
Ficus microcarpa	Chinese banyan			Introduced	X	X	X	X		X		3,5,7,28
Ficus spp.	Banyan			Introduced	X	X		X	X	X		5,20,31
Fimbristylis cymosa (F. pycnocephala)	Button fimbristylis	Mau'u 'aki'aki		Indigenous	X							4,11,31
Flaveria trinervia	Flaveria			Introduced	X							4,31
Furcraea foetida	Mauritius hemp, Sisal	Malina		Introduced	X							31
Gaillardia pulchella	Blanket flower	Melekule wai kahuli, waikahuli		Introduced		X						5
Gossypium barbadense	Sea island cotton			Introduced		X						5
Gossypium tomentosum	Hawaiian Cotton	Ma`o		Endemic	X	X					X	16,17
Grevillea robusta	Silk oak	'Oka kilika		Introduced		X	X					5,28
Halophila maritima					X							26
Hedychium cornorarium	White ginger			Introduced			X					28

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					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility			
Plants												
Heliconia bihai	Lobster claw			Introduced			X			X		28
Heliconia caribaea	Heliconia			Introduced			X			X		28
Heliconia psittacorum	Parakeet flower			Introduced			X			X		28
Heliocarpus popayanensis		Moho		Introduced			X			X		28
Heliotropium amplexicaule	Heliotrope			Introduced	X	X						4,5
Heliotropium anomalum	Hinahina	Hinahina		indigenous	X						X	4,7,15
Heliotropium curassavicum	Seaside heliotrope	Nena, kupukai		Indigenous	X	X					X	1,11,12,15,17, 30
Heliotropium procumbens var depressum	Heliotrope			Introduced	X	X						4,5
Heteropogon contortus	Pili, piligrass, twisted beardgrass			Indigenous	X	X						1,5
Hibiscus arnottianus	Native white hibiscus	Koki`o ke`oke`o	Endangered (US)	Endemic	X						X	16,17,19
Hibiscus brackenridgei	Native yellow hibiscus (state flower)	Ma`o hau hele	Endangered (US)	Endemic	X						X	17,19
Hibiscus kokio	Native red hibiscus	Koki`o`ula`ula	Species of Concern (HI)	Endemic	X						X	17
Hibiscus calyphyllus (H. tiliaceus)	Hau	Hau		Indigenous	X	X	X	X			X	1,3,5,11,14,20, 22,28,31
Hippeastrum striatum	Amaryllis, Barbados lily, orange lily			Introduced	X							7
Howea forsteriana	Kentia Palm			Introduced	X						X	16
Hylocereus undatus	Night-blooming cereus			Introduced	X	X				X		5,7,31
Hyptis pectinata	Comb hyptis		Noxious Weed (HI)	Introduced	X	X				X		5,7
Indigofera spicata (I. hendecaphylla)	Creeping indigo			Introduced	X	X					X	5,7,15
Indigofera suffruticosa	Indigo	'Iniko		Introduced	X	X						1,5,11
Ipomoea alba	Moonflower	Koali pehu		Introduced		X						5
Ipomoea batatas	Sweet potato	Uala		Polynesian Introduction			X					28
Ipomoea cairica	ivy-leaved morning glory	Koali 'ali		Introduced	X	X						5,7
Ipomoea indica	Koali	Koali 'awa, Koali 'awahia		Indigenous	X	X			X			5,7,20,31
Ipomoea obscura	White field bindweed			Introduced	X	X						5,7
Ipomoea ochracea	Yellow-flowered morning-glory			Introduced		X						5
Ipomoea pes-caprae ssp.	Beach morning glory	Pohuehue		Indigenous	X	X					X	1,4,5,11,17, 19,31
Ipomoea triloba	Little bell			Introduced	X							7
Jacquemontia ovalifolia sandwicense	Pa'u-o-hi'iaka, kakuaohi'iaka	Pa'u-o-hi'iaka, kakuaohi'iaka		Endemic	X	X					X	4,11,12,15,17, 19

Table C5: Updated Species Inventory - Plants

Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Cultivated	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility			
Plants												
Jasminum fluminense	Wild jasmine			Introduced		X				X		5
Justicia betonica	White shrimp plant			Introduced		X				X		5,31
Kalanchoe pinnatum (Byrophyllum pinnatum)	Air plant	'Oliwa ku kahakai		Introduced	X							7
Kalanchoe tubiflora	Chandelier plant			Introduced		X						5
Lantana camara	Lantana, lakana			Introduced	X	X	X	X		X		1,4,5,12,20,28, 31
Lepidium virginicum	Peppergrass			Introduced		X						5
Leptochloa uninervia	Leptochloa, sprangletop			Introduced	X	X						1,5,12
Leucaena leucocephala (L. glauca)	Koa haole	Koa haole, ekoa, lilikoa		Introduced	X	X		X	X	X	X	1,2,4,5,7,11, 20, 30,31
Lipochaeta integrifolia	Nehe	Nehe		Endemic	X							4,7,31
Lycium sandwicense	'Ohelo kai, 'ae'ae	'Ohelo kai, 'ae'ae		Indigenous	X							4,7
Lycopersicom pimpinellifolium	Currant tomato, wild tomato			Introduced		X						5
Lycopodium cernuum	Club moss	Wawae-`iole		Indigenous			X					24,28
Macaranga mappa	Bingabing			Introduced			X			X		28
Macroptilium atropurpureum	Siratro, purple bushbean			Introduced		X						5
Macroptilium lathyroides (Phaseolus lathyroides)	Cow pea, Wild bean			Introduced	X	X						1,5,7,12
Malachra alceifolia	Malachra, wild okra		Noxious Weed (HI)	Introduced		X				X		5
Malva parviflora	Cheese weed			Introduced		X						5
Malvastrum coromandelianum	False mallow			Introduced	X	X						1,5,12
Mangifera indica	Mango	Manako		Introduced		X	X					24,28
Manihot esculenta	Cassava, tapioca			Introduced			X					28
Mariscus javanicus (Cyperus javanicus)	March cyperus	'Ahu'awa		Indigenous	X						X	1,11,12,22
Medicago lupulina	Black medic, nonesuch			Introduced		X						5
Medicago polymorpha	Bur clover			Introduced	X	X						1,4,5,11
Medicago sativa	Alfalfa, Lucerne	'Alapapa		Introduced	X			X				1,2,20
Melinis minutiflora	Molasses grass			Introduced		X	X			X		5,24
Melinis repens	Natal redtop			Introduced	X							7
Merremia aegyptia	Hairy merremia, hairy morning-glory	Koali kua hulu		Introduced	X	X						1,5,11
Metrosideros polymorpha	'Ohi'a	'Ohi'a		Endemic			X	X				3,28
Mimosa pudica var. unijuga	Sensitive plant, sleeping grass	Puahilahila		Introduced	X	X	X					1,5,11,28,31
Momordica charantia	Wild bittermelon			Introduced	X	X				X		5,31
Monstera deliciosa	Split leaf philodendron			Introduced			X					28
Morinda citrifolia	Indian mulberry	Noni		Polynesian Introduction	X	X	X					5,7,28

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					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility			
Plants												
Murraya paniculata	Mock orange, orange jessamine			Introduced		X				X		5
Musa X paradisiaca	Banana	Maia		Introduced		X	X					5,24,28
Musa cf. *velutina*	Pink banana			Introduced			X					28
Myoporum sandwicensis	Naio papa	Naio papa		Indigenous	X	X					X	7,14,17,19
Nama sandwicensis	Nama	Hinahina kahakai		Endemic	X	X						5,7,31
Neomarica gracilis	Neomarica			Introduced			X					28
Nephrolepis cordifolia		Kupukupu fern		Indigenous	X						X	16,17
Nephrolepis multiflora	Hairy sword fern			Introduced		X	X					3,5,24,28
Nicotiana glauca	Tree tobacco	Makahala, paka		Introduced	X					X		31
Normanbya normanbyi	Normanbya Palm			Introduced	X						X	16
Nototrichium sandwicense		Kulu'i		Endemic	X						X	16,17
Nymphaea spp	Water lily	Lilia-lana-I-ka-wai		Introduced	X					X		13
Ocimum gratissimum	Wild basil			Introduced	X	X				X		5,7
Ophiopogon japonicus	Mondo			Introduced	X						X	16
Ophiopogon japonicus 'nana'	Dwarf mondo			Introduced	X						X	16
Oplismenus hirtellus	Basket grass	Honohono kukui		Introduced			X					3,28
Opuntia cochenillifera	Cochineal cactus			Introduced	X							7,31
Opuntia ficus-indica	Prickly pear	Panini		Introduced	X							7
Opuntia spp.	Prickly pear			Introduced	X	X			X	X		1,5,21
Osteomeles anthyllidifolia		'Ulei, u'ulei		Indigenous		X	X					3,5,28
Oxalis corniculata	Yellow wood sorrel	`Ihi-`awa		Polynesian Introduction	X	X	X					1,5,12,28
Oxalis debilis	Pink wood-sorrel			Introduced			X			X		28
Paederia scandens		Maile pilau		Introduced			X			X		28
Pandanus tectorius	Pandanus, screwpine	Hala		Indigenous	X	X	X				X	3,4,5,14,16, 17,19,28,31
Panicum maximum	Guinea grass			Introduced	X	X	X			X		1,4,5,11,28,30, 31
Panicum maximum var.trichoglume	Green panicgrass			Introduced		X						5
Panicum torridum		Kakonakona		Endemic	X							7
Paraserianthes falcataria	Albizia			Introduced			X					3,28
Paspallum vaginatum	Seashore paspallum			Introduced	X	X				X	X	5,13,19
Paspalum conjugatum	Hilo grass	Mau'u hilo		Introduced	X	X	X			X		1,5,11,24,28
Paspalum scrobiculatum	Ricegrass	Mau'u laiki	Noxious Weed (US)	Indigenous		X	X					5,28
Passiflora edulis	Passion fruit	Liliko'i		Introduced		X						5
Passiflora foetida	Love-in-a-mist, scarlet-fruited passion flower	Pohapoha		Introduced	X	X			X	X*		1,5,11,13,21, 31

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					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility			
Plants												
Passiflora laurifolia	Yellow granadilia			Introduced			X			X		28
Passiflora suberosa	Huehue haole, Corky passionflower			Introduced	X	X				X		5,7
Pellaea viridis	Green cliffbrake			Introduced		X						5
Pennisetum ciliare	Buffel grass			Introduced	X							1,11,12
Pennisetum clandestinum	Kikuyu grass		Noxious Weed (US)	Introduced	X							1,11,12
Pennisetum polystachion (P. setosum)	Feathery pennisetum			Introduced	X		X					1,28
Pennisetum purpureum	Napier grass, elephant grass			Introduced		X				X		5
Pennisetum setaceum	Fountain grass		Noxious Weed (HI)	Introduced		X				X		21,30
Peperomia remyi (P. blanda var. floribunda)	Peperomia	Ala'ala wai nui		Endemic	X							7
Phlebodium aureum		Laua`e-haole		Introduced			X					28
Phyla nodiflora	Creeping ip plant, turkey tangle			Introduced		X						5
Phyllanthus debilis	Niruri			Introduced	X	X						5,7
Phymatosorus grossus		Laua`e		Introduced			X					28
Phymatosorus scolopendria	Laua'e Fern	Laua'e		Introduced	X						X	13
Physalis angulata	Ground cherry, Husk tomato			Introduced	X							7
Piper sp.				Introduced			X					28
Pithecellobium dulce	'Opiuma, madras thorn, Manila tamarind	'Opiuma		Introduced		X			X	X		5,20
Plantago major	Broad-leaved plantain	Laukahi		Introduced		X						5
Plectranthus parviflorus	Spurflower			Indigenous	X							1,7,12
Pleopeltis thunbergiana		Pakahakaha		Indigenous			X					28
Pluchea carolinensis	Pluchea			Introduced			X			X		28
Pluchea indica	Indian fleabane, Indian pluchea			Introduced	X	X			X	X	X	1,4,5,7,11,21,31
Pluchea symphytifolia (P. odorata)	Sourbush, Hairy fleabane			Introduced	X	X						1,4,5,13,31
Pluchea X fosbergii	Hybrid pluchea			Introduced	X	X						5,7,31
Plumbago zeylanica	Leadwort	'Ilie'e, hilie'e		Indigenous	X	X						5,7
Portulaca oleracea	Pigweed, common purslane	'Akulikuli kula		Introduced	X	X					X	1,4,5,11,12,14,31
Portulaca pilosa	Portulaca	'Akulikuli		Introduced	X	X					X	4,5,31
Prichardia spp.	Loulu palm	Loulu	Endangered (US)	Endemic	X						X	14,16,17
Prosopis pallida	Algaroba, mesquite	Kiawe	Noxious Weed (US)	Introduced	X	X			X	X		1,2,5,11,20,30,31
Psilotum nudum		Moa		Indigenous			X					28
Psidium cattleianum	Strawberry guava	Waiawi 'ula 'ula		Introduced		X	X	X		X		3,5,20,28

Table C5: Updated Species Inventory - Plants

Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Cultivated	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility			
Plants												
Psidium guajava	Common guava	Kuawa		Introduced		X	X	X		X		3,5,20,28
Psydrax odoratum (Canthium odoratum)		Alahe'e		Indigenous				X				20
Pteris cretica	Cretan brake			Indigenous			X					28
Ptychosperma macarthurii	MacArthur Palm			Introduced	X						X	16
Reichardia tingitana				Introduced	X							4,7
Rhizophora mangle	American mangrove, red mangrove			Introduced	X	X				X*		1,5,13,30,31
Rhynchelytrum repens (Tricholaena rosea)	Natal redtop			Introduced	X	X				X		1,5,11
Ricinus communis	Castor bean	Koli		Introduced		X				X		5,31
Rivina humilis	Rouge plant, coral berry			Introduced		X						5
Rubus rosifolius	Thimbleberry			Introduced			X			X		28
Ruppia maritima	Widgeon grass, sea tassel			Indigenous	X							11,13
Sacciolepis indica	Glenwood grass			Introduced			X					24,28
Salvinia molesta	Water fern		Noxious Weed (US)	Introduced		X				X		21,30
Samanea saman	Monkeypod	'Ohai		Introduced		X		X	X	X		2,5,20
Sansevieria trifasciata	Bowstring hemp, mother-in-law's tongue			Introduced	X							7,31
Santalum spp. (possibly intermediate btwn coastal species ellipticum and inland species freycinianatum)	Sandalwood	`Iliahi		Endemic		X						30
Sapindus saponaria		Manela, A'e		Indigenous	X						X	17
Scaevola gaudichaudiana	Naupaka-kuahiwi	Naupaka-kuahiwi		Endemic			X					3,28
Scaevola sericea (S. taccada)	Beach naupaka	Naupaka, naupaka kahakai		Indigenous	X	X					X	4,5,7,11,14, 15,16,17,19, 31
Schefflera actinophylla	Octopus tree, umbrella tree			Introduced	X	X	X	X	X	X		2,5,13,20,24, 28
Schinus terebinthifolius	Christmas berry	Wilelaiki		Introduced	X	X		X	X	X		1,3,4,5,11,20, 30,31
Schoenoplectus lacustiris	Great bulrush	`Aka`akai		Indigenous	X						X	13,19
Senna pendula				Introduced		X						5
Senna surattensis	Kolomona, kalamona	Kolomona, kalamona		Introduced		X						5
Sesbania tomentosa	`Ohai	`Ohai	Endangered (US)	Endemic	X						X	15,17,19
Sesuvium portulacastrum	Sea purslane	'Akulikuli		Indigenous	X	X					X	1,4,11,12,15, 17,19,31

Table C5: Updated Species Inventory - Plants

Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Cultivated	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility			
Plants												
Setaria gracilis	Yellow foxtail	Mau'u kalepuni		Introduced		X				X		5
Setaria verticillata	Bristly foxtail	Mau'u pilipili		Introduced	X							1,11,12
Sida fallax	`Ilima	`Ilima		Indigenous	X	X					X	1,4,5,11,12,16, 17,22,31
Sida rhombifolia	Cuba jute			Introduced	X	X						5,7
Sida spinosa	Prickly sida			Introduced	X							1,12
Solanum americanum	Glossy nightshade	Popolo		Indigenous	X	X						5,7,22
Solanum lycopersicum	Cherry tomato			Introduced	X							7,31
Solanum mauritianum		Pua nana honua		Introduced			X					28
Solanum nigrum	Black nightshade	Popolo		Introduced	X							1,11
Solanum seaforthianum	Brazilian nightshade, blue potato vine			Introduced	X	X				X		5,7
Solanum torvum	Prickly solanum, turkeyberry		Noxious (US)(HI)	Introduced		X				X		5
Sonchus oleraceus	Sow thistle	Pualele		Introduced	X	X						1,4,5,11
Sorghum halpense	Johnson grass			Introduced	X							1,11,12
Spathodea campanulata	African Tulip Tree			Introduced		X	X			X		5,28
Spathoglottis plicata	Philippine ground orchid			Introduced			X					28
Spergularia marina	Saltmarsh sand spurry	Mimi'ilio		Introduced	X							1,4,11
Spermacoce assurgens	Buttonweed			Introduced		X						5
Sphagneticola trilobata				Introduced	X							7
Sphenomeris chinensis	Pala'a fern	Pala'a		Indigenous			X					24,28
Sporobolus indicus	West Indian dropseed, Smut grass			Introduced		X				X		5
Sporobolus virginicus	Beach dropseed grass, seashore rushgrass	'Aki'aki		Indigenous	X	X					X	1,4,5,11,19,31
Stachys arvensis	Staggerweed			Introduced	X	X						5,7
Stachytarpheta cayennensis	Joee, false vervain	Oi		Introduced	X							1,11,12
Stachytarpheta dichotoma	Vervain			Introduced			X					24,28
Stachytarpheta jamaicensis	Jamaica vervain	Owi, oi		Introduced	X	X						1,5,12,31
Stachytarpheta urticifolia	Nettle-leaved vervain	Owi, oi		Introduced		X	X					5,28
Stapelia gigantea	Carrion flower, Zulu giant, giant toad plant			Introduced	X	X				X		5,7
Stenotaphrum secundatum	Buffalo grass	Aki'aki haole		Introduced	X							7,31
Styphelia tameiameiae	Pukiawe	Pukiawe		Indigenous			X					3,28
Swietenia mahogani	West Indian mahogany			Introduced		X						5
Synedrella nodiflora	Nodeweed			Introduced	X	X						5,7
Syzygium cumini	Java plum	Palama		Introduced		X	X			X		3,5,28
Syzygium malaccense	Mountain apple	Ohi'a 'ai		Polynesian Introduction			X					28

Table C5: Updated Species Inventory - Plants

Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Cultivated	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility			
Plants												
Tabebuia pentaphylla	Pink tecoma			Introduced		X				X		5
Terminalia catappa	Indian almond	Kamani haole		Introduced	X							7,31
Tetragonia tetragonioides	New Zealand spinach			Introduced		X						5,31
Thespesia populnea	Milo	Milo		Indigenous	X	X					X	1,4,5,11,17,19,31
Thunbergia fragrans	White thunbergia			Introduced			X			X		28
Tournefortia argentea	Beach heliotrope			Introduced	X	X			X		X	1,5,7,12,16,20,31
Trianthema portulacastrum				Introduced	X							7
Tribulus cistoides	Nohu	Nohu		Indigenous	X							1,12
Tridax procumbens	Coatbuttons		Noxious Weed (US)	Introduced	X	X						5,11,12
Typha latifolia	Common cattail			Introduced	X					X		13
Urena lobata	Ramina			Introduced			X			X		28
Veitchia Joannis	Joannis Palm			Introduced	X						X	16
Veitchia merrillii	Manila Palm			Introduced	X						X	16
Veitchia montgomereyana	Montgomereyana Palm			Introduced	X						X	15
Verbesina encelioides	Golden crown-beard			Introduced	X	X						1,5,11,31
Vernonia cinerea var. parviflora	Little ironweed			Introduced	X	X						1,5,11
Vigna marina	Beach pea	Nanea, mohihihi		Indigenous	X						X	4,7,11,17,31
Vitex rotundifolia	Beach vitex	Pohinihina, Kolokolo kahakai		Indigenous	X	X					X	5,14,15,17,19,31
Vitex trifolia var. subtrisecta	Vitex	Polinalina		Introduced	X	X						5,7
Waltheria indica		`Uha loa, hi`oloa, kanakaloa		Indigenous	X	X						1,5,12
Wedelia trilobata	Wedelia			Introduced	X	X				X		4,5,31
Wikstroemia oahuensis	'Akia	'Akia		Endemic			X					24,28
Wikstroemia uva-ursi	'Akia	'Akia		Endemic	X	X					X	3,14,16,17,19
Wollastonia integrifolia (= Lipochaeta integrifolia)	Nehe	Nehe		Endemic	X							4,7,31
Xanthosoma sagittifolium	Tannia			Introduced			X					28
Youngia japonica	Oriental hawkbeard			Introduced	X		X					7,28
Zingiber zerumbet	Shampoo ginger	Awapuhi		Introduced		X	X					24,28
Zoysia japonica	Zoysia 'El toro'			Introduced	X						X	16
Algae												
Acanthophora pacifica	Red algae				X							31
Acanthophora specifera	Red algae			Introduced	X	X						4,5,11,13,31

Table C5: Updated Species Inventory - Plants

Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Cultivated	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility			
Plants												
Ahnfeltia concinna	Red algae	Limu aki'aki			X							2
Amansia glomerata	Red algae				X							31
Asparagopsis taxiformis	Red algae	Limu kohu			X	X						2,5,31
Asteromenia spp.	Red algae				X							31
Bornetella sphaerica	Green algae				X							31
Botryocladia skottsbergii	Red algae				X							31
Bryopis spp.	Green algae				X							31
Caulerpa racemosa	Green algae				X	X						5,31
Cladophora spp.	Green algae				X							
Caulerpa serrulata	Green algae				X							31
Caulerpa sertularioides	Green algae			Native	X							31
Caulerpa taxifolia	Green algae			Invasive native	X							31
Caulerpa vericillata	Green algae				X							31
Caulerpa webbiana	Green algae				X							31
Chaetomorpha antennina	Green algae				X							31
Cladophora spp.	Green algae				X							31
Codium arabicum	Green algae				X							31
Codium edule	Green algae	Limu wawae 'iole			X							2
Codium reediae	Green algae			Native	X							31
Codium spp.	Green algae					X						5
Coelothrix irregularis	Red algae				X							31
Corallina spp.	Red algae					X						5
Daysa spp.	Red algae				X							31
Dictopteris app	Brown algae			Introduced		X						5
Dictyopteris australis	Brown algae			Introduced	X							4,31
Dictyosphaeria cavernosa	Green bubble algae			Invasive native	X							4,31
Dictyosphaeria verslugsii	Green bubble algae			Native	X							31
Dictyota spp.	Brown algae				X	X						5,31
Dictyota acutiloba	Brown algae				X							31
Dotyella hawaiiensis	Red algae				X							31
Enteromorpha sp.	Green algae					X						5
Galaxaura spp.	Red algae				X	X						5,31
Galaxaura marginata	Red algae				X							31
Gibsmithia hawaiiensis	Red algae				X							31
Gracilaria spp.	Red algae				X							31
Gracilaria bursapastoris	Red algae	Limu ogo (Japanese)			X							2
Gracilaria salicornia	Red algae	Gorilla ogo		Introduced	X							31

Table C5: Updated Species Inventory - Plants

Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Cultivated	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility			
Plants												
Grateloupia filicina	Red algae	Limu huluhuluwaena			X							2
Halichrysis coalescens	Red algae				X							31
Halimeda spp.	Green algae					X						4,5
Halimeda discoidea	Green algae				X							31
Halophila deciphens	Hawaiian sea grass				X							31
Halophila hawaiiana (H. ovalis)	Hawaiian sea grass			Endemic	X							4,31
Haloplegma duperreyi	Red algae				X							31
Halymenia formosa	Red algae	Lepe 'ula'ula			X							31
Hydroclathrus clathratus	Brown algae				X							31
Hydrolithon spp.	Red algae					X						5
Hypnea spp.	Red algae			Introduced		X						5
Jania spp.	Red algae				X	X						5,31
Laurencia spp.	Red algae	limu mane`one`o			X							31
Liagora spp.	Red algae											4,31
Lobophora variegata	Brown algae				X							31
Lyngbya majuscula	Blue-green algae					X						4,5
Martensia fragilis	Red algae				X							31
Microdictyon spp.	Green algae				X							31
Microdictyon setchallianum	Green algae				X							31
Microdictyon umbillicatum	Green algae				X							31
Neogoniolithon spp.	Red algae					X						5
Neomartensia flabelliformis	Red algae				X							31
Neomeris sp.	Green algae				X							31
Neomeris annulata	Green algae					X						5
Padina spp.	Brown algae				X	X						4,5,31
Padina melemele	Brown algae			Endemic	X							31
Peyssonnelia spp.	Red algae				X							31
Peysonellia rubra sp.	Red algae			Introduced		X						5
Porolithon spp.	Red algae					X						5
Portieria hornmanni	Red algae				X							31
Predaea spp.	Red algae				X							31
Rhipidosiphon javensis	Green algae				X							31
Rosenvingea intricata	Brown algae				X							31
Sargassum echinocarpum	Brown algae	Limu kala				X						4,5,6
Siphonocladius tropicus	Green algae				X							31
Spyridia filamentosa	Red algae				X							13,31
Stypopodium flabelliforme	Brown algae				X							31
Symploca spp.	Blue-green algae/cyanobacteria				X							31
Titanophora pikeana	Red algae				X							31

Table C5: Updated Species Inventory - Plants

Scientific Name	Common Name	Hawaiian Name	Regulatory Status	Origin	Property					Invasive	Cultivated	Source Code
					MCBH-KB	MCTAB	Waikane Valley Impact Area	MCBH-CS	Puuloa Training Facility			
Plants												
Trichogloea requienii	Red algae				X							31
Tolypiocladia glomerulata	Red algae				X							31
Turbinaria ornata	Brown algae			Native	X							31
Ulva faciata	Green algae; Sea lettuce	Palahalala			X							13
Ulva spp.	Green algae; Sea lettuce	Palahalala				X						5
Valonia spp.	Green algae					X						5
Ventricaria ventricosa	Green bubble algae				X							31
Wrangelia elegantissima	Red algae				X							31
Crustose coralline algae					X							31
Filamentous turf					X							31
Wiry turf					X							31

APPENDIX D
LANDSCAPING IMPROVEMENTS FOLLOWING NEW GUIDELINES, INCLUDING PROGRESS DOCUMENTATION

As detailed in COA Component Plan 7.5 of this updated INRMP, MCBH has made great strides during the first five year implementation of the 2001 INRMP/EA to address INRMP Objective 7.5.1 to take a sustainable landscape approach to improving grounds maintenance and landscape management on MCBH properties. The HI21002 *MCBH Master Landscape Study* completed in 2002 updated and expanded upon earlier lists of preferred native and Polynesian-introduced and prohibited plants cited in the 2001 INRMP/EA and provided additional recommendations for landscaping improvement on MCBH properties (HDA 2002). These plant lists are aligned with the 2006 guidance provided by HQ USMC on developing base-wide master plant lists (see Appendix D1). The plant lists included in Appendix D2 reprint information from these earlier lists published in the MCBH INRMP/EA (2001) and the MCBH Master Landscape Study (2002), with some updates reflecting expertise and recent experience of our natural resources staff, and new information received since 2002. *Any plants considered for landscaping not identified on these lists must be reviewed and approved on a case-by case-basis by the Environmental Department prior to planting for suitability of use or introduction to MCBH properties and by the Facilities Department for maintenance concerns.* These updated plant lists will continue to be distributed widely (e.g., to facilities planners and grounds maintenance personnel, family housing staff, contract specialists) to help attain compliance and will continue to be used as the definitive guide followed in all relevant landscape and grounds maintenance projects at MCBH-KB. Rigorous reference to these regularly-updated lists has occurred in all MCBH natural resources staff reviews of various landscaping projects—both large and small. This has helped ensure compliance with the Executive Orders, federal regulations, and military directives concerning sustainable landscaping. The lists will eventually be incorporated into a new or updated Base Order for wider, more routine dissemination.

In summary, this appendix includes the following documents and tables:

D1. HQ USMC Policy on Base-wide Master Plant List, April 10, 2006

D2. MCBH Plant Lists

Excerpt from MCBH Master Landscape Study (2002) summarizes why Natives and Polynesian-introduced plants receive preference in Hawaii and at MCBH

Table D2-1: Plants Prohibited for Planting Aboard All MCBH Properties

Table D2-2: Approved Plants for Native and Polynesian Introduced Plantings Aboard All MCBH Properties

Table D2-3: Approved Non-Native Plants for Plantings Aboard All MCBH Properties

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D1. HQ USMC POLICY ON BASE-WIDE MASTER PLANT LIST

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DEPARTMENT OF THE NAVY
HEADQUARTERS UNITED STATES MARINE CORPS
2 NAVY ANNEX
WASHINGTON, DC 20380-1775

IN REPLY REFER TO:
5090
LFL/1
1 0 APR 2006

From: Commandant of the Marine Corps

Subj: HEADQUARTERS MARINE CORPS POLICY ON BASE-WIDE MASTER PLANT LIST

Ref: (a) E.O. 13112, Invasive Species
(b) E.O. 13148, Greening the Government Through Leadership in Environmental Management
(c) 60 FR 40837, Environmentally Beneficial Landscape Practices on Federal Landscaped Grounds

Encl: (1) Camp Pendleton Base-wide Master Plant List

1. To comply with goals and direction of references (a), (b), and (c), Marine Corps installations should establish a base-wide master plant list that identifies native and non-native plants suitable for landscaping, and invasive plants that are prohibited for any use on their installation. Plants listed as a threat to ecosystems or agriculture by the U.S. Department of Agriculture and State agriculture departments should be listed as prohibited from planting.

2. Installations should set goals to maximize the use of native plants for urban and open area landscaping. Base Exterior Architecture Plans, Base Master Plans, Integrated Natural Resource Management Plans, and other landscaping maintenance plans should incorporate these goals in order to prevent unintentionally planting invasive species and to implement cost-effective, environmentally sound landscaping practices.

3. The Marine Corps Base Camp Pendleton Base-wide Master Plant List is provided as an example for guidance at enclosure (1). Efforts to control invasive species and re-establish native plants communities will ultimately ensure stable, healthy ecosystems for sustained military land use.

4. We request progress on compiling the master plant list and implementing procedures as detailed in references (a), (b), and (c) be reported to Headquarters Marine Corps (HQMC) LFL/1 by 30 September 2006.

Subj: HEADQUARTERS MARINE CORPS POLICY ON BASE-WIDE MASTER PLANT LIST

5. Questions regarding this issue may be directed to Ms. Heidi Hirsh at DSN 225-8240, 703-695-8240, or heidi.hirsh@usmc.mil. Ms. Hirsh is also available to assist in the preparation of the plant lists.

JAMES F. FLOCK
Assistant Deputy Commandant
Installations and Logistics (Facilities)

Distribution:
COMMARFORRES NEW ORLEANS LA
CG MCRD/WRR SAN DIEGO CA
CG MCAGCC TWENTYNINE PALMS CA
CG MCRD PARRIS ISLAND SC
CG MCAS CHERRY POINT NC
CG MCBH KANEOHE BAY HI
MCB CAMP LEJEUNE NC
MCB CAMP PENDLETON CA
MCAS PENDLETON CA
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Area Commanders
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AC/S, Cal
AC/S, Log
AC/S, ISS
AC/S, MCCS
CO, MCAS
CO, SWDIV (Attn: CPEN Area Focus Team)
FMD
Dir, Housing
CP&LO
ROICC
OICC

CAMP PENDLETON BASE EXTERIOR ARCHITECTURE PLAN
3.6 G. Master Plant Lists

Subject:
The following plants lists replace the Basewide Master Plant List, Plant Matrix 3.6 - G and all Area specific Plant Matrices of the Base Exterior Architecture Plan (BEAP) of November 1995.

Reference:
Executive Order 13148 of April 21, 2000 states that, "Each agency shall strive to promote the sustainable management of Federal facility lands through the implementation of cost-effective, environmentally sound landscaping practices, and programs to reduce adverse impacts to the natural environment...increase the use of native plant species...not only to protect our biological heritage; to reduce fertilizer, pesticides, and water costs..."
For additional information visit:
http://ceq.eh.doe.gov/nepa/regs/eos/eo13148.html
http://www.epa.gov/fedrgstr/EPA-GENERAL/1995/August/Day-10/pr-664.html

Intent:
Camp Pendleton's intent is to achieve a base wide ratio of a maximum 20 percent drought tolerant Mediterranean climate plants and a minimum 80 percent California native and or region specific native plants. Additionally, "invasive" non-native plants shall not be used on Camp Pendleton.

The following guidelines are provided for use in achieving this goal:

For projects immediately adjacent to existing native vegetation and or open space:
Select only native plant materials from the master plant list 3.6 - G.1. Plant materials adjacent to buildings shall be fire resistant and the overall site design shall conform to the Brush Management Guidelines within the Landscape Guideline section 3.6H.9 of the BEAP .

For projects within "urbanized" areas:
In addition to region-specific natives it is acceptable to select up to 20% drought tolerant Mediterranean climate plants (which are designated with an asterisk [*]) from the master plant list 3.6 - G.1. Plants designated with [**] require specific approval for use from the Public Works Department.

Use of invasive non-natives:
The Master Plant List 3.6 - G.2 provides a list of plants not permitted for "any" use on Camp Pendleton. Additionally, any plant listed as a threat to ecosystems or agriculture by the California Exotic Pest Plant Council or the California Department of Agriculture shall not be used.

BASEWIDE MASTER PLANT LIST 3.6 - G.1

Botanical Name	Common Name
TREES	
Large Trees (40' +)	
Acer macrophyllum	Big-leaf Maple
Acer negundo californicum	Box Elder
Acer negundo interius	Box Elder
Alnus rhombifolia	White Alder
Calocedrus decurrens	Incense Cedar
Cupressus stephensonii	Cuyamaca Cypress
Fraxinus latifolia	Oregon Ash
*Pinus canariensis	Canary Island Pine
Pinus coulteri	Coulter Pine
*Pinus eldarica	Afghan Pine

Botanical Name	Common Name
TREES (cont'd)	
Pinus torreyana	Torrey Pine
Platanus racemosa	California Sycamore
Populus fremontii	Fremont's Cottonwood
Quercus agrifolia	Coast Live Oak
Quercus engelmannii	Mesa Oak
Quercus kelloggii	California Black Oak
Quercus lobata	California White Oak
*Syagrus romanzoffianum	Queen Palm
Umbellularia californica	California Bay Laurel
**Ulmus parvifolia	Chinese Elm cultivars "Drake" or "True Green"
Medium Trees (25'-40')	
*Brahea armata	Blue Hesper Palm
Celtis reticulata	Netleaf Hackberry
*Geijera parvifolia	Australion Willow
*Jacaranda mimosifolia	Jacaranda
Myrica californica	Pacific Wax Myrtle
*Podocarpus gracilior	Fern Pine
Small Trees (15'-25')	
*Agonis flexuosa	Peppermint Tree
Aesculus californica	California Buckeye
Arbutus menziesii	Madrone
Arctostaphylos glauca	Blue Manzanita
Cercidium floridum	Blue Palo Verde
Cercis occidentalis	Western Redbud
*Chamaerops humilis	Mediterranean Fan Palm
Chilopsis linearis	Desert Willow
Lavatera assurgentiflora	California Tree Mallow
Lyonothamnus floribundus ssp asplenifolius	Catalina/Santa Cruz Ironwood
*Metrosideros excelsus	New Zealand Christmas Tree
Quercus dumosa	Scrub Oak
Salix gooddingii	Black Willow
Salix lasiolepis	Arroyo Willow
Sambucus mexicana	Mexican Elderberry
SUCCULENTS	
Large Succulent (10'-18')	
*Aloe spp.	Aloe
Medium Succulent (5'-10')	
*Aloe spp.	Aloe

D2. MCBH PLANT LISTS

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5.1 Overview

Many of the philosophies embodied within this document, from ecosystem-based management to creating an appropriate environmental and cultural sense of place, relate to the use of native plant material. When the previous Master Landscape Study was developed in 1984, the commercial industry and general awareness of native plant species was in its infancy. Today, more and more mandates to use native plant species in new landscape developments, renovations and reforestations are appearing through federal, state, city and county governments. The public awareness of the use and beauty of native plants continues to grow every year.

Many public agencies, commercial growers and private individuals are beginning to realize that native Hawaiian plants are not only botanically rich and beautiful, but also beneficial to the environment. The Master Plant List that follows in this section reflects these new philosophies of plant material use, especially in environmentally sensitive areas, like the Mōkapu peninsula.

5.2 Native versus Introduced Plant Species

Native Hawaiian plants are defined as those plants that arrived in Hawai‘i on their own, without the aid of man. These plants could have had seeds travel to the island chain over water or through air, or hitchhiked in or on a travelling bird. There are two types of native plants, those that are endemic and those that are indigenous.

Endemic plants are those that arrived here and evolved into a plant unique to Hawai‘i. Indigenous plants are found naturally in Hawai‘i, but they are also found in other parts of the world as well. Both types are native and deserve special consideration for use within the designed landscape.

Introduced plants were brought to Hawai‘i by people, either on purpose or by accident. Some introduced plants are considered Polynesian introduced and tend to be related to cultural uses. These plants were brought to Hawai‘i by the first Polynesians. Most introduced plants arrived in Hawai‘i during modern times and for purely ornamental or agricultural uses. These plants drastically altered the native landscape and environment, as the Hawaiian environment provided an excellent setting for these nonnative plants to spread beyond their intended uses and infiltrate the natural landscapes.

While there are many wonderful plants that are nonnative and many of those are thought of as inseparable from the Hawai‘i experience, these plants can actually present a threat to the native species. Some are invasive and naturally choke out native vegetation, but other simply are familiar and tend to inhibit awareness of the lesser know native plants.

In some locations on the peninsula, especially where the site orientation is directly affected by the tradewinds or in some special location that requires a more ornamental approach, it may be necessary to look toward nonnative species for assistance. Whenever possible, appropriate and practical, native species will be considered for use before nonnative species.

Over the years, some debate has occurred regarding the native or introduced status of specific plants found in Hawai‘i. Although many resource lists in the past have listed Milo (Thespesia populnea), Hau (Hibiscus tileaceaous) and Kou (Cordia subcordata) as Polynesian introductions, recent research now appears to indicate that these plants arrived by their own means and deserve native plant status.

Many native plants, especially those native to coastal and dry forest areas, will help reduce wasteful watering practices. Also, plants such as naio, a‘ali‘i, pohinahina, ‘ilima, naupaka, manele and lonomea have broad range elevation tolerance. Thus given full sun and good drainage, they can be grown in coastal, inland and upland Hawaiian landscapes.

Not long ago, it was not easy to locate large supplies of native plants, especially if the search included many varieties. However, as each year passes, more and more of the commercial growers are realizing the relatively untapped economic market in native plants. The list found in this section contain the names of nurseries that currently offer native plants. This is a growing market and the list is expected to evolve as time passes and the use of native plant material continues to grow in popularity.

Most of all, the use of native plants creates a more stable and sustainable landscape environment. The use of native plants creates a system that is less depleting of limited resources (e.g., irrigation water and maintenance time). The use of endemic, indigenous and Polynesian introduced plant material will help the Base landscape reflect a sense of place, environmentally and culturally.

Table D2-1: PLANTS PROHIBITED FOR PLANTING ABOARD ALL MCBH PROPERTIES

The following plants are prohibited aboard MCBH installations (i.e., MCBH-Kaneohe Bay, MCTAB, Camp H.M. Smith, Manana Housing, Puuloa Training Facility, Waikane Valley Impact Area, Molokai Training Facility) for any plantings. **Prior to purchase and/or planting, any plants considered for landscaping not identified on this list must be reviewed and approved on a case-by case-basis by the MCBH Environmental Department for suitability of use or introduction to MCBH properties and by the Facilities Department for maintenance concerns.**

- No grasses other than native or turf building grasses for lawns and golf courses are allowed.
- All non-native vines are strictly prohibited.

Scientific Name	Common Name	Remarks
TREES		
Bucida buceras	Geometry Tree	3
Casuarina equisetifolia	Ironwood	1,6,8,9
Clusia rosea	Autograph Tree	6, May only be used in very high wind environments.
Coccoloba uvifera	Seagrape	4,6
Conocarpus erectus	Silver Buttonwood	1,4,5,6
Enterolobium cyclocarpum	Earpod	2
Eucalyptus spp.	Eucalyptus	1,6
Ficus benghalensis	Indian Banyan	1,2,4,5,6,7
Ficus elasticus	False Rubber Tree	2,4,5,7
Ficus lyrata	Fiddleleaf Fig	2,4,5,6,7
Ficus microcarpa	Chinese Banyan	1,2,4,6,7
Grevillea robusta	Silk Oak	1,4,5,6
Melaleuca quinquenervia	Paperbark	1,4,5,6
Pimenta dioica	Allspice	1,6
Pithecellobium dulce	Opiuma	3,5,6
Polyscias guilfoylei	Panax	Highly attractive to termites.
Prosopis pallida	Kiawe	3,5,6
Psidium cattleianum	Strawberry Guava	4,5,6,9
Psidium guajava	Common Guava	4,5,6,9
Rhizophora mangle	Mangrove	1,2,4,5,6,8
Schefflera actinophylla	Octopus Tree	1,2,4,5,6,7
Schinus terebinthifolia	Christmas Berry / Brazilian Pepper Tree	1,3,4,5,6
Spathodea campanulata	African Tulip Tree	2,4,5,6
Terminalia catappa	False Kamani	6
PALMS & CYCADS		
Cocos nucifera	Coconut Palm	4
SHRUBS		
Carissa macrocarpa	Natal Plum	3,4
Hedychium coronarium	White Ginger	4,5,6,9
Hedychium flavescens	Yellow Ginger	4,5,6,9

Table D2-1: PLANTS PROHIBITED FOR PLANTING ABOARD ALL MCBH PROPERTIES

Scientific Name	Common Name	Remarks
Hedychium gardnerianum	Kahili Ginger	4,5,6,9
Hylocereus undatus	Nightblooming Cereus	4,5,6
Lantana camara	Lantana	3,4,5,6
Ricinus communis	Castor Bean	1,3,5,6
GROUND-COVERS		
Asystasia gangetica	Chinese Violet	5,6
Carpobrotus edulis	Iceplant	5,6
Convolvulus mauritanicus	Ground Morning Glory	6
Stapelia gigantea	Carrion Flower	5,6
OTHER		
Cortaderia jubata and *selloana*	Pampas Grass	1,4,5,6
Pennisetum setaceum	Fountain Grass	1,4,5,6 – Fire Hazard
Arundinaria sp., Bambusa sp., Chimonobambusa sp., Chusquea sp., Otatea sp., Phyllostachys sp., Pseudosasa sp., Sasa sp., Semiarundinaria sp., Shibataea sp., Sinarundinaria sp., Thamnocalamus sp.	All bamboo species	4,5,6,9
Do not plant around housing and children playgrounds:		
Bougainvillea spp.	Bougainvillea	3,4,6
Calotropis gigantea	Crown Flower	Toxic
Datura stramonium	Jimson Weed	Highly Toxic
Euphorbia pulcherrima	Poinsettia	Poisonous or will cause skin irritation or burns
Euphorbia tirucalli	Pencil Plant	Poisonous or will cause skin irritation or burns
Jatropha multifida	Coral Plant	Poisonous or will cause skin irritation or burns
Nerium oleander	Oleander	Poisonous or will cause skin irritation or burns
Thevetia peruviana	Be-still Tree	Poisonous or will cause skin irritation or burns
Brugmansia candida	Angel's Trumpet	Poisonous or will cause skin irritation or burns

Note: The above plant list is an update of previous lists published in the MCBH INRMP (2001) and the MCBH Master Landscape Study (2002). It builds upon the recommendations and analyses in those documents as well as experience and expertise of our natural resources staff, and new information received since 2002. Any plants on this list are strictly prohibited from any plantings on MCBH properties. Consult companion Table D2-2 for an Approved List of preferred indigenous and/or Polynesian introduced plants for recommended use in MCBH planting schemes on various MCBH properties specified therein.

Remarks

1. Prolific seeder
2. Destructive / aggressive root system
3. Thorns, caustic sap, causes skin irritation, poisonous
4. Difficult to control / high maintenance, economically expensive to control/maintain
5. Little or no means of natural control
6. Out competes natives and other species – fast growth, rapid reproduction, high dispersal ability
7. Harmful epiphytic (grows on other plants) behavior
8. Allelopathy (negatively influences the growth and development of neighboring plants)
9. Causes erosion

Conditions that Lead to Invasion[1]

Traits of invasive species

Many features have been attributed to invasive species and invaded ecosystems, but none are universal and invasive species tend to have a suite of traits rather than all of them. Common invasive species traits include fast growth, rapid reproduction, high dispersal ability, phenotypic plasticity (the ability to alter one's growth form to suit current conditions), tolerance of a wide range of environmental conditions, ability to live off of a wide range of food types, single parent reproduction (especially in plants), and, commonly, association with humans. The single best predictor of invasiveness, however, is whether or not the species has been invasive somewhere else.

Species-based mechanisms

Species-based characteristics focus on plant competition. While all plants are able to compete in some manner in order to survive and persist, invasive species appear to have specific traits or combinations of specific traits that make them especially good competitors. In some cases it can be as simple as having the ability to grow and reproduce more rapidly than native species. Other situations are more complex, such as allelopathy, which is a common mechanism whereby the invader directly or indirectly prevents other plants from growing nearby.

Life history

Several traits have been singled out by researchers as predictors of invasive ability in plants. For example, the ability to reproduce both asexually (vegetatively) as well as sexually, rapid growth, early sexual maturity, high reproductive output, the ability to disperse young widely, tolerance of a broad range of environmental conditions, and high phenotypic plasticity are all abilities that might aid an invasive plant in establishing and proliferating in a new environment. In addition, plants that are associated with human habitats, such as crop plants (and their weeds), plants valued for ornamental purposes, or plants that are spread along roadways or by domestic animals, are more likely to find a vector to travel to a new habitat in the first place.

Superior competition

A common trait of invasive species is great competitive ability, which can be stronger against plants in a new habitat than plants in their native habitat. There can be huge differences between how an invasive species interacts with its native ecosystem, and with the ecosystem it is invading. Often, the invading species has a better chance at acquiring resources, which can be light, water, space, or nutrients.

Facilitation

Facilitation is the mechanism by which some species can alter their environment through chemicals or manipulation of abiotic factors, usually to make it more favorable to their growth or reproduction. Sometimes, neighboring species may benefit by another's facilitation, but often the facilitation actually benefits the target species to the detriment of its neighbors.

[1] This information excerpted from "Invasive Species", available at http://en.wikipedia.org/wiki/Invasive_species.

Table D2-2: APPROVED PLANTS FOR NATIVE AND POLYNESIAN INTRODUCED PLANTINGS ABOARD ALL MCBH PROPERTIES

The following plants are allowed aboard specific MCBH installations (i.e., MCBH-Kaneohe Bay, MCTAB, Camp H.M. Smith, Manana Housing, Puuloa Training Facility, Waikane Valley Impact Area, Molokai Training Facility – see table for details) for plantings. **Prior to purchase and/or planting, any plants considered for landscaping not identified on this list must be reviewed and approved on a case-by case-basis by the MCBH Environmental Department for suitability of use or introduction to MCBH properties and by the Facilities Department for maintenance concerns.**

Scientific Name	Common Name	Hawaiian Name	Endemic (e), Indigenous (ind.), or Polynesian (p).	Recommended Planting Location: K=MCBH Kaneohe Bay; CS=Camp Smith; M=Manana; P=Puuloa
TREES				
Acacia koa	Koa	Koa	e	CS
Acacia koaia		Koaʻia	e	CS
Aleurites moluccana	Kukui Tree	Kukui	p	CS
Artocarpus altilis	Breadfruit	Ulu	p	CS/M/K
Broussonetia papyrifera	Paper Mulberry	Wauke	p	CS/M
Calophyllum inophyllum	True Kamani		p	K/CS/M/P
Cordia subcordata	Kou		p	K/CS/M/P
Diospyros sanwicensis	Hawaiian Ebony	Lama	e	K/M
Erythrina sandwicensis	Hawaiian Coral Tree	Wiliwili	e	K/M/P
Hibiscus tiliaceus		Hau	ind.	CS
Metrosideros polymorpha		Ohiʻa Lehua	e	K/CS/M/P
Munroidendron racemosum			e	CS/M
Pandanus tectorius	Screw Pine	Hala	ind.	K/CS/M/P
Pisonia sp.		Papala	ind/e	CS
Rauvolfia sandwicensis		Hao	e	K/P/M
Santalum freycinetianum	Sandlewood	ʻIliahi	e	CS
Sapindus oahuensis	Oahu Soapberry	Lonomea	e	K/CS/M
Sapindus saponaria	Hawaiian Soapberry	Manele	ind.	CS
Thespesia populnea	Portia Tree	Milo	ind.	K/CS/M/P
Tournefortia argentia	Beach Heliotrope		p	K/P
PALMS & CYCADS				
Pritchardia affinis	Big Island Loulu	Loulu	e	K/CS/M/P
Pritchardia beccariana		Loulu	e	K/CS/M/P
Pritchardia hillebrandii	Molokaʻi Loulu	Loulu lelo	e	K/CS/M/P
Pritchardia remota	Nihoa Loulu	Loulu	e	K/CS/M/P
Pritchardia martii	Oʻahu Loulu	Loulu	e	K/CS/M

Table D2-2: APPROVED PLANTS FOR NATIVE AND POLYNESIAN INTRODUCED PLANTINGS ABOARD ALL MCBH PROPERTIES

Scientific Name	Common Name	Hawaiian Name	Endemic (e), Indigenous (ind.), or Polynesian (p).	Recommended Planting Location: K=MCBH Kaneohe Bay; CS=Camp Smith; M=Manana; P=Puuloa
SHRUBS				
Abutilon menziesii	Red ‘Ilima	Ko‘oloa‘ula	e	CS/M
Alocasia macrorrhizos	‘Ape		p	K/CS/M/P
Argemone glauca	Hawaiian Poppy	Pua kala e	e	K/M/P
Bidens spp.		Ko‘oko‘olau	e	K
Capparis sandwichiana		Maiopilo	e	K/M/P
Chamaesyce sp.		Akoko	e	CS/M
Chenopodium oahuense		‘Aweoweo	e	K/M/P
Colocasia esculenta	Taro	Kalo	p	K/CS/M/P
Cordyline fruticosa	Ti	Ti	p	K/CS/M/P
Dodonaea viscosa		A‘ali‘i	ind.	K/CS/M/P
Gardenia brighamii		Nanu	e	K/M/P
Gossypium tomentosum	Hawaiian Cotton	Ma‘o	e	K/M/P
Hibiscus amottianus	Native White Hibiscus	Koki‘o ke‘oke‘o	e	K/CS/M/P
Hibiscus brackenridgei	Native Yellow Hibiscus	Ma‘o Hau Hele	e	K/CS/M/P
Hibiscus clayi	Clay Hibiscus	Koki‘o ‘ula	e	K/CS/M/P
Hibiscus kokio subsp. Saintjohnianus	Native Red Hibiscus	Koki‘o ‘ula ‘ula	e	K/CS/M
Hibiscus waimeae	White Kauai Hibiscus	Koki‘o ke‘oke‘o	e	CS/M
Morinda citrifolia	Noni		p	K/CS/M/P
Myoporum sandwicense	Bastard Sandalwood	Naio	ind.	K/CS/M/P
Nototrichium sandwicense		Kulu‘i	e	K/CS/M/P
Pipturus albidus		Mamaki	e	CS
Pittosporum sp.		Ho‘awa	e	K/CS/M
Psydrax odoratum		Alahe‘e	ind.	K/CS/M/P
Scaevola sericea	Beach Naupaka	Naupaka kahakai	ind.	K/CS/M/P
Scaevola gaudichaudii	Mountain Naupaka	Naupaka kauahiwi	e	CS
Sesbania tomentosa		‘Ohai	e	K/M/P

Table D2-2: APPROVED PLANTS FOR NATIVE AND POLYNESIAN INTRODUCED PLANTINGS ABOARD ALL MCBH PROPERTIES

Scientific Name	Common Name	Hawaiian Name	Endemic (e), Indigenous (ind.), or Polynesian (p).	Recommended Planting Location: K=MCBH Kaneohe Bay; CS=Camp Smith; M=Manana; P=Puuloa
GROUND-COVERS				
Asplenium nidus		‘Ekaha	ind.	CS
Dianella sandwicensis		Ukiuki	ind.	CS
Heliotropium anomalum		Hinahina	ind.	K/P
Heliotropium curassavicum	Seaside Heliotrope	Kipukai	ind.	K/P
Ipomoea pes-caprae	Beach Morning Glory	Pohuehue	ind.	K/M/P
Jacquemontia ovalifolia subsp. sandwicensis		Pa‘u-o-Hi‘iaka	e	K/CS/M/P
Lipochaeta integrifolia		Nehe	e	K/M/P
Microlepia strigosa		Palapalai	e	K/CS
Nephrolepis cordifolia	Narrow Sword Fern	Kupukupu	ind.	K/M
Osteomeles anthyllidifolia		Ulei	ind.	K/CS/P
Peperomia spp.		‘Ala‘ala wai nui	e	CS
Phymatosorus grossus		Laua’e	p	K/CS/M/P
Plumbago zeylanica	Plumbago	Ilie‘e	ind.	CS
Portulaca molokiniensis		‘Ihi	e	K/M/P
Sesuvium portulacastrum		Akulikuli	ind.	K/CS/P/M
Sida fallax		‘Ilima papa	ind.	K/CS/P/M
Sporobolus virginicus		Akiaki	ind.	K/P/M
Vitex rotundifolia	Beach Vitex	Pohinahina	ind.	K/CS/P/M
Wikstroemia uva-ursi		‘Akia	e	K/CS/P/M

Note: The above plant list is an update of previous lists published in the MCBH INRMP (2001) and the MCBH Master Landscape Study (2002). It builds upon the recommendations and analyses in those documents, as well as the experience and expertise of our natural resources staff, and new information received since 2002. The reader following this list should always contact the MCBH Environmental Department for the latest information prior to making any final decisions. Consult companion Table D2-1 for a Prohibited Plant List of plants prohibited for planting at all MCBH properties.

Table D2-3: APPROVED NON-NATIVE PLANTS FOR PLANTINGS ABOARD ALL MCBH PROPERTIES

The following plants are allowed aboard specific MCBH installations (i.e., MCBH-Kaneohe Bay, MCTAB, Camp H.M. Smith, Manana Housing, Puuloa Training Facility, Waikane Valley Impact Area, Molokai Training Facility – see table for details) for plantings. **Prior to purchase and/or planting, any plants considered for landscaping not identified on this list must be reviewed and approved on a case-by case-basis by the MCBH Environmental Department for suitability of use or introduction to MCBH properties and by the Facilities Department for maintenance concerns.**

Scientific Name	Common Name	Recommended Planting Location: K=MCBH Kaneohe Bay; CS=Camp Smith; M=Manana; P=Puuloa	Remarks
TREES			
Cassia fistula	Golden Shower	K/CS/M/P	
Cassia x nealiae	Rainbow Shower	K/CS/M/P	
Erythrina variegata	Vertical Wiliwili	K/P	Prohibited until the Erythrina Gall Wasp (*Quadrastichus erythrinae*), a recent alien invader that is attacking Wiliwili throughout the state, is under control. The state is working on possible controls as of 2006.
Plumeria obtusa	Singapore Plumeria	K/CS/M/P	
Plumeria rubra	Plumeria	K/CS/M/P	
Samanea saman	Monkeypod	K/CS/M/P	
Senna surattensis	Kolomana	K/CS/M/P	
Tabebuia aurea	Silver Trumpet Tree	K/CS/M/P	
Tabebuia donnell-smithii	Gold Tree	CS/M	
PALMS & CYCADS			
Archontophoenix cunninghamiana	King Palm	CS/M	
Chrysalidocarpus lutescens	Areca Palm	K/CS/M/P	
Hibiscus spp.	Hibiscus (var)		
Hyophorbe lagenicaulis	Bottle Palm	K/CS/M/P	
Latania loddigesii	Blue Latan Palm	K/CS/M/P	
Livistona chinesis	Chinese Fan Palm	CS/M	
Phoenix roebelenii	Dwarf Date Palm	K/CS/M/P	
Ptychosperma macarthurii	Macarthur Palm	CS/M	
Roystonea regia	Royal Palm	CS/M	
Syagrus romanzoffiana	Queen Palm	K/CS/M/P	
Veitchia joannis	Joannis Palm	K/CS/M/P	
Veitchia merrillii	Manila Palm	K/CS/M/P	
Wodyetia bifurcata	Foxtail Palm	K/CS/M/P	
SHRUBS			
Crinum asiaticum	Spider Lily	K/CS/M/P	
Hibiscus spp.	Hibiscus (var)		
Hibiscus rockii	Rock's Kaua`I Hibiscus	K/CS/M/P	
Ligustrum ovalifolium	California Privet	K/CS/M/P	
Murraya paniculata	Mock Orange	K/CS/M/P	
Strelitzia reginae	Bird of Paradise	CS/M	
GROUND-COVERS			
Arachis pintoi	Golden Glory	K/CS/M/P	
Tradescantia spathacea	Oyster Plant	K/CS/M/P	

Note: The above plant list is an update of previous lists published in the MCBH INRMP (2001) and the MCBH Master Landscape Study (2002). It builds upon the recommendations and analyses in those preceding documents, as well as the experience and expertise of our natural resources staff, and new information received since 2002. The reader following this list should always contact the MCBH Environmental Department for the latest information prior to making any final decisions.

APPENDIX E
COURSE OF ACTION

This appendix contains information in support of Section 7, the Course of Action Component Plans.

E1. MCBH INRMP Goals and Objectives

E2. Past Implementation Progress

E3. Active and Programmed Management Actions

E4. Funding Description

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E1. MCBH INRMP GOALS AND OBJECTIVES

Goal 7.1: Fish and Wildlife Management. Contribute to maintenance of healthy regional fish and wildlife populations by managing protected species and habitats that currently exist within MCBH lands/waters/air space, consistent with natural resources laws, military directives, interagency consultations, management programs, and permits.

Objective 7.1.1: Implement MCBH-KB's Fish and Wildlife Management Program at the two Wildlife Management Areas (WMAs) on Mokapu Peninsula.
Objective 7.1.2: Increase emphasis on Fish and Wildlife Management Program elements at MCBH-KB outside the two WMAs.
Objective 7.1.3: Develop and implement a Fish and Wildlife Management Program on MCBH parcels outside MCBH-KB.
Objective 7.1.4: Document and share results of inventories and monitoring of protected/pest species and habitats and improve data management systems.
Objective 7.1.5: Assist implementation of a Bird-Aircraft Strike Hazard (BASH) Management Program at MCBH-KB's airfield.
Objective 7.1.6: Track and manage impacts of other agency plans on MCBH's protected/pest species management activities.
Objective 7.1.7: Catalyze regional ecosystem-level protected species enhancement/ invasive species control efforts.
Objective 7.1.8: Optimize effectiveness of both fish and wildlife protection and invasive/pest species control.

Goal 7.2: Wetland Management. Protect, enhance, and restore wetlands from loss or degradation to the maximum extent possible, consistent with the military mission and related wetland laws and regulations.

Objective 7.2.1: Identify, map and characterize all MCBH wetlands.
Objective 7.2.2: Identify wetland threats and implement strategies to address them.
Objective 7.2.3: Identify and implement wetland enhancement opportunities.
Objective 7.2.4: Identify and implement wetland monitoring and management activities.
Objective 7.2.5: Comply with wetland protection laws and regulations.

Goal 7.3: Watershed Management. Use an ecosystem-based watershed approach to managing water quality, erosion, and flow/flooding issues on MCBH lands.

Objective 7.3.1: Take a watershed approach to characterize and develop solutions to flooding, erosion and other watershed health issues.
Objective 7.3.2: Conduct or facilitate restoration activities that enhance watershed health.
Objective 7.3.3: Implement BMPs to improve watershed health.
Objective 7.3.4: Incorporate watershed BMPs into guidelines, operating and evaluation procedures.
Objective 7.3.5: Ensure adequate awareness building and training about BMPs, watershed health and water quality.

Goal 7.4: Coastal and Marine Resources Management. Use an ecosystem-based watershed approach to manage and enhance shoreline and near-shore marine resources within MCBH control and/or use.

Objective 7.4.1: Improve inventory and conditions of biological and geophysical processes and features in MCBH littoral areas.

Objective 7.4.2: Identify impacts and threats to MCBH coastal and marine resources.
Objective 7.4.3: Plan restoration, avoidance, mitigation or monitoring activities on MCBH coastal and marine resources.
Objective 7.4.4: Improve implementation of policies, guidelines, and procedures on shoreline and offshore coastal and marine resources.
Objective 7.4.5: Improve awareness and training on coastal and marine resources.
Objective 7.4.6: Optimize interaction with regional stakeholders to address coastal and marine conservation impacts and opportunities.

Goal 7.5: Grounds Maintenance and Landscape Management. Maintain grounds and landscaped areas through cost-effective, environmentally sound, sustainable grounds maintenance and landscaping practices, emphasizing use of native plants, to support training needs, recreation, and natural resources compliance.

Objective 7.5.1: Take a sustainable landscape approach to improve grounds maintenance and landscape management.
Objective 7.5.2: Identify, map and characterize vegetation and other ground cover in both maintained and non-maintained landscapes.
Objective 7.5.3: Create and maintain a "flame-retardant" landscape at Ulupa'u Head to sustain live fire training and a healthy booby colony.
Objective 7.5.4: Improve landscape monitoring and management.
Objective 7.5.5: Optimize effectiveness of education and outreach on sustainable landscaping.

Goal 7.6: Outreach, Outdoor Recreation and Quality of Life Management. Support high quality, natural-resource-based (not activity-based) outdoor recreation/outreach experiences consistent with natural resource conservation.

Objective 7.6.1: Enhance opportunities for appropriate natural resources-related recreational/outreach activities within sustainable limits.
Objective 7.6.2: Improve awareness of recreation uses, impacts, and constraints regarding MCBH natural resources.
Objective 7.6.3: Optimize interaction with regional stakeholders to address outdoor recreation impacts and opportunities.[1]

Goal 7.7: Resource Information Management. Develop and use the best information and information management "tools" (based primarily on an Environmental Geographic Information System (EGIS)) to assist in implementing the INRMP and supporting integrated natural resources management on MCBH properties.

Objective 7.7.1: Automate available natural resources data for ease of reporting, trend analysis, and eventual integration with MCBH's EGIS.
Objective 7.7.2: Maintain and enhance natural resource management databases for MCBH-KB in MCBH's EGIS.
Objective 7.7.3: Develop basemaps and related natural resources databases for MCBH properties other than MCBH-KB.
Objective 7.7.4: Optimize Base-wide sharing of natural resource management data.
Objective 7.7.5: Optimize interaction with other agencies to facilitate sharing of natural resource management data.
Objective 7.7.6: Optimize technical capacity of and access to the MCBH EGIS.
Objective 7.7.7: Use a Global Positioning System (GPS) unit for gathering natural resource data.

[1] Objective 7.6.3: Integrate natural resource enhancement with outdoor recreational opportunities from the 2001 INRMP/EA was removed and management actions consolidated in related objectives (7.3.2, 7.6.2). The current Objective 7.6.3 was formerly Objective 7.6.4.

E2. PAST IMPLEMENTATION PROGRESS

As required by the Sikes Act Improvement Act and pertinent military directives, the INRMP is to be reviewed annually and updated and/or revised, as appropriate, no less than once every five years. This appendix documents MCBH's compliance with this requirement. It contains documentation of progress implementing the INRMP/EA from 2002-2006. During that time frame, MCBH has produced regular progress reports and sent them to regulators for review and comment. The first two years (2002-2003) were combined into one progress report; the years 2004 and 2005 were covered by single year progress reports, and progress in 2006 is covered by this INRMP Update. Complete records of INRMP progress reports sent and any related correspondence received from reviewing agencies during the past five years is maintained in the MCBH Environmental Department files, while highlights of those reviews are reported herein.

The MCBH Senior Natural Resources Management Specialist has offered to meet with regulators reviewing these reports each time they were sent (per the cover letter accompanying the progress reports and through phone calls and emails). Over this time frame, USFWS representatives have either met MCBH natural resources staff to review progress and/or responded in writing to these progress reports. In fact, in 2004, the Pacific Islands Office of the USFWS nominated MCBH for the Military Installation Conservation Partner Award based on exemplary implementation of our INRMP. The State of Hawaii DLNR personnel only responded once in writing after the 2002-2003 progress report was submitted. However, DLNR personnel regularly interact and cooperate with MCBH natural resources staff in a number of areas. MCBH notes with interest that the State's 2005-published *Hawaii's Comprehensive Wildlife Conservation Strategy (CWCS)* outlines a statewide strategy for native wildlife conservation and lists as one of its priority conservation objectives to strengthen existing partnerships, including those with the US Marine Corps (Mitchell et al. 2005). It is anticipated that this will mean that DLNR staff will play a more active role in annual progress reviews in the future. Finally, NOAA Fisheries (formerly National Marine Fisheries Service) never submitted any formal responses to our annual progress reports. However, due to receipt of their review comments on the INRMP update document and an existing long-term cooperative relationship with various NOAA Fisheries staff, MCBH expects to receive their participation in annual progress reviews in future years. .

In summary, this appendix includes the following documents and tables:

Table E2-1. Project-related reports completed 2002-2006. (Excerpted from MCBH Natural Resources Bibliography (see Appendix F1)).

Table E2-2. Summary table of 2001 INRMP/EA management actions completed, removed or consolidated.

Table E2-3. MCBH INRMP Completed Projects Requiring Section 7/NEPA/Permits (2000-2005).

Table E2-4. Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006).

INRMP Progress Reports.

Reprinted in this appendix are the annual progress reports (covering 2002-2005) submitted by MCBH to Sikes Act partners. For each progress report there are several components: (1) Cover letter submitted to each Sikes Act partner: USFWS, State DLNR and NOAA Fisheries; (2) Enclosure 1 – detailing answers to the five questions per INRMP implementation guidance (HQ USMC); (3) Table A – showing status of 'must fund' projects; (4) Table B – showing status of each management action included in the INRMP/EA[1]; (5) Table C – showing an overview of the execution rate/implementation status of the management actions by level of effort—cumulative over the preceding years 2002 - 2005.

[1] Since this table is cumulative, only 2-3 pages are reprinted for each year. Table E2-4 is the 'Table B' for the 2006 reporting period, showing cummulative progress on each management action for 2002-2006.

Table E2-1. Project-Related Reports Completed 2002-2006

Report Title	Author	Date	Details	COMPTRAK #[1]
7.0 Overall INRMP Program Management				
Environmental Compliance Evaluation (ECE) Draft Evaluation Outbrief, Marine Corps Base Hawai'i, Evaluation Period: 4-15 March 2002.	Potomac Hudson Engineering Inc.	2002	Summary of the Headquarters Marine Corps (HQMC) ECE of MCBH from 4-15 March, 2002. Provides a snapshot of MCBH's environmental compliance and protection program status based on audit visit by Headquarters Marine Corps inspection team. March 2002. Per MCO P5090.2A, program audits are performed every five years. Includes information on status of INRMP implementation review.	N/A
Marine Corps Base Hawaii Natural Resources Conservation-Small Installation (Period Covered: FY01 - FY03)	Drigot, Diane	2003	Report prepared for entry in the interservice military competition leading to service-wide and Department of Defense wide environmental awards, after juried review by subject matter experts. This report provides summary of MCBH accomplishments in the Fy01-03 time frame in the Natural Resources Conservation-Small Installation Category. This report won the Secretary of Navy overall award in the competition.	N/A
Marine Corps Base Hawaii Natural Resources Conservation-Small Installation (Period Covered: FY04 - FY05)	Drigot, Diane	2005	Report prepared for entry in the interservice military competition leading to service-wide and Department of Defense wide environmental awards, after juried review by subject matter experts. This report provides summary of MCBH accomplishments in the FY04-05 time frame in the Natural Resources Conservation-Small Installation Category. This report won first place at both the Secretary of Navy and the Department of Defense-wide competitions.	N/A
Environmental Compliance Evaluation (ECE) Draft Evaluation Outbrief, Marine Corps Base Hawaii, Evaluation Period: 24 January - 3 February 2006.	TEC Inc.	2006	Summary of the Headquarters Marine Corps (HQMC) ECE of MCBH from 4-15 March, 2002. Provides a snapshot of MCBH's environmental compliance and protection program status based on audit visit by Headquarters Marine Corps inspection team. March 2002. Per MCO P5090.2A, program audits are performed every five years. Includes information on status of INRMP implementation review.	N/A
7.1 Fish and Wildlife Management				
Mangrove Removal and Endangered Species Habitat Improvements, Final Environmental Assessment and Finding of No Significant Impact. Marine Corps Base Hawai'i, Kane'ohe Bay, O'ahu Island, Hawai'i	Wil Chee-Planning, Inc.	2002	This EA covers: 1) removal of approx. 132K square feet of mangrove at 8 locations; 2) excavation/removal of approx. 16K cubic yards of debris/sediment at 3 locations; and 3) restoration of clogged culvert connecting former intertidal wetland w/ Sag Harbor within MCBH Kane'ohe Bay (Mokapu peninsula)	HI21004

[1] COMPTRAK # is a project tracking number in the USMC environmental budget tracking system.

Table E2-1. Project-Related Reports Completed 2002-2006

Report Title	Author	Date	Details	COMPTRAK #[1]
Marine Corps Base Hawai'i Invasive Species Management Study, Final Report	Sustainable Resources Group Int'l Inc.	2002	Response to increased concern about adverse affects of invasive species and includes recommended management actions. Prepared for MCBH Environmental Department, prepared by Sustainable Resources Group Int'l, Inc. December 2002	HI20012
Marine Corps Base Hawai'i Support of Hawai'ian Stilt Recovery in the Ko'olaupoko District , O'ahu, Final Report	Rauzon, M.J., Garrison, J.S.E., Menard, T.C., and K.N. Duin of Sustainable Resources Group Int'l, Inc.	2002	Assesses current and future habitat conditions, enhancements, and actions in the region for the Hawaiian stilt and recommends short and long term management goals. December 2002	HI95156
Marine Corps Base Hawai'i Support of Hawai'ian Stilt Recovery in the Ko'olaupoko District , O'ahu, Final Report- Internal Addendum	Rauzon, M.J. and K.N. Duin of Sustainable Resources Group Int'l, Inc.	2002	Prepared for Environmental Department MCBH and Naval Facilities Engineering Command; December 2002	HI95156
Wetland Restoration/Percolation Ditch Replacement Project, Final Environmental Assessment and FONSI. Marine Corps Base Hawai'i-Kane'ohe Bay, Ko'olaupoko District, O'ahu, Hawai'i	Drigot, Diane	2004	Final EA outlining how MCBH-KB proposes to manage chronic flooding and stormwater runoff at a Combat Service Support Group (CSSG)-3 vehicle maintenance compound in such manner as also helps restore historic wetland conditions, enhance scenic and biological values, and improve water quality. July 2004. FONSI signed by J.C. McAbee, Commanding General, USMC, Commanding General, Marine Corps Base Hawai'i	HI60834
Archaeological Monitoring and Coring for Wetland Restoration/Percolation Ditch Replacement, Marine Corps Base Hawaii, Kaneohe Bay, O'ahu, Hawai'i. Final Report.	International Archaeological Research Institute, Inc.	2006	N62742-04-D-1855 Task Order 0004 Final report of archaeological monitoring and paleoenvironmental investigations conducted in support of the wetland restoration/percolation replacement project at the Marine Corps Base Hawaii, Kane'ohe bay. The project location is just north of Nu'upia 'Ekolu Fishpond. Prepared for: Commander, Navy Region Hawaii Pearl Harbor through Navy Facilities Engineering Command. August 2006.	HI60834
7.3 Watershed Management				
Erosion Mitigation Archaeologically Sensitive Areas Pyramid Rock and Fort Hase Recreational Areas MCBH, Kane'ohe Bay, O'ahu, Hawai'i. After Action Report.	Edward K. Noda and Associates, Inc.	2001	Report describing erosion control and related site improvements at Pyramid Rock Recreation Area and Fort Hase Recreational Area, both located at Marine Corps Base Hawai'i Kane'ohe Bay. Prepared for Environmental Compliance and Protection Department, MCBH Kane'ohe Bay through U.S. Army Corps of Engineers, Honolulu Engineering District.	HI14985

Table E2-1. Project-Related Reports Completed 2002-2006

Report Title	Author	Date	Details	COMPTRAK #[1]
Marine Corps Base Hawai'i Marine Corps Training Area Bellows Watershed Impairment Study with Recommendations for Stream and Estuarine Repair, Final Report.	Sustainable Resources Group Int'l Inc.	2002	Report describing the results of an assessment off watershed conditions in the MCTAB portion of the Waimanalo and Inoa'ole Stream systems, and concept design solutions developed to address watershed impairment issues. December 2002.	HI20033
Improve Ground Cover/Water Delivery, Reduce Brushfire Risk, Sustain Birds and Weapons Training at Ulupa'u Crater Head. Final Design Report with Installation and Instructions	Sustainable Resources Group Int'l Inc.	2003	Prepared for: Environmental Department, Marine Corps Base Hawai'i, prepared through Naval Facilities Engineering Services Center. September 2003. 3-ring binder with plans, specs, drawings and 3 color figures showing water cannon placement and expected area of coverage.	HI20007/ HI20008
Mokapu Central Drainage Channel Study, Marine Corps Base Hawai'i, Kane'ohe Bay. Final Submittal	Hawai'i Pacific Engineers	2003	Study involving assessment and refinement of a 1995 study of the Mokapu Central Drainage Channel. Prepared for Pacific Division Naval Facilities Engineering Command, prepared by Hawai'i Pacific Engineers. Facilities Department funded project (data was used in MCDC HI20010). February 2002 - Rev Mar 2003.	N/A
Landfill and Northeast Crater Catchment Erosion Assessment Report With Recommendations, Final Report	Sustainable Resources Group Int'l, Inc.	2004	Report summarizing a project to delineate erosion hotspots on Ulupa'u Crater at Marine Corps Base Hawai'i-Kane'ohe Bay, and develop cost effective design solutions to reduce and arrest erosion at specific sites. Prepared for: Environmental Dept., Marine Corps Base Hawai'i. Prepared through: Naval Facilities Engineering Services Center. June 2004.	HI20013
Natural Resources Management Study to Address ECE-Mandated Erosion Compliance Problems on MCBH Lands, Various Locations. Amendment 3: Cost Estimate for Materials and Installation of Best Management Practices and Structural Fixes to Control Landfill Erosion Hotspots.	Sustainable Resources Group Int'l, Inc.	2004	Cost estimate for materials, supplies and labor to implement erosion control designs at various locations on Marine Corps Base Hawai'i. Prepared for MCBH Environmental Department. Prepared through Naval Facilities Engineering Services Center. Staff working paper. July 2004.	HI20013
Basis of Design and Design Calculations for Restore Watershed/Repair Mokapu Central Drainage Channel, Marine Corps Base Hawai'i, Kane'ohe Bay, Final Submittal.	Hawai'i Pacific Engineers	2005	Basis of Design and Design Calculations for restoration of the Mokapu Central Drainage Channel at MCBH. Restoration of the MCDC would provide for ecological, aesthetic and recreational functions of the basin while reducing the adverse impacts of flood inundation in a cost effective manner. Prepared for Naval Facilities Engineering Command Pacific, Pearl Harbor Hawai'i. 21 July 2005.	HI20010

Table E2-1. Project-Related Reports Completed 2002-2006

Report Title	Author	Date	Details	COMPTRAK #[1]
Electrical Variance Review Reports for the Pressure Relief Valves Design for Water Delivery System at the Ulupa'u Crater.	Sustainable Resources Group Int'l, Inc.	2005	Letter dated 17 November 2005, documenting the findings of a review of the variances to the electrical as built system for the water cannon system installed in Ulupa‘u Crater, prepared by Sustainable Resources Group Int'l, Inc. (SRGII). In response to the finding that insufficient voltage and amperes were being delivered to the three motors that run the water cannons in the original design, SRGII provided a revised electrical solution design. The variances installed by the build contractor were consistent with the original intent of the design, and the materials used were adequate replacements for the originally designed system.	HI21008
Erosion Control Design/Instructions for Range Berms within Ulupa'u Crater, Final Report	Sustainable Resources Group Int'l, Inc.	2005	Final report which describes the findings of an assessment of existing berms and fill pile at the Range Training Facilities, with respect to their surficial stability and makes recommendations on types of cover materials and BMPs to help regulate erosion rates. Prepared for Environmental Department, Marine Corps Base Hawai'i. Prepared through Naval Facilities Engineering Services Center. Prepared by Sustainable Resources Group Int'l, Inc. Staff working paper. October 2005.	N/A
Estimated Probable Construction Cost for Restore Watershed/Repair Mokapu Central Drainage Channel, Marine Corps Base Hawai'i, Kane'ohe Bay, Final Submittal.	Hawai'i Pacific Engineers	2005	Basis for estimate of probable construction cost for Restore Watershed/Repair Mokapu Central Drainage Channel project at MCBH. Restoration of the MCDC would provide for ecological, aesthetic and recreational functions of the basin while reducing the adverse impacts of flood inundation in a cost effective manner. Includes summary report, markup report, and detailed report unburdened. Prepared for Naval Facilities Engineering Command Pacific, Pearl Harbor Hawai'i. 21 July 2005.	HI20010
Pressure Relief Valves Design for Water Delivery System at the Ulupa'u Crater, Final Report	Sustainable Resources Group Int'l, Inc.	2005	This project was funded to design additional components of the water canon system in Ulupa'u Crater to address a system failure related to over-pressurization of the pipe network. A separate portion of the project provides for a review of changes made to the system’s electrical solution design. Prepared for: Environmental Department, Marine Corps Base Hawai'i. Prepared through Naval Facilities Engineering Services Center and Fleet & Industrial Supply Center Regional Contracting Department. November 2005.	HI21008

Table E2-1. Project-Related Reports Completed 2002-2006

Report Title	Author	Date	Details	COMPTRAK #[1]
Restore Watershed/Repair Mokapu Central Drainage Channel (MCDC), Marine Corps Base Hawai'i, Kane‘ohe Bay, Ko‘olaupoko District, O‘ahu, Hawai‘i, Final Environmental Assessment and FONSI.	Drigot, D.C.	2005	Final EA and FONSI for Restore Watershed/Repair Mokapu Central Drainage Channel project at MCBH. Restoration of the MCDC would provide for ecological, aesthetic and recreational functions of the basin while reducing the adverse impacts of flood inundation in a cost effective manner. Prepared for U.S. Marine Corps, Marine Corps Base Hawai'i (MCBH). July 2005.	HI20010
Specifications for Restore Watershed/Repair Mokapu Central Drainage Channel, Marine Corps Base Hawai'i, Kane'ohe Bay, Final Submittal.	Hawai'i Pacific Engineers	2005	Specifications for Restore Watershed/Repair Mokapu Central Drainage Channel project at MCBH. Restoration of the MCDC would provide for ecological, aesthetic and recreational functions of the basin while reducing the adverse impacts of flood inundation in a cost effective manner. Prepared for Naval Facilities Engineering Command Pacific, Pearl Harbor Hawai'i. 21 July 2005.	HI20010
Improve Water Delivery, Reduce Brushfire Risk, Sustain Birds and Weapons Training at Ulupa'u Crater Head, Marine Corps Base Hawai'i. Water Cannon System Performance Test Report.	Sustainable Resources Group Int'l Inc.	2006	This report covers performance aspects of a remote-controlled, solar powered water cannon system in Ulupa'u Head Wildlife Management Area (WMA) at Marine Corps Base Hawai'i, Kaneohe Bay. Four water cannons were strategically located inside the WMA to wet down areas in the immediate vicinity of tree clusters during wildland fires in order to reduce chance of destroying tree habitat or birds during brushfire events. The CD contains electronic versions of the report and appendices. Text documents are primarily Microsoft Word files except where Adobe Acrobat files were required. Prepared for Environmental Department, Marine Corps Base Hawai'i, through Naval Facilities Engineering Services Center. April 2006.	HI20008
7.4 Coastal and Marine Resources Management				
Marine Corps Base Hawai'i Coral Reef Ecosystem Management Study, Final Report	Sustainable Resources Group Int'l Inc.	2002	Coral Reef Ecosystem Management Study that summarizes information available and addresses critical information gaps regarding coral reef ecosystems. Prepared for MCBH Environmental Department, prepared through Naval Facilities Engineering Service Center December 2002	HI20009
MCBH Marine Inventory Map for Marine Resources Survey, Draft	USFWS	2004	Preliminary printout showing bathymetry in 500-yard buffer zone around Mokapu Peninsula. Bathymetry source: SHOALS LIDAR, collected in Nov. 2000. Prepared by USFWS for MCBH, 18 Feb 2004. 36" x 60"	HI20009
MCBH Inventory Study Areas for Marine Resources Survey, Draft	USFWS	2004	Preliminary printout showing 11 study areas in 500-yard buffer zone around Mokapu Peninsula and GPS points where rapid ecological data was collected. Prepared by USFWS for MCBH, 15 June 2004. 36" x 38" (work in progress, expected completion in 2006.	HI20009

Table E2-1. Project-Related Reports Completed 2002-2006

Report Title	Author	Date	Details	COMPTRAK #[1]
7.5 Grounds Maintenance and Landscape Management				
Flammable Vegetation Control, As-Built Documents, Weapons Range at the Marine Corps Base Hawaii, Kane'ohe Bay, O'ahu, Hawaii	Nakoa Companies, Inc.	2002	CD containing As-Built Documents for Flammable Vegetation Control, Weapon Range at MCBH	HI42261
Flammable Vegetation Control, Post-Construction Condition Report, Weapons Range at the Marine Corps Base Hawai'i, Kane'ohe Bay, O'ahu, Hawai'i	Nakoa Companies, Inc.	2002	Post-Construction Condition Report for Flammable Vegetation Control, Weapons Range at MCBH	HI42261
Master Landscape Study for MCBH Integrated Resources Management Plan (Final)	Hawai'i Design Associates Inc.	2002	Master Landscape Study for MCBH: includes separate reports for Camp H.M. Smith (53 pages), Kane'ohe Bay (271 pages), Manana Housing Area (32 pages), and Puuloa Training Facility (34 pages). Prepared by Hawai'i Design Associates, Inc. with contributions by Umemoto Cassandro Design Corporation. Prepared for Marine Corps Base Hawai'i. May 2002.	HI21002
Ulupa'u Crater Fire Management Study	Belt Collins Hawai'i (BCH)	2002	The purpose of this study, FMS 2002, is to evaluate fire management at Ulupa'u Crater and recommend updates, as appropriate. Prepared for: Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawai'i. April 2002.	HI21005
GIS Mapping and Control of Invasive Species/Erosion/Brushfire Control on MCBH Training Lands ("Vegetation Survey of Marine Corps Training Area Bellows 2003")	Geo Insight International, Inc.	2004	Report designed to provide an analysis of the Marine Corps Training Area-Bellows landscape, to assess the problems based on its vegetation and land use, and to suggest ways of managing the land in a sustainable manner. Prepared for: Environmental Dept., Marine Corps Base Hawai'i, prepared through Naval Facilities Engineering Services Center (NFESC). April 2004.	HI20012
7.6 Quality of Life, Outdoor Recreation, and Outreach Management				
Nu'upia Ponds Recreational Run Access Trail, Final Environmental Assessment. Marine Corps Base Hawai'i-Kane'ohe Bay, Kane'ohe, O'ahu, Hawai'i	Drigot, Diane	2002	Final EA outlining how MCBH-KB proposes to establish an additional public access option at Nu'upia Ponds Wildlife Management Area to accommodate base population demand for a recreational running route in more secluded, safer surroundings than existing high-traffic corridors. July 2002.	N/A

Table E2-1. Project-Related Reports Completed 2002-2006

Report Title	Author	Date	Details	COMPTRAK #[1]
Interpretive Sign for MCBH Klipper Golf Course Ponds Environmental Enhancement (Interpretive signage and images), Marine Corps Base Hawai'i, Kane'ohe Bay	Design Ng Company for Hawai'i Design Associates, Inc.	2004	Sign posted at golf course, constructed of an exterior rated Scotch Cal vinyl print (24"x36") laminated to a 3mm Sintra backing and framed in oak. See figure 3-1 in the project report. Project implements an earlier-prepared concept design to enhance waterbird habitat conditions at the constructed ponds/wetlands on the Klipper Golf Course. Prepared by Hawai'i Design Assoc., through Naval Facilities Engineering Service Center, for the Environmental Dept., MCBH.	HI80726
Other Reports—related to INRMP but not funded under the INRMP program				
Case Study Evaluation of Challenges Associated with Implementing Native Riparian Vegetation Strips as a Best Management Practice at Two Locations: Klipper Golf Course Ponds, Marine Corps Base Hawai'i, and Waimanalo Stream, O'ahu, Hawai'i	Sudduth, T.	2005	Master's thesis by Tiana M. Sudduth that focused on the effectiveness of native riparian vegetative buffers as a component of two improvement projects on O'ahu, Hawai'i. Case study evaluation of each project's successes and failures, and made recommendations for future projects of a similar nature. University of Hawai'i, Department of Natural Resources and Environmental Management. August 2005.	Related to project HI0080726M
Cave Faunal Survey and Environmental Assessment for the Reburial of the Mokapu Collection Aboard Marine Corps Base Hawai'i, Kane'ohe Bay, O'ahu, Hawai'i, Final Report.	Hawai'i Biological Survey	2005	Information from this report prepared for the Cultural resources program project EA was used to help update biological inventory in the INRMP. Final report for a study to search for obligate cave-adapted animals living in a cave on Pu'u Hawai'i Loa in which reburial of human remains is proposed, as well as to assess the biological significance of the cave and vicinity. Prepared for Marine Corps Base Hawai'i, Kane'ohe Bay. Prepared by Francis G. Howarth and David G. Preston, Hawai'i Biological Survey. 31 October 2005.	N/A
Proposed USMC Jungle Warfare Training, Environmental Assessment. Waikane Valley, O'ahu, Hawai'i	U.S. Marine Corps, Marine Corps	2004	Final report in PDF and MS Word files, sub consultants reports (complete draft EA in PDF format is 358 pages). Dated September 30, 2002. Project cancelled by the proponent. December 10, 2004.	N/A
Garden Renovations, Marine Corps Base Hawaii and Marine Corps Training Area Bellows	Gencarelli, C.	2003	Final Report For Undergraduate Internship Course IS300, University of Hawaii, and to help MCBH fulfill INRMP/EA (2001) Objective 7.5.5 to sustain and improve demonstration native plant riparian gardens at MCBH Kaneohe Bay and MCTAB. Author fulfilled academic undergraduate degree requirement while maintaining, improving, and evaluating the garden plots, and recording lessons learned in this report.	N/A

1

Table E2-2. MCBH INRMP Completed Projects Requiring Section 7/NEPA/Permits (2000-2005)

Project Number	Project Title	COA Section	Level of NEPA Required	Sec 7 ESA Consult (Y/N)	Permits (Y/N)
N/A	Nu‘upia Ponds Recreational Run Trail and Interpretive Signs along Route (in-house, no extra cost)	7.1.1, 7.6.2	EA	Y	N
HI21004	Continue Endangered Species Habitat Improvements/ Mangrove Removal	7.2.2	EA	Y	Y
HI80726	Design/Construct Golf Course Pond/ Endangered Waterbird Enhancement Project	7.2.3, 7.6.3	CATEX	Y	N
HI60834	Wetland Restoration/Percolation Ditch Replacement	7.2.3	EA*	Y*	Y*
HI20010	Watershed Repair/Restore, MCDC	7.3.2	EA*	Y*	Y*
HI10007	Design/Construct Puuloa Range Impact Berm Repair	7.3.2, 7.4.1	CATEX	N	Y
HI21007	Improve Ground Cover/ Reduce Fire Risk/ Sustain Birds/ Weapons Training at Ulupa‘u Crater	7.5.3, 7.3.1	CATEX	N	N
HI21008	Improve Water Delivery/ Reduce Fire Risk/ Sustain Birds/ Weapons Training at Ulupa‘u Crater	7.5.3	CATEX	N	N
HI20011	Front Gate Static Display Project	7.5.5	CATEX	N	N

Note: The asterisk (*) denotes that this requirement has been completed but the entire project is still active, straddling the end of the time frame for the 2001 INRMP/EA and the beginning of the time frame for the updated INRMP (i.e., project almost completed and in the final construction phase in November 2006). See Table 3.2 of the updated INRMP for a similar table applicable to the INRMP Update implementation period (2007 – 2011).

Table E2-3. Summary Table of 2001 INRMP/EA Management Actions Completed, Removed or Consolidated

Management Action	Obj	Remarks
Course of Action: 7.1 Fish and Wildlife Management		
UHWMA/SHA: Update Ulupa'u Head WMA Boundary map to reflect current condtions.	7.1.1	Completed
Complete H120012 Invasive Species Management Study	7.1.3	Completed
Complete the HI95156 MCBH Hawaiian Stilt Regional Recovery Study.	7.1.7	Completed
Provide input to finalization and implementation of USFWS's Regional Waterbird Recovery Plan.	7.1.7	Completed
Host appropriate projects to control invasive species and habitats on/around MCBH.	7.1.7	Consolidated into another management action.
Course of Action: 7.2 Wetland Management		
Complete HI20004 Wetland Delineation Study.	7.2.1	Completed
Evaluate and incorporate USFWS wetland classification inventory into the MCBH EGIS, as appropriate.	7.2.1	Consolidated into another management action.
Implement developed data sharing agreements, as appropriate.	7.2.1	Consolidated into another management action.
Explore interagency cooperative projects to implement regional wetland enhancement opportunities.	7.2.3	Consolidated into another management action.
Course of Action 7.3 Watershed Management		
Complete HI20033 MCTAB Watershed Impairment Study	7.3.1	Completed
Complete HI20013 ECE-Mandated Erosion Assessment of MCBH Properties.	7.3.1	Completed
Evaluate and implement appropriate recommendations from the HI20013 ECE-Mandated Erosion Assessment.	7.3.1	Completed
Design/Construct HI10007 Puuloa Range Impact Berm Repair.	7.3.2	Completed
Design/Construct HI32168 Pa'akai Pond/Beach Restoration.	7.3.2	Removed
Implement watershed BMPs in appropriate projects.	7.3.3	Removed
Develop and implement appropriate BMPs into contract SOWs, Plans and Specifications, as appropriate.	7.3.4	Consolidated into another management action.
Course of Action 7.4 Coastal and Marine Resources Management		
Design/Construct HI10007 Puuloa Range Impact Berm Repair.	7.4.1	Completed
Complete HI20009 Coral Reef Ecosystem Management Study.	7.4.1	Completed

Management Action	Obj	Remarks
Course of Action 7.5 Grounds Maintenance and Landscape Management		
Complete HI21001 Master Landscape Study.	7.5.1	Completed
Update Base Order 11014.19, "Grounds Maintenance and Police", to reference sustainable landscape guidance.	7.5.1	Consolidated into another management action.
HI20012 Invasive Sp/Erosion/Brushfire Cntrl-Veg Mgt Planning-MCTAB	7.5.2	FY06 Funded; To be completed in 2006
Complete HI21005 Ulupa‘u Fire Management Study.	7.5.3	Completed
Complete HI20012 Invasive Species Management Study.	7.5.4	Completed
Course of Action 7.6 Quality of Life/Outdoor Recreation Management		
Review and update public access SOPs to clarify useage within mission and natural resource priorities.	7.6.2	Consolidated into another management action.
Design/Construct HI80726 Golf Course Pond/Endangered Waterbird Habitat Enhancement.	7.6.3	Completed
Complete MCDC Flood Control Recreational “Parkway” Plan/Vision.	7.6.3	Objective Removed; consolidated into another management action
Continue to install interpretive signs and displays to enhance the environmental experience of recreational users.	7.6.3	Objective Removed; consolidated into another management action
Design/Construct HI35636SM Erosion Control/Horse Trails, MCBH-CS.	7.6.3	Objective Removed; consolidated into another management action
Course of Action 7.7 Resource Information Management		
Establish a lead department or entity on MCBH in this area (e.g., LE, LF, ISMO) and clarify interdepartmental responsibilities.	7.7.3	Completed
Review and update available data files and associated metadata for properties acquired since 1994 for compliance with DoD standards.	7.7.3	Consolidated into another management action.
Perform benefit/cost and consultations regarding Base-wide adoption of real world coordinate system for use with GIS data.	7.7.4	Completed
Implement developed data-sharing agreements, as appropriate.	7.7.5	Consolidated into another management action.
Acquire an appropriate GPS unit for use by LE personnel.	7.7.7	Completed

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Regular review and update of the INRMP (HI20014)				In Oct 2006, the Pre-Final Draft INRMP Update (2007-2011) is undergoing final review by Sikes Act partners and other agencies. Final edits and concurrence signatures on the INRMP Update are expected by early November, and final publication/disribution by mid-November.
Course of Action: 7.1 Fish and Wildlife Management				
NPWMA/SHA: Control invasive plants with established in-house and contractor resources and methods (e.g., manual, mechanical).	7.1.1	2002-3	X	Annual AAV mud ops; Finished HI21004 mangrove removal project; Assistance received by State's Environmental Emergency Work Force (EEWF) (2001-2002)
		2004	X	Annual AAV mud ops continued
		2005	X	Annual AAV mud ops continued
		2006	X	Annual AAV mud ops continued
NPWMA/SHA: Control invasive plants with established volunteer-conducted activities	7.1.1	2002-3	X	Volunteer weed pull events at pond Muli wai garden & other shoreline locations (e.g., Sierra Club Ecology Camp 2001; Scout projects)
		2004	X	Sierra Club & base girl scouts repaired tire-nest islands for stilt in Pa'akai Pond
		2005	X	Sierra Club, Active & retired military, & other civic groups continued to perform mangrove & other invasive weed pulling events at Nu'upia Ponds & other MCBH wetlands
		2006	X	Progress continued as in 2005.
NPWMA/SHA: Evaluate and improve (systematically) invasive plant control methods.	7.1.1	2002-3	O	EEWF Pluchea removal from shearwater colony area of ponds
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	X	No significant activity to report on this item.
NPWMA/SHA: Remove vertebrate predators (rats, cats, dogs, mongoose) with established methods.	7.1.1	2002-3	X	Mechanical trapping & feral cat removal; enforcement of leash law
		2004	X	Mechanical trapping & feral cat removal; enforcement of leash law
		2005		Mechanical trapping & feral cat removal; enforcement of leash law continued with assist of USDA Wildlife Services & Military Police animal control staff.
		2006	X	Mechanical trapping & feral cat removal continues in NPWMA with assist of USDA Wildlife Services; Military Police personnel continue to assist conservation law enforcement officer in enforcement of leash law, etc.
NPWMA/SHA: Evaluate and improve (systematically) vertebrate predator control methods.	7.1.1	2002-3	O	2003-USDA Wildlife Service contract starts diaphacinone methods
		2004	O	USDA Wildlife Service contractors continued use of diaphacinone
		2005	O	USDA Wildlife Service contractors continued use of diaphacinone
		2006	O	USDA Wildlife Service contractors continue use of diaphacinone; MCBH wildlife specialist contractor reviews and records trapping data from USDA contractor and works with MCBH natural resources staff and USDA personnel to expand trapping locations to areas recently-colonized by endangered waterbirds to improve likely succes rate of new nesting activity in those areas (e.g., recently mangrove-cleared areas at Salvage Yard and Sag Harbor wetlands).

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
NPWMA/SHA: Limit disturbance of nesting waterbirds with established methods.	7.1.1	2002-3	X	Restricted public pond access continues
		2004	X	Restricted public pond access continues
		2005	X	Restricted public pond access continues
		2006		Restricted public pond access continues
NPWMA/SHA: Continue established approach (opportunistic) to monitor fish and wildlife, evaluate results, and improve management.	7.1.1	2002-3	X	Semi-annual waterbird counts & Annual Christmas bird counts continued
		2004	X	Semi-annual waterbird counts & Annual Christmas bird counts continued
		2005	X	Semi-annual waterbird counts & Annual Christmas bird counts continued
		2006		Semi-annual waterbird counts & Annual Christmas bird counts continued
NPWMA/SHA: Monitor fish and wildlife (systematically), evaluate results, and improve management.	7.1.1	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006		In 2006, MCBH's wildlife specialist contractor was hired to assist implementing various INRMP activities, including this one. Throughout the year, she systematically monitored endangered waterbird activity once a week at MCBH-KB wetlands, with special emphasis on Hawaiian stilt nesting activites. She also monitored wedge-tailed shearwater colony activity in late summer/fall fledgling "fall-out" season. Final reports of monitoring results to be completed by January 2007 and a database has been created that can be updated as needed.
NPWMA/SHA: Explore interagency partnerships to expand cooperative monitoring of fish and wildlife on a regional basis.	7.1.1	2002-3	O	No significant activity to report on this item
		2004	O	Initiated “mangrove buster” discussions with regional stakeholders
		2005	O	To benefit “mangrove buster” regional stakeholders, acquired funds to perform project HI0920017M Feasibility study of phased mangrove removal along state-submerged lands abutting Nu’upia Ponds/MCBH entrance/shoreline.
		2006	X	Project HI0920017M feasility study in progress, with final report due by end of November 2006. Results to be shared with State DLNR, USFWS, NOAA-Fisheries, and other interested stakeholders to provide basis of establishing more cooperative monitoring of invasive mangrove encroachment impacts on Kane'ohe Bay ecosystem, with adverse spillover effects in NPWMA.
NPWMA/PUA: Support required on-site access by natural resource partner agencies.	7.1.1	2002-3	X	Continued bird counts, interagency spill exercises, etc.
		2004	X	Continued bird counts, interagency spill exercises, etc.
		2005	X	Continued bird counts, interagency spill exercises, Nat Res. Damage Assessment & Restoration team visits, supported FWS-led interagency team performing marine resources inventory in MCBH 500-yard security buffer zone under project HI20009; FWS & State DLNR Enforcement vessels now hosted at MCBH waterfront ops under agreements, etc.
		2006		Continued all the same support actions listed in 2005.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
NPWMA/PUA: Provide established resource-compatible on-site public access on a case-by-case basis.	7.1.1	2002-3	X	Escorted environmental tours continued
		2004	X	Escorted environmental tours continued
		2005	X	Escorted environmental tours continued
		2006		Escorted environmental tours continued
NPWMA/PUA: Provide additional resource-compatible on-site public access on a scheduled basis.	7.1.1	2002-3	O	2001 Ecology Camp; Opened Nuupia Ponds Run Trail
		2004	O	Continued use of Nuupia Ponds Run Trail
		2005	O	Continued support of use of Nuupia Ponds Run Trail for solo joggers, organized fun-run events; and limited unit formation runs.
		2006	X	Continued support of same activities as in 2005. In addition, expanded tour support to include a number of special tours. For details, see Appendix G.
NPWMA/PUA: Display/distribute *available* presentation materials on fish and wildlife management.	7.1.1	2002-3	X	Continued to distribute Ponds brochures
		2004	X	Continued to distribute Ponds brochures
		2005	X	Continued to distribute Ponds brochures
		2006	X	Continued to distribute Ponds brochures
NPWMA/PUA: Develop/distribute *additional* presentation materials on fish and wildlife management.	7.1.1	2002-3	O	Developed wetland do's/don'ts handouts; Pond Run Trail Interpretive Signs
		2004	O	Continued distribution of wetland do's/don'ts handouts; Maintained Pond Run Trail Interpretive Sign
		2005	O	Continued distribution of wetland do's/don'ts fact sheet; Continued to maintain interpretive & boundary signs; updated Base Regs (BaseO P5500.15B) to include improved maps of sensitive F&W areas; continued escorted pond nature tours to groups
		2006	X	Continued same activities as described for 2005.
NPWMA/PUA: Host established project-specific volunteer service actions.	7.1.1	2002-3	X	2001 Ecology Camp nest isles repair
		2004	X	Sierra Club/Mokapu Girl Scouts Nest Isle Repair Activity
		2005	X	Sierra Club, other civic groups continued to perform weed pulling service projects.
		2006	X	Sierra Club, other civic groups continued to perform weed pulling service projects.
NPWMA/PUA: Expand project-specific volunteer service actions.	7.1.1	2002-3		2003-UH intern earned academic credit while maintaining pond plants
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	X	No significant activity to report on this item

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
NPWMA/PUA: Provide off-site public outreach about fish and wildlife management.	7.1.1	2002-3		Sr. Nat. Res. Mgt. Spec. Presentation at Wildlife Society's Wetland Workshop
		2004	X	Sr. Nat. Res. Mgt. Spec. continues to publish & present off-site to general public, military and school audiences; Wildlife Tech presents to variety of resource users during enforcement patrols
		2005	X	Sr. Nat. Res. Mgt. Spec. continued off-site school & community presentations; & represented Pond F&W wildlife/public access projects at high-visibility White House Conference on Cooperative Conservation in St. Louis, MO. Reaching over 1000 attendees with display booth & by posting of success stories on website ; Wildlife Tech continued briefs re enforcement issues (New Joins Briefs, interagency training seminars, unit briefs, Environ. Dept. SOP classes, etc.)
		2006	X	Similar outreach activities performed in 2006 as in 2005 by Sr. Nat. Res. Mgt. Specialist and Wildlife Tech/Conservation Law Enforcement Officer.
NPWMA/PUA: Explore interagency cooperative partnerships to coordinate public education/access activities.	7.1.1	2002-3	O	MCBH posts info on Koolau.net website; State Mokapu School posts Nu'upia Ponds website (won at internatl. cyberfaire competition 2002)
		2004	O	Helped stand up Hawaii-Pacific Cooperative Ecosystems Studies Unit at UH; DoD is CESU partner & Sr. Nat. Res. Spec. is DoD rep to this CESU
		2005	O	Sr. Nat. Res. Mgt. Spec. continued to coordinate DoD activities within new HI-Pacific Cooperative Ecosystems Studies Unit at UH; MCBH agreed to host FY07 interagency Wildlife Law conference; hosted interpretive tours for Honolulu garden club & 3rd grade teachers Windward Wetland workshop; continued annual Christmas Bird Count for Audubon birder volunteers; hosted tour of Army COE researchers interested in off-shore sediment erosion processes around MCBH lands
		2006	X	Cooperative parternship with HI-Pacific CESU continues. In early October, planning begins to host (for the 6th time) a Sierra Club "ecology camp" in February 2007-involving over 100 high school youth from local schools camping, attending educational workshops, and service projects at NPWMA and elsewhere on MCBH.
NPWMA/PUA: Develop interagency mechanisms to inform the public about resources, access, and volunteer service options.	7.1.1	2002-3	O	No significant activity to report on this item
		2004	O	USMC/USFWS Poster re Masters of Amphib Assault at N. Ponds as part of "Saving a Few Good Species" Poster Series; Sierra Club Newsletter advertised scheduled service projects; Persuaded DoD to join Hawaii-Pacific CESU set up at UH to expand potential for interagency fund sharing to support resource mgt. projects of mutual concern
		2005	O	Sierra Club National Magazine & Website published info. on long-term partnership of MCBH w/Sierra Club to perform mangrove weed removal service projects at Nu'upia Ponds; MCBH invasive species pond control efforts featured in National Wildlife Federation (NWF)'s National Magazine and website in connection with DoD-NWF project to educate pubic & Congress on invasive species impacts on military readiness.
		2006	X	Groups such as Sierra Club, Hawaii Audubon, Conservation Council for Hawaii, and National Wildlife Federation continue to post noteworthy conservation activities and service projects available on MCBH in their membership newsletters and websites.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
UHWMA/SHA: Move birds away from high-risk target areas using established methods	7.1.1	2002-3	X	Built 2 new nest platforms in unoccupied habitat in lower risk area to lure birds
		2004	X	Placed decoys to lure boobies to new nesting platforms; decoys too light weight, blew down. Collected for remodeling and re-install next season.
		2005	X	No significant activity to report on this item; maintenance of existing platforms contnues, with volunteer help.
		2006	X	No significant actvity to report on this item; maintenance of existing platforms continues, with volunteer help.
UHWMA/SHA: Update Ulupa'u Head WMA Boundary map to reflect current conditions	7.1.1	2002-3	X	New Map completed in 2003, based on outcome of Crater Brush Fire Mgt. Study 2002
		2004	O	New WMA Boundary disseminated to Facilities for use in all new base maps.
		2005	O	N/A
		2006	O	N/A
UHWMA/SHA: Replace fire-prone vegetation using established methods.	7.1.1	2002-3	X	Regular pest shop herbicide of firebreak roads
		2004	X	Regular pest shop herbicide of firebreak roads continues
		2005	X	Regular pest shop herbicide of firebreak roads continues
		2006	X	Regular pest shop herbicide of firebreak roads continues
UHWMA/SHA: Maintain fire-fighting capabilities using established methods.	7.1.1	2002-3	X	Fire breaks; first response truck; etc. continue as documented in Ulupa'u Brush fire mgt. study (02)
		2004	X	Continuation of response methods per Brush Fire Mgt. Study (02)
		2005	X	Continuation of response methods per Brush Fire Mgt. Study (02)
		2006	X	Continuation of response methods per Brush Fire Mgt. Study (02).
UHWMA/SHA: Improve fire-fighting capabilities.	7.1.1	2002-3	O	2 FY03-funded design/build projects awarded: HI21007 (Improve Grnd Cover with Geotextile Matting; HI21008 Improve Water Delivery/Water Cannons(Total Value: $350K)
		2004	O	Installation of HI21007 & 21008 Projects begun in late CY04 (delay due to contractor bonding problem which has been resolved) Est. completion 1/05
		2005	O	HI21007 completed in Jan 05 to suppress flammable vegetation under booby tree habitat by installing geotextile matting anchored with coarse gravel cover; Successfully prevented fire spread to booby trees during late Aug 2005 brushfire. HI21008 project (build water cannons) continued, technological modifications made, bullet damage repaired, and project readied for final test and completion in early 2006
		2006	X	In early 2006, findings from performance test of water cannons led to need for additional technical adjustments. In late 2006, awaiting finalization of these adjustments in order for the final performance test of the cannons to take place, and be accepted by the government.
UHWMA/SHA: Remove vertebrate predators (rats, cats, dogs, mongoose) using established methods.	7.1.1	2002-3	X	Wildlife Tech continues to remove cats and mongooses at Crater
		2004	X	Wildlife Tech continues to monitor for/remove predators at Crater
		2005	X	Wildlife Tech continues to monitor for/remove predators at Crater
		2006	X	Wildlife Tech continues to monitor for/remove predators at Crater

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
UHWMA/SHA: Evaluate and improve (systematically) vertebrate predator control methods.	7.1.1	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	X	No significant activity to report on this item
UHWMA/SHA: Continue established approach (opportunistic) to monitor status of protected species, evaluate results, and improve management.	7.1.1	2002-3	X	Regular Christmas Booby Counts continue
		2004	X	Regular Christmas Booby Counts continue
		2005	X	Regular Christmas Booby Counts continue
		2006	X	Regular Christmas Booby Counts continue
UHWMA/SHA: Monitor protected species' status (systematically), evaluate results, and improve management.	7.1.1	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	X	No significant activity to report on this item
UHWMA/PUA: Support required on-site access by natural resources partner agencies.	7.1.1	2002-3	X	Ex: Annual Interagency Spill Response Exercises & a USFWS NRDAR trng drill hosted
		2004	X	Access support continues by nat res partner agencies (bird counts; spill response monitoring drills, etc.)
		2005	X	Access support continues by nat res partner agencies (bird counts; spill response monitoring drills, etc.); Assisted FWS by conducting NRDAR survey at colony during Cape Flattery ship grounding and oil release near Barbers' Point.
		2006	X	Access support similar to that described for 2005 continues.
UHWMA/PUA: Provide on-site public access within limits set by mission, safety, and natural resource sensitivities.	7.1.1	2002-3	X	Escorted tours continue on non-interference basis
		2004	X	Escorted tours continue on non-interference basis
		2005	X	Escorted tours continue on non-interference basis with weapons fire training
		2006	X	Escorted tours continue on non-interference basis with weapons fire training
UHWMA/PUA: Provide off-site public education program to compensate for limited public access to natural resources.	7.1.1	2002-3	X	Fossil exhibits at BPBM & Smithsonian; exhibit pavilion in Range parking lot; brochures disseminated; presentations made
		2004	X	Off site brochure dissemination; presentations, publications continue
		2005	X	Off site brochure dissemination; staff presentations continued. Sr. Nat. Res. Mgr. presented display & website-posted success stories re booby colony management at White House Conference on Coop. Conservation in St. Louis, MO.
		2006	X	Off-site presentations by Sr. Nat. Res. Mgr. continued in 2006, such as to university classes, civic organizations.
UHWMA/PUA: Display/distribute *available* presentation materials on wildlife management.	7.1.1	2002-3	X	Continued to distribute booby brochures
		2004	X	Continued to distribute booby brochures
		2005	X	Continued to distribute booby brochures
		2006	X	Continued to distribute booby brochures

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
UHWMA/PUA: Develop/distribute *additional* presentation materials on wildlife management.	7.1.1	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	Booby management success story displayed at conference & website during White House Conference on Coop. Conservation (see above)
		2006	X	No significant activity to report on this item
UHWMA/PUA: Host established project-specific volunteer service actions within limits set by mission, safety and natural resource sensitivities.	7.1.1	2002-3	X	Annual nest platform repair continues with several volunteers ea time
		2004	X	Annual nest platform repair continues with several volunteers ea time
		2005	X	Annual nest platform repair continues with Sierra Club and other interested volunteers
		2006	X	Annual nest platform repair continues with Sierra Club and military volunteers
UHWMA/PUA: Expand project-specific volunteer service actions within limits set by mission and natural resource sensitivities.	7.1.1	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	X	No significant activity to report on this item.
UHWMA/PUA: Coordinate interdepartmental MCBH staff public access/education program on natural resources and management.	7.1.1	2002-3	X	Ex., Hosted USFWS-coordinated teacher NWHI Isles workshop access to see boobies
		2004	X	No significant activity to report on this item specifically for the Crater booby colony
		2005	X	No significant activity to report on this item specifically for the Crater booby colony
		2006	X	No significant activity to report on this item specifically for the Crater booby colony
UHWMA/PUA: Explore interagency cooperative partnerships to monitor wildlife resources.	7.1.1	2002-3	O	Interagency monitoring of booby colony occurs as part of islandwide NRDAR
		2004	O	Interagency monitoring of booby colony occurs as part of islandwide NRDAR
		2005	O	Interagency monitoring of booby colony occurs as part of islandwide NRDAR
		2006	X	Interagency monitoring of booby colony occurs as part of islandwide NRDAR
UHWMA/PUA: Explore interagency cooperative partnerships to coordinate public education/access activities.	7.1.1	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	Host ongoing outreach partnership with Sierra Club involving regular outing events including bird counts and nest platform repair at Ulpua'u Crater booby colony.
		2006	X	Activities described in 2005 continued in 2006.
UHWMA/PUA: Develop interagency mechanisms to inform the public about resources, access and volunteer service options.	7.1.1	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	Publications hosted in NWF and Sierra Club national magazines, including reference to red-footed booby colony.
		2006	X	No significant activity to report on this item.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Initiate systematic monitoring of protected/pest fish and wildlife in small wetlands at MCBH-KB and appropriate follow-on actions.	7.1.2	2002-3	O	Accomplished RBI in 2002 at new Mokapu wetland basin by Sailors Barracks w/US FWS, DU, and HPU professor help
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	O	MCBH-contracted wildlife specialist performed systematic monitoring of waterbird nesting and foraging at all MCBH-KB wetlands in 2006, prepared an updatable data base, and is preparing the final report of observations for delivery in January 2007.
Incorporate updated fisheries/marine mammal policy into Base Plans, Projects, and Protocols as appropriate.	7.1.2	2002-3	X	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	N/A
		2006	O	No significant activity to report on this item
Complete H120012 Invasive Species Management Study	7.1.3	2002-3	X	Study Completed, Dec 2002
		2004	O	N/A
		2005	O	N/A
		2006	O	N/A
Evaluate and implement appropriate recommendations from the HI20012 Invasive Species Management Study.	7.1.3	2002-3	X	Follow on project funded: MCTAB vegetation mapping projectHI20012 in FY03 ($125K)
		2004	X	Project HI20012 completed in 04; Recommendations under review for follow on appropriate actions
		2005	X	Follow on actions from study recommendations began at MCTAB: HI20009 completed vegetation maps of MCTAB, showing predominance of invasive weed cover. Next phase of HI20012 project assessment began, to develop a vegetation management strategy for MCTAB over the next ten years to be more environmentally-friendly and conducive to sustainable military training.
		2006	X	The final vegetation strategy report for MCTAB is due in November, and will be the basis of a design programmed in FY07 (IAO $75K) to implement an appropriate recommended project in FY08 (IAO $350K).
Implement closer integration between established pest management plans and invasive species management activities.	7.1.3	2002-3	X	No significant activity to report on this item
		2004	X	Working w/Navy consultant to update MCBH pest mgt. plan to include cross-ref to Invs Sps Mgt. Study info & INRMP
		2005	X	NAV FAC HI staff developed draft update of MCBH pest mgt. plan to include cross-ref to Invs Sps Mgt. Study info & INRMP by Dec 05, with anticipated completion in early CY06.
		2006	X	Updated MCBH Pest Mgt. Plan incorporating cross-reference to INRMP actions and studies is being finalized toward end of 2006.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Continue reporting on monitoring efforts and perform related data management in response to specific requests and requirements.	7.1.4	2002-3	X	Tech Notes done on Wetland RBI & Ft. Grass removal at MCTAB; shared with interagency participants
		2004	X	Tech Notes done on Wetland RBI & Ft. Grass removal on at MCTAB by contractor S. Lyons-Grounds; shared with interagency participants; Article published in 'Elepaio, Hawn Audubon Journal by Rauzon/Drigot(Aug-Sep 04 issues) re Cattle Egret & BC Nite Heron response to Mangrove Removal.
		2005	X	Invasive Ft. Grass surveys, removal, mapping and results sharing continued on MCTAB by MCBH-led team with continued assist of State HIARNG & Oahu Inv. Species Committee staff and new expanded participation to include Air Force staff.
		2006	X	Invasive Ft. Grass surveys and results sharing continued on MCTAB in 2006--scheduled for November 2006 as in 2005.
Evaluate current status of monitoring reports and related data management and identify requirements for system improvements	7.1.4	2002-3	O	No significant activity to report on this item
		2004	O	MCBH bird recovery data collection & mgt. records improved by MCBH contractor in collab w/USFWS staff, contracted USDA wildlife services personnel, Game Wardens; GPS's purchased for more effective field monitoring of site-specific developments (e.g., Ft. Grass locations, bird nest locations)
		2005	O	N/A
		2006	O	Evaluation has led to MCBH wildlife specialist contractor developing/improving/expanding our databases on bird monitoring, bird handling, predator trapping, and BASH reporting.
Design/implement system improvements to take advantage of extensive existing information on MCBH's protected/pest species.	7.1.4	2002-3	O	No significant activity to report on this item
		2004	O	HI20016 Nat. Res. Archive Project completes electronic bibliography & begins to scan/archive collected research/study repts.
		2005	O	HI20016 Nat. Res. Archive Project continues update and refinement of electronic bibliography & continues to scan/archive collected research/study repts.
		2006	X	MCBH wildlife specialist contractor developed a data base in Access to record results of waterbird monitoring at MCBH wetlands and has populated the data base with 2006 results. She has also improved an automated data base on bird handling, USDA trappping results and BASH report results. HI20016 Nat. Res. Archive Project continues to update and refine electronic data bases.
Improve capability for staff access to the MCBH EGIS for information sharing on protected/pest species.	7.1.4	2002-3	O	Environ. Dept. Functional Review in progress (03) leading to EGIS improvements
		2004	O	Environ. Dept. Functional Review completed; HQMC GIS needs assmt begun in 04.
		2005	O	Environ. Dept. participates in new HQMC-driven efforts to work with MCBH on updating GIS to include standardizing all environmental layers for more systematic, accurate, shared use among departments, with HQMC, and with external stakeholders. .
		2006	O	Database updates developed by MCBH wildlife contractor specialist posted on share drive for access by other natural resources staff members. MCBH natural resources staff continues to work with HQ contractor staff in updating GIS layers. Not ready for access by external stakeholders until database and layers are certified accurate within USMC. Progress toward that end completed.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Continue *established* data collection and management system for BASH.	7.1.5	2002-3	X	Ongoing by Wildlife Technician with USDA Wildlife Services Assist
		2004	X	USDA Wildlife Technician performs BASH/ collects data for Marine Air Facility; QA/QC by MCBH Wildlife Tech
		2005	X	USDA Wildlife Technician continues to perform BASH/ collect data for Marine Corps Air Facility (MCAF) with QA/QC by MCBH Environ. Dept. staff
		2006	X	UDSA Wildlife Services continues to perform BASH work for MCAF and provided data results to MCBH Environ. Dept and it is added to our automated database.
Develop an *improved* data collection and management system for BASH.	7.1.5	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	BASH bird strike reports under new BASH plan filed by USDA personnel & copies shared with MCBH Environ .Dept. as well.
		2006	X	Improvements in the BASH database were performed by MCBH Environmental's 2006 Wildlife Specialsit contractor.
Track airfield staff to finalize, implement, and regularly update a BASH plan.	7.1.5	2002-3	X	Ongoing advisory role
		2004	X	Ongoing advisory role
		2005	X	MCAF BASH Plan was published on 15 Nov 2004; Ongoing advisory role continues
		2006	X	Ongoing advisory /QA-QC role continues; MCBH Environ. Dept. maintains the depradation permit from USFWS and ensures BASH actions are performed within conditions of the permit.
Identify and assist appropriate personnel to incorporate BASH considerations into airfield SOWs, Plans, and Project Specifications.	7.1.5	2002-3	X	Ongoing advisory role
		2004	X	No significant activity to report on this item
		2005	X	MCAF BASH Plan clarifies personnel responsibilities.
		2006	X	No significant activity to report on this item.
Gather and review information through meetings, reports, and other media.	7.1.6	2002-3	X	Ongoing receipt of BASH-related reports (strike incident repts. etc.)
		2004	X	Ongoing receipt of BASH-related reports (strike incident repts. etc.)
		2005	X	Ongoing receipt of BASH-related reports (strike incident repts. etc.) by Environ. Dept. staff
		2006	X	Ongoing receipt of BASH-related reports (strike incident repts. etc.) by Environ. Dept. staff; staff attended quarterly BASH meetings.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Participate in interagency initiatives on invasive species problems.	7.1.6	2002-3	X	Working with HIARNG & OISC staff to control Ft. Grass at MCTAB
		2004	O	Interagency MCBH, HIARNG & OISC control of Ft. Grass at MCTAB continues; Participation in State aquatic invasive sps committee continues; Mangrove "busters" coalition initiated
		2005	X	Interagency MCBH, HIARNG & OISC control of Ft. Grass at MCTAB continues; Participation in State aquatic invasive sps committee continues; Mangrove "busters" coalition continues to communicate; MCBH Sr. Nat. Res. Mgr. continues to coordinate DoD projects funded through the HI-Pacific CESU based at Univ. of Hawaii
		2006	X	MCBH natural resources staff continues to attend OISC meetings and participate on projects listed in 2005. MCBH Sr. Nat. Res. Mgr. prepared letter of endorsement for OISC/Bishop Museum grant request to DoD Legacy Program (for FY07 funds) pertaining to development of an early weed detection model on MCBH lands. Outcome of Legacy competition pending.
Collect and evaluate information on other agency plans impacting MCBH fish and wildlife activities.	7.1.6	2002-3	O	Ex., Monitoring other wetland projects in windward O'ahu area serving Hawaiian stilt (eg., HI95156 Stilt Recovery Study completed)
		2004	O	Provided input to USFWS Waterbird Recovery Plan update; Initiated mtg w/State DLNR to ensure INRMP is considered in their Strategic Wildlife Plan development (Oct 04)
		2005	O	Provided more input to USFWS Revised Draft Waterbird Recovery Plan update; Completed participation in State DLNR effort to develop a Strategic Wildlife Plan (to ensure MCBH INRMP is referenced).
		2006	X	No significant activity to report on this item.
Improve data management, agency contacts, and response to other agency impacts.	7.1.6	2002-3	O	Subscribe to list-serves maintained by OISC, HEAR, MEGIS, Coral Reef Group
		2004	O	Continue to subscribe to list-serves; attend mtgs; Also initiated mtg. w/DLNR re their new Wildlife Strategic Plannng efforts to ensure incorp. of INRMP
		2005	O	Continued to subscribe to list-serves; attend state res. mgt. mtgs. and workshops.
		2006	X	Continued similar activities in 2006 as in previous years.
Implement revisions in data management system as necessary.	7.1.6	2002-3	O	See funded projects begun in FY02 & FY03 under Section 7.8 NR Info. COA component of this INRMP
		2004	O	Work under FY02 & FY03-funded Natural Resources Archives /Environ. Mgt. System improvements continues
		2005	O	Work to develop & refine MCBH's automated Natural Resources Data Base & Archives continues. Cross-links to MCBH's /Environ. Mgt. System (EMS) created.
		2006	O	Several natural resources databases populated as described above and illustrated in Section 7.7 and Appendix F (Summary of Data Management Improvements) of the updated INRMP.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Complete the HI95156 MCBH Hawaiian Stilt Regional Recovery Study.	7.1.7	2002-3	X	Study completed in Dec 2002 and distributed to reviewers/agencies in 2003.
		2004	O	N/A
		2005	O	N/A
		2006	O	N/A
Evaluate and implement appropriate recommendations from the HI95156 MCBH Hawaiian Stilt Regional Recovery Study.	7.1.7	2002-3	X	In progress (end FY03)
		2004	X	Mangrove Buster Coalition begun
		2005	X	Mangrove Buster Coalition continues; Hawaiian Stilt Regional Study referenced in USFWS Revised Draft Waterbird Recovery Plan under public review in 2005.
		2006	X	No significant activity to report on this item.
Provide input to finalization and implementation of USFWS's Regional Waterbird Recovery Plan.	7.1.7	2002-3	X	Review Comments provided; await USFWS update on current status
		2004	O	Review Comments provided; await USFWS update on current status
		2005	O	Additional review comments offered to USFWS's Revised Draft Waterbird Recovery Plan; await USFWS update on current status
		2006	O	No significant activity to report on this item
Host appropriate projects to enhance habitat of fish and wildlife on and around MCBH land and water parcels.	7.1.7	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	Rec'd & obligated funds to do feasibility of mangrove removal from state-submerged lands adjacent to H-3 causeway leading to MCBH-KB; will require cooperative State/Federal execution.
		2006	X	Feasbility study for mangrove removal from state-submerged lands adjacent H-3 causeway contracted and in progress Project HI0920017M, with expected completion date of November 2006. Recommendations will be shared with State/Federal wildlife agencies to trigger dicsussion on feasibility of a jointly-funded mangrove removal/habitat enhancement project in that area. Design/build funds to contribute to a jointly-funded initiative have been programmed for FY07 (Design) and FY09 (Construct)--see Table E3-1, Appendix E for details, but will depend on partner participation.
Improve regional capacity to plan for, reduce risks, assess and recover from damages to fish and wildlife due to catastrophic events.	7.1.7	2002-3	O	MCBH Waterfront Ops personnel assisted State in Salvinea molesta removal from Lake Wilson (2003)
		2004	O	No significant activity to report on this item
		2005	O	Host regular FWS-led resource damage assessment trng/surveys at Booby Colony; host UH marine mammal rehab facility; continue to host Coast-Guard led interagency spill drills to improve regional capacity for effective spill response.
		2006	O	No significant activity to report on this item.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Improve regional capacity to protect, reduce risks to, and rehabilitate fish and wildlife and/or their habitat affected by IRP program contaminated sites.	7.1.7	2002-3	O	No significant activity to report on this item
		2004	O	Assisting Air Force in incorporating F&W considerations into IRP projects on MCTAB (Bellows) lands
		2005	O	Completed assistance to Air Force re incorporating F&W considerations into IRP projects on MCTAB (Bellows) lands; Air Force has implemented our recommendations on some projects (e.g., sinkhole survey by cave ecologist; natural resources erosion mitigation measures & monitoring built-into clean up project preparations
		2006	O	No significant activity to report on this item.
Host appropriate projects to control invasive species and habitats on/around MCBH.	7.1.7	2002-3	O	Coordinate regular Ft. Grass monitoring/removal at MCTAB; continue AAV mud ops to control pickleweed at Ponds; completed mangrove removal from all Mokapu wetlands in 2003; continue volunteer events to control re-sprout (ongoing)
		2004	O	Continued to coordinate regular Ft. Grass removal at MCTAB; continued AAV mud ops to control pickleweed at Ponds; continued volunteer events to control re-sprout at all MCBH wetlands (ongoing)
		2005	O	Continued to coordinate regular Ft. Grass removal at MCTAB; continued AAV mud ops to control pickleweed at Ponds; continued volunteer events to control re-sprout at all MCBH wetlands (ongoing); began mangrove removal feasibility study along H-3 causeway
		2006	X	Same activities as in 2005 continued in 2006; in addition, MCH Senior Nat. Res. Mgr. wrote letters of endorsement for three outside agency proposals for DoD Legacy Program funding that--if funded in FY07--will help control invasive species and habitats on/around MCBH: Island Conservation's proposal to study feasibility of and demonstrate value of new high-tech predator control fences at strategic locations (e.g., MCBH wetlands); OISC/Bishop Museum's proposal to expand detecton efforts re incipient populations of invasive weeds to include unpaved road systems on MCBH lands & refine a predictive model on the subject already developed for other public lands on O'ahu; SWCA Environmental Consultants' proposal to develop test plots on MCTAB lands to evaluate various methods of controlling flammable guinea grass there--with potential outcome of helping MCTAB and other military land managers to reduce fire risk from this ubiquitious fire-prone grass in Hawaii training areas.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Formally assign fish and wildlife protection and/or control duties to MCBH personnel who assist MCBH natural resources staff.	7.1.8	2002-3	X	Assigned MCBH Military Police have Game Warden duties & assist MCBH Wildlife Tech
		2004	X	Assigned MCBH Military Police assist MCBH Wildlife Tech w/ animal damage control & fish pass monitoring duties
		2005	X	Limits of collateral duties by Military Police and Auxiliaries have been further clarified w/respect to nuisance animal damage control; enforcement & animal control duties are more tightly overseen now by conservation enforcement personnel with required commissions/training. MCBH Wildlife Tech trained at Federal Law Enf Academy & is a commissioned federal law enforcement officer per new Marine Corps program under new MCO 5090.4. USDA Wildlife Services trained personnel are on long-term contracts to assist in BASH & in predator trapping in sensitive habitats around base.
		2006	X	No significant new activity to report on this item.
Ensure relevant personnel obtain focused training on proper protection and/or control of fish and wildlife species.	7.1.8	2002-3	X	MP Game Wardens are provided OJT w/MCBH Wildlife Tech assist.
		2004	X	MCBH Wildlife Tech continues to receive mandated trng & updates; MP Game Wardens are provided OJT
		2005	X	MCBH Wildlife Tech continues to receive mandated trng & updates; MP Game Wardens are provided OJT. MCBH Wildlife Tech now a dual commissioned state/federal conservation law enforcement officer
		2006	X	No significant new activity to report on this item.
Regularly review and update staff training to ensure latest management and/or control policies, regulations, and techniques are included.	7.1.8	2002-3	X	Ongoing
		2004	X	Ongoing
		2005	O	Ongoing
		2006	O	Ongoing
Clarify wildlife enforcement policy, identify lead responsible unit at MCBH, and implement appropriate recommendations for improvement.	7.1.8	2002-3	O	New MCO published, civilianizing Game Enforcement function on USMC installations--MCBH Wildlife Tech Appted; & sent to FLTEC trng 2003
		2004	O	FLTEC-trained MCBH Wildlife Tech implements USMC Consv. Law Enforcement program under new USMC MCO 5090.4
		2005	O	FLTEC-trained MCBH Wildlife Tech continues to implement USMC Consv. Law Enforcement program under new USMC MCO 5090.4; work continues on upgrading his position classification to reflect his upgraded responsibilities and training under an emergent USMC program
		2006	O	In October 2006, clarified Conservation Law Enforcmenet positoin description is almost completed and should be finalized by end of CY2006.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Evaluate placement of wildlife and natural resources enforcement billet in MP or LE and implement appropriate recommendations.	7.1.8	2002-3	O	Done—New Wildlife/Nat. Res. Enforcement lead in LE
		2004	O	Conservation Enforcement billet continues to operate out of LE/added duties to Wildlife Tech position (G. Olayvar)
		2005	O	Conservation Enforcement billet continues to operate out of LE/added duties to Wildlife Tech position (G. Olayvar) with separate Position Description in final draft in preparation for separate out of Wildlife Tech Duties from Consv. Enforcement Duties—an additional billet to be created in 2006 rather than a dual-hatted Wildlife Tech/Consv. Law Enforcement billet.
		2006	X	As indicated in 2005, placement of wildlife and natural resources enforcement billets will remain in the Environmental Department (LE).
Continue to implement established public awareness programs on MCBH's wildlife protection and control efforts.	7.1.8	2002-3	X	All ongoing programs continue as described in INRMP & annual reports
		2004	X	All ongoing programs continue as described in INRMP & annual reports
		2005	X	All ongoing programs continue as described in INRMP & annual reports
		2006	X	All ongoing programs continue as described in INRMP & annual reports
Improve public awareness materials/programs on MCBH's wildlife protection and control efforts.	7.1.8	2002-3	O	Several initiatives listed as INRMP actions for FY02-FY03 completed (e.g., signs at Golf Crse. wetlands).
		2004	O	No significant activity to report on this item
		2005	O	Received excellent national publicity in National Wildlife Federation and Sierra Club national magazines & websites; displays & invited participation at White House Conference on Cooperative Conservation
		2006	X	No significant activity to report on this item
Evaluate placement of a volunteer coordinator billet in LE and implement appropriate recommendations.	7.1.8	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	O	No significant activity to report on this item.
Develop and apply performance measures to improve effectiveness of both fish and wildlife protection/pest species control.	7.1.8	2002-3	O	New HQMC guidance published/adapted to MCBH (via Environ. Dept.'s ongoing Functional Analysis (FA) in 2003.
		2004	O	MCBH metrics for measuring INRMP effectiveness applied; input provided to HQMC consultant developing INRMP metrics at nationwide level
		2005	O	MCBH metrics for measuring INRMP effectiveness applied; input provided to HQMC; Sr. Nat. Res. Mgr. attended workshop to input to draft INRMP evaluation metrics being developed at national level by Navy/USMC staff as a merger of their efforts. New Navy policy to be released in CY2006 on this subject. FWS & State reps. providing input.
		2006	X	HQ Marine Corps issued new guidance to implement a new INRMP metrics at the end of CY2006. See INRMP update (Section 7.0.6) for details.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Course of Action: 7.2 Wetland Management				
Complete HI20004 Wetland Delineation Study.	7.2.1	2002-3	X	Completed in 2002.
		2004	O	N/A
		2005	O	N/A
		2006	O	N/A
Add new wetland GIS boundary layers to EGIS.	7.2.1	2002-3	X	GIS layers created by Army COE during wetland study turned over to MCBH Environ. Dept. Geographer to merge into EGIS.
		2004	O	N/A
		2005	O	N/A
		2006	O	N/A
Evaluate and incorporate USFWS wetland classification inventory into the MCBH EGIS, as appropriate.	7.2.1	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	O	No significant activity to report on this item
Explore development of cooperative data sharing agreements for GIS layers.	7.2.1	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item; Progress deferred until HQMC-driven update of Geospatial Data Base USMC-wide is completed; then will be in better position to share GIS data in agreements with outside agencies
		2006	X	Since HQMC-driven update of the Geospatial Data abase USMC-wide is still not completed, and certified accurate, GIS layers are not yet ready for interagency cooperative sharing.
Implement developed data sharing agreements, as appropriate.	7.2.1	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	N/A at this time
		2006	O	N/A at this time

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Continue invasive plant and animal species control at MCBH-KB wetlands (e.g., HI21004 Endangered Sps Habitat Improvements/Mangrove Removal).	7.2.1	2002-3	X	HI21004 mangrove removal efforts completed in 2003 (all MCBH Mokapu wetlands now cleared of mangrove)
		2004	X	Mangrove “seed bed” at Salvage Yd Wetland controlled by volunteer events w/Sierra Club & military
		2005	X	Continued invasive plant control on-going with regular Sierra Club, military, and other volunteer volunteer events to keep mangrove sprouts from taking over again.
		2006	X	Feasbility study for mangrove removal from state-submerged lands adjacent H-3 causeway contracted and in progress Project HI0920017M, with expected completion date of November 2006. Recommendations will be shared with State/Federal wildlife agencies to trigger dicsussion on feasibility of a jointly-funded mangrove removal/habitat enhancement project in that area. Design/build funds to contribute to a jointly-funded initiative have been programmed for FY07 (design) and FY09 (Construct)--see Table E3-1, Appendix E for details, but will depend on partner participation.
Expand invasive plant and animal species control to MCTAB wetlands.	7.2.2	2002-3	X	Regular monitor/removal of Ft. Grass done w/interagency help; USDA Wildlife Services contracted to remove predators (mongoose, feral cats, pigs)
		2004	X	Regular monitor/removal of Ft. Grass & USDA assist continues; work begun w/Facilities Dept. to develop maint. contract for streamside invs. plant control along Waimanalo stream/wetlands; advised Air Force contractor on beginning of mangrove removal from streamside wetland in their jurisdiction.
		2005	X	Regular monitor/removal of Ft. Grass at MCTAB with interagency team continues. USDA/Wildlife Services predator control continues; work continued w/Facilities Dept. to develop maint. contract for streamside invs. plant control along Waimanalo stream/wetlands complted & awaits maintenance funds to implement.
		2006	X	Regular Ft. Grass removal and USDA Wildlife Services predator contorl continued; still awaiting Facilties maint. Contract to be funded for streamside invasive plant control at Waimanalo Stream on MCTAB. Currently identified as an "unfunded deficiency."
Identify and assist appropriate personnel (e.g., planners, operators) to detect and address threats to MCBH wetlands.	7.2.2	2002-3	X	Disseminated new Wetland Do’s and Don’ts Handout; more signage erected at small vulnerable wetlands (Salvage yard & Hale Koa beach)
		2004	X	See above
		2005	X	See above (advice to Facilities on maintenance requirements)
		2006	X	MCBH natural resources staff continues to advise G-4/Facilities & G-3 staff on approriate vegetation management actions in/near MCBH wetlands.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Explore interagency cooperative projects to control wetland threats that transcend Base borders.	7.2.2	2002-3	X	NR staff attended/Drigot presented at 2002 Wetland Workshop co-sponsored by State & Wildlife Society (share data/mgt. tips)
		2004	O	Mangrove Buster Coalition initiated & NR staff continue to attended Annual Wetland Mgrs. Workshop sponsored by State, Pac Joint Venture, & Wildlife Society
		2005	X	Mangrove Buster Coalition initiated & NR staff continue to attended Annual Wetland Mgrs. Workshop sponsored by State, Pac Joint Venture, & Wildlife Society
		2006	X	Feasbility study for mangrove removal from state-submerged lands adjacent H-3 causeway contracted and in progress Project HI0920017M, with expected completion data of November 2006. Recommendations will be shared with State/Federal wildlife agencies to trigger dicsussion on feasibility of a jointly-funded mangrove removal/habitat enhancement project in that area. Design/build funds to contribute to a jointly-funded initiative have been programmed for FY07 (design) and FY09 (Construct)--see Table E3-1, Appendix E for details, bt will depend on partner participation.
Improve regional capacity to identify factors and forces that encroach on wetlands and develop remedies.	7.2.2	2002-3	O	No significant activity to report on this item
		2004	O	Mangrove Buster Coalition initiated
		2005	O	Continued participation in HI-Pacific CESU & Mangrove Buster Coalition (see above)
		2006	X	Continued participation in HI-Pacific CESU & O'ahu Invasive Species Committee, which helps identify and control invasive species encroaching on sensitive habitats including wetlands.
Complete HI60834 Wetland Restoration/Percolation Ditch Improvements.	7.2.3	2002-3	X	Design and EA progressed to near completion at end FY03; project is on FY04 construction forecast for build award in Feb 04
		2004	X	In 04, EA completed/Public Notice published; Project advertised, award negotiations in progress late CY04.
		2005	O	Project awarded IQO $507K & construction began, with anticipated completion in Feb 06, leaving one year maintenance period for new native plant cover to establish before project is totally complete (expected by Feb 06).
		2006	O	Additional funds committed to address unanticipated site conditions; many large boulders encountered during site excavation stage and a disposal site was needed. Boluders broken down and utilized as site boundary markers and potentially available for recycling/use elsewhere in the future. Despite this challenge, the project to be completed by Jan 2007 as planned. The native vegetation is thriving at the project site and a pair of Hawaiian stilt utilized the site in the spring for a successful nest location (details of stilt nesting and other bird uses of the new expanded wetland contained in reports under preparation by MCBH contractor wildlife specialist who systematically monitored waterbirds at MCBH wetlands during CY2006).

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Design/Construct HI80726 Golf Course Pond/Endangered Waterbird Habitat Enhancement.	7.2.3	2002-3	X	Completed on-ground vegetation/dredge improvements to Golf Course Ponds in 2003; final interpretive sign and report to be done by end CY03.
		2004	X	Rept completed in CY04
		2005	O	N/A
		2006	O	N/A
Explore interagency cooperative projects to implement regional wetland enhancement opportunities.	7.2.3	2002-3	O	No significant activity to report on this item
		2004	O	Mangrove Buster Coalition initiated
		2005	O	Helped with HQMC to successfully persuade DoD to join the new HI-Pacific Coop. Ecosystem Studies Unit (CESU) at UH to provide mechanism for pooling funds & intellectual capital on regional projects; Helped draft CESU application for mangrove busters grant thru FWS Joint Venture partnership program; however, funds not received.
		2006	X	No significant activity to report on this item.
Formally assign wetland monitoring and management responsibilities to appropriate personnel.	7.2.4	2002-3	X	No significant activity to report on this item
		2004	X	No significant activity to report on this item
		2005	X	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Ensure assigned personnel obtain focused training on wetland delineation, regulations, and/or monitoring protocols.	7.2.4	2002-3	X	No significant activity to report on this item
		2004	X	No significant activity to report on this item
		2005	X	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Display/distribute *available* presentation materials on wetland resources and management.	7.2.4	2002-3	X	Ongoing distribution of brochures
		2004	X	Ongoing distribution of brochures
		2005	X	Ongoing distribution of brochures; sign maintenance; display prepared and shared at White Hse Conference on Coop. Conservation in St. Louis in Aug 05.
		2006	X	No significant new activity to report on this item.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Develop/distribute *additional* presentation materials on wetland resources and management.	7.2.4	2002-3	O	New Golf Course Pond sign; off-limits signs around newly-delineated small wetlands; new Wetlands Do's/Don'ts handout distributed at New Arrivals Briefs & Environ. Trng. Classes hosted; on tours, etc.
		2004	O	MCBH Golf Course wetland enhancement project to be featured on CY05 Calendar published & distributed nationwide by Navy's CURRENTS magazine; USMC/FWS poster unveiled re AAV mgt to enhance Hawn stilt wetland habitat as part of "Saving a Few Good Species" poster series
		2005	O	MCBH Golf Course wetland enhancement project featured on CY05 Calendar published & distributed nationwide by Navy's CURRENTS magazine; USMC/FWS poster unveiled re AAV mgt to enhance Hawn stilt wetland habitat as part of "Saving a Few Good Species" poster series; Success stories posted on White House Conference for Coop. Conservation website & presented in Conf. Display to over 1,000 attendees; Successes also posted on USFWS, National Wildlife Federation, and Sierra Club websites.
		2006	X	No significant new activity to report on this item.
Continue established approach (opportunistic) to monitor MCBH wetlands, evaluate results, and improve management.	7.2.4	2002-3	X	Ongoing
		2004	X	Ongoing
		2005	X	Ongoing
		2006	X	Ongoing
Evaluate and improve (systematically) wetland monitoring methods.	7.2.4	2002-3	O	2002 completed RBI at Mokapu wetland basin w/help from DU, US FWS, & HPU professor staff
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	X	Improved waterbird utlization monitoring at MCBH wetlands was initiated in 2006 when MCBH hired a wildlife specialist contractor to assist implementing various INRMP activities, including this one. Throughout the year, she systematically monitored endangered waterbird activity once a week at MCBH-KB wetlands, with special emphasis on Hawaiian stilt nesting activites. Final report of monitoring results to be completed by January 2007 and a database has been created that can be updated as needed.
Explore interagency cooperative partnerships to monitor regional wetland resources.	7.2.4	2002-3	O	No significant activity to report on this item
		2004	O	Mangrove Buster Coalition initiated
		2005	O	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Develop and apply performance measures to improve effectiveness of wetland resource management.	7.2.4	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	X	HQ Marine Corps issued new guidance to implement a new INRMP metrics at the end of CY2006. See INRMP update (Section 7.0.6) for details.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Clarify jurisdictional status of wetlands when necessary.	7.2.5	2002-3	X	Added several "official" wetlands to MCBH list w/completion of Army COE wetland delineation study in 2002
		2004	O	Developed improved map that depicts real estate/wetland boundary overlap bwtn Air Force & MCBH jurisdiction at wetland along Waimanalo stream at Bellows; raised issue for resolution at HQMC-level.
		2005	X	No significant activity to report on this item
		2006	X	Another study to evaluate and possibly update jurisdictional wetland boundaries determined in 2002 by the Army COE has been programmed for FY08 execution. Such updates are recommended every five years.
Obtain wetland-related permits (404, 401) as needed.	7.2.5	2002-3	X	Ongoing
		2004	X	Confirmed no need wetland permit from Army COE for HI HI60834 Wetland Restoration/Percolation Ditch Replacement project
		2005	X	In July 05, obtained Army COE Nationwide #27 Permit for Stream and Wetland Restoration in order to implement HI20010 watershed Repair/Restore, Mokapu Central Drainage Channel.
		2006	X	Ongoing
Streamline permitting process where possible.	7.2.5	2002-3	X	Ongoing
		2004	X	See above
		2005	X	See above
		2006	X	See above
Course of Action 7.3 Watershed Management				
Complete HI20033 MCTAB Watershed Impairment Study	7.3.1	2002-3	X	Completed in 2002
		2004	O	N/A
		2005	O	N/A
		2006	O	N/A
Complete HI20013 ECE-Mandated Erosion Assessment of MCBH Properties.	7.3.1	2002-3	X	Funded in FY03-- Phase I for erosion assessmt of Ulupa'u Crater (Range interior Catchment & Landfill areas); phase 2 & 3 funded design efforts to design erosion fixes in specific "hot spots" detected)
		2004	X	Landfill/Craterl Erosion Assmt report completed.
		2005	O	N/A
		2006	O	N/A

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Evaluate and implement appropriate recommendations from the HI20013 ECE-Mandated Erosion Assessment.	7.3.1	2002-3	X	See above
		2004	X	Projects being programmed to design/build fixes for erosion "hot spots" in FY06/FY07
		2005	X	Funds obligated and work began on Designs of projects to fix erosion problems identified at Crater Landfill and Catchment (interior) locations w/construction programmed for FY06/FY07 time frame.
		2006	X	Design work is near completion in October 2006 for HI20013 to Install Erosion Control BMPs in Crater Interior. Construction award of the project is forecasted for the March 2007 timeframe.
Initiate systematic monitoring of ambient erosion conditions and implement appropriate follow-on actions.	7.3.1	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	X	Contractor performing next phase erosion assessment study (HI0920013M Install Erosion BMPs: Crater Slope and Shoreline) has systematically photographed erosion problems during large-scale storm/stormwater flow events as part of this study. This is helping MCBH identify priority areas for follow on erosion mitigation actions to be programmed.
Develop and apply performance measures to monitor erosion control projects, and make appropriate adjustments.	7.3.1	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	Began to track erosion projects as part of MCBH Environ .Dept.'s Environmental Management System matrix developed by MCBH EMS coordinator with updates regularly reported to HQMC as part of new EMS requirement.
		2006	X	No significant activity to report on this item.
Design/Construct HI20010 Watershed Repair/Restore, MCDC.	7.3.2	2002-3	X	Design and EA progressed in FY03; project is on FY04 construction forecast for build award in March 04
		2004	X	Finalization of EA & design work continues; pending acceptance, USMC has authorized to advertise for construction in FY05.
		2005	O	EA and Design done, Army COE permit under nationwide #27 (Stream and Wetland Restoration) authority issued, and negotiations completed with successful bidder in Sep 05, funds awarded IA0 $596K to implement work in Nov 05 (await scheduling of construction kick-off meting in early CY06).
		2006	O	Construction awarded to successful bidder but implementation delayed until another contractor clears the area of construction debris where excavated soil is to be taken. In late 2006, delay appears to be almost over, allowing the new contractor to begin work.
Design/Construct HI35636SM Erosion Control/Horse Trails, MCBH-CS.	7.3.2	2002-3	X	Design completed; await construction scheduling decision
		2004	O	No horse use allowed; erosion impact mitigation decision still pending
		2005	X	Erosion mitigation design implementing awaits completion of lead-contaminated soil removal/disposal from the site.
		2006	X	Work in progress on removing lead-contaminated soil under the Installation Restoration Program. Anticipate design funds in FY07 to update already-completed design to convert eroded, discontinued horse trails into a sustainable hiking trail at Camp Smith.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Design/Construct HI10007 Puuloa Range Impact Berm Repair.	7.3.2	2002-3	X	Project awarded at end FY03 for construction completion
		2004	O	N/A (project completed)
		2005	O	N/A
		2006	O	N/A
Design/Construct HI32168 Pa‘akai Pond/Beach Restoration.	7.3.2	2002-3	X	Project completion deferred
		2004	X	No significant activity to report on this item
		2005	X	Project completion deferred due to more important emergent priorities
		2006	X	Project completion deferred due to more important emergent priorities
Design/Construct HI20033 MCTAB Watershed Impairment Solution.	7.3.2	2002-3	X	Project completion deferred
		2004	X	Project being programmed for design/construct in FY06
		2005	X	No significant activity to report on this item
		2006	X	No activity in 2006; Expect design funds programmed for FY07 to begin work on this project.
Continue established approach to voluntary service and outreach in MCBH watersheds.	7.3.2	2002-3	X	Ongoing
		2004	X	Ongoing
		2005	X	Ongoing
		2006	X	Ongoing
Explore interagency cooperative projects to enhance regional watershed restoration opportunities for all stakeholders.	7.3.2	2002-3	O	Begin MCBH participation in State/Wildlife Society Wetland Workshop in 2002.
		2004	O	Continued interagency watershed workshop networking; sponsored access for native plant firm under State DOH 319 grant to improve native riparian vegetation along part of Waimanalo stream adjacent & upstream of MCTAB
		2005	O	Continued activities such as described in 2004
		2006	X	Continued activties such as described in 2004, 2005
Review and update all relevant plans and SOPs to integrate BMPs.	7.3.3	2002-3	X	Text drafted into MCBH Environmental Dept. EC-SOP to be published in CY04 as new Base Order
		2004	X	No significant activity to report on this item
		2005	X	Updated Base Regs (BaseO 5500.15B) distributed base-wide & contains updated natural resources information and maps; Natural resources chapter in draft MCBH Environ. Dept. EC-SOP to be published in CY06 as user-friendly basewide resource on-line; Inputed to Base initiative to update Standard Specs to include various BMPs (erosion control, vegetation replacement & maintenance)
		2006	X	Ongoing reviews of Base Orders to include environmental BMPs.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Implement watershed BMPs in appropriate projects.	7.3.3	2002-3	X	Ongoing—example, riparian vegetation to be installed in MCDC improvements project
		2004	X	Ongoing—example, riparian vegetation to be installed in Wetland Restore/Perc Ditch Replace project
		2005	X	Ongoing—example, riparian vegetation to be installed in Wetland Restore/Perc Ditch Replace project and in l Watershed Restore/Repair, Mokapu Central Drainage Channel project.
		2006	X	Ongoing--see above examples
Identify and assist appropriate personnel to incorporate BMPs into operational guidelines and SOPs.	7.3.4	2002-3	X	Erosion Assessment contractor to field- instruct landfill and Range staff on simple BMPs to reduce erosion at Crater Range/landfill areas
		2004	X	Ongoing—example, assisting MCBH facilities personnel to incorporate BMPs in grounds mntce practices contracts for grounds mntce along streams, ditches, wetland basin at MCBH
		2005	X	Ongoing—example, assisting MCBH facilities personnel to incorporate BMPs in grounds mntce practices contracts for grounds mntce along streams, ditches, and wetland basin near barracks along Mokapu Central Drainage Channel
		2006	X	Ongoing
Develop and implement appropriate BMPs into contract SOWs, Plans and Specifications, as appropriate.	7.3.4	2002-3	X	See above example
		2004	X	Ongoing-example—assisting Facilities dept. personnel to prep. contract specs for proper BMPS on grounds mntce along vegetated banks of Waimanalo stream and constructed Mokapu wetland basin at MCBH in acc/with permits awarded
		2005	X	Ongoing-example—assisted Facilities dept. personnel to prep. contract specs for proper BMPS on grounds mntce along vegetated banks of Waimanalo stream and at constructed Mokapu wetland basin at MCBH in acc/with permits awarded
		2006	X	Ongoing--see above examples
Develop and apply performance measures to document effects of implementing BMPs, and make appropriate adjustments.	7.3.4	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	MCBH Sr. Nat. Res. Mgr. served as academic advisor to Master's degree student at Univ. of Hawaii who evaluated MCBH's implementation of EPA BMP to use native plant vegetation strips in constructed wetlands at Klipper Golf Course ponds project recently completed as INRMP Project HI80726. Master's thesis exercise represents one effort to obtain independent evaluation of efforts to implement this BMP.
		2006	X	No significant activity to report on this item.
Formally assign watershed management and assessment responsibilities to appropriate MCBH personnel.	7.3.5	2002-3	X	Senior Nat. Res. Mgt. Specialist is lead & regularly confers with staff environ engineers & cooperating agency watershed personnel (EPA, State DOH, DLNR, USFWS, USDA Nat. Res. Consv. Service)
		2004	X	Ongoing as described in 02-03
		2005	X	Ongoing as described in 02-03
		2006	X	Ongoing as described above.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Ensure relevant personnel obtain focused training on watershed BMPs.	7.3.5	2002-3	X	Ex: Landfill operators being OJT-trained by consultant watershed expert civil/environmental engineer/geomorphologist
		2004	X	NR & Facilities staff attended EPA-State co-sponsored watershed erosion BMP workshop in Jan 04
		2005	X	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Display/distribute *available* presentation materials on watershed health, assessment and BMPs.	7.3.5	2002-3	X	CY200-01 completed major watershed health educational project w/State DOE teachers; over 1K volunteers & related educational materials for students/public
		2004	X	Watershed presentations & tours continue using existing handouts about program initiatives
		2005	X	Watershed presentations & tours continue using existing handouts about program initiatives; MCBH's Mokapu watershed manual posted at DENIX website and downloaded by teachers & others.
		2006	X	Ongoing as described above.
Develop/distribute *additional* presentation materials on watershed health, assessment and BMPs.	7.3.5	2002-3	O	CY00-02 completed major watershed health BMP educational initiative w/State DOE teachers/students and over 1K volunteers; New educational matls developed & distributed to students/public
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	X	No significant activity to report on this item.
Course of Action 7.4 Coastal and Marine Resources Management				
Design/Construct HI10007 Puuloa Range Impact Berm Repair.	7.4.1	2002-3	X	Project awarded at end FY03 for construction completion
		2004	X	Project completed
		2005	O	N/A
		2006	O	N/A
Continue CZM Consistency Determination Improvements.	7.4.1	2002-3	X	No significant activity to report on this item
		2004	X	No significant activity to report on this item
		2005	X	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Initiate systematic monitoring of ambient shoreline and off-shore erosion conditions and implement appropriate follow-on actions.	7.4.1	2002-3	O	No significant activity to report on this item
		2004	O	Some systematic monitoring occurred along Ulupa'u Crater shoreline as part of Crater/Landfill Erosion assmt completed in CY04.
		2005	O	Next phase of erosion assessment funded/began for Southeast Ulupa'u Crater shoreline & for North-facing slopes of Ulupa'u Crater
		2006	X	2005-initiated studies, mentioned above, continued in 2006.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Complete HI20009 Coral Reef Ecosystem Management Study.	7.4.1	2002-3	X	Study Completed in 2002
		2004	O	N/A
		2005	O	N/A
		2006	O	N/A
Evaluate and implement appropriate recommendations from the HI20009 Coral Reef Ecosystem Management Study.	7.4.1	2002-3	X	In progress; also, an update of in-water marine inventory (Project HI20009) in MCBH waters was funded IAO $116K at end CY03.
		2004	X	Marine Inventory Project (HI20009) in MCBH 500-yard security buffer zone progressing toward completion in CY05.
		2005	X	Fieldwork phase of Marine Inventory Project (HI20009) in MCBH 500-yard security buffer zone almost completed; report findings write up began to be completed in early CY06.
		2006	X	Some fieldwork yet to be done; report write up continued after significant delays due to USFWS staff/authors being diverted to other priorities/emergencies. Anticipate receipt of completed report by end CY2006. To be inserted in Pre-Final Draft INRMP Update (Oct 06)
Inventory available maps/data bases about coastal and marine resources/ spill risks in MCBH coastal areas, and integrate into MCBH EGIS.	7.4.2	2002-3	X	Ongoing as part of above-cited inventory
		2004	O	Ongoing as part of above-cited inventory
		2005	O	Ongoing as part of above-cited inventory
		2006	O	Ongoing as part of above-cited inventory
Formally assign NRDA responsibilities to appropriate personnel.	7.4.2	2002-3	X	Sr. Nat. Res. Mgt. Specialist performed NRDAR role in 2002 Spill Exercise
		2004	X	All available NR staff participated in spill drill training exercise, including NRDA, hosted at MCBH
		2005	X	All available NR staff participated in annual table-top spill drill training exercise, including NRDA, hosted at MCBH (w/DLNR & FWS participation as well)
		2006	X	No significant new activity to report on this item.
Ensure assigned personnel obtain focused training on NRDA responsibilities.	7.4.2	2002-3	X	Sr. Nat. Res. Mgt. Specialist received USFWS-sponsored NRDAR trng in 2003.
		2004	X	OJT training occurred as part of annual spill drill exercise
		2005	X	OJT training occurred as part of annual spill drill exercise
		2006	X	OJT training occurred as part of annual spill drill exercise
Review and update existing MOUs about NRDA actions with Sikes Act partners and other agencies, as appropriate.	7.4.2	2002-3	X	No significant activity to report on this item
		2004	X	No significant activity to report on this item
		2005	X	No significant activity to report on this item
		2006	X	No significant activity to report on this item

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Identify and assist appropriate personnel (e.g., planners, operators) to detect and address threats to coastal and marine resources.	7.4.2	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	Completed assist to HQMC-sponsored team on their EA and pre-fieldwork orientation to MCBH waters for a successfully performed summer CY05 trial of new generation AAVs (EFVs) in MCBH waters off Mokapu Peninsula.
		2006	X	No significant activity to report on this item
Review and update established MCBH policies and practices regarding ERA for potential expansion to coastal and marine resource management.	7.4.3	2002-3	X	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Ensure assigned personnel obtain focused training on ERA methodologies.	7.4.3	2002-3	O	Sr. Nat. Res. Mgt. Specialist attended CECOS ERA course in 20012.
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	O	No significant activity to report on this item
Develop and apply performance measures for the application of appropriate ERA methods to coastal and marine projects.	7.4.3	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	O	No significant activity to report on this item
Incorporate updated coastal and marine resource management policies into Base Plans, Projects and Protocols.	7.4.4	2002-3	X	MCBH Environ. Dept EC-SOP to be published in 2004; contains some updated information.
		2004	X	No significant activity to report on this item
		2005	X	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Develop a Sustainable Marine Access Policy and disseminate to stakeholders.	7.4.4	2002-3	X	No significant activity to report on this item
		2004	X	No significant activity to report on this item
		2005	X	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Monitor recreational use of MCBH's marine coastal zone (systematically), evaluate results, and improve management.	7.4.4	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	Patrols, interdiction & prosecution of poachers, & citation of trespassers in MCBH waters improved in CY05 due to increased activity of MCBH's Conservation Law Enforcement officer in coop. with USFWS, Navy Investigative Service, Military Poilcy, and State DLNR DOCARE staff.
		2006	O	Ongoing as reported in 2005

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Formally assign coastal and marine resource management responsibilities to appropriate MCBH personnel.	7.4.5	2002-3	X	No significant activity to report on this item
		2004	X	No significant activity to report on this item
		2005	X	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Ensure assigned personnel receive appropriate training in marine resource management, enforcement, and related subjects.	7.4.5	2002-3	X	Resource Enforcement covered in FLTEC course attended by MCBH Wildlife Tech in 2003.
		2004	X	No significant activity to report on this item
		2005	X	Wildlife Tech/Conservation Law Enforcement office gets regular training & does training briefs for others; hosts training seminars when needed.
		2006	X	Ongoing training as reported in 2005
Display/distribute *available* presentation materials on coastal and marine resources.	7.4.5	2002-3	X	Continue to disseminate environ brochures & New Arrivals Briefs & SOP course; on environ. tours.
		2004	X	Continue to disseminate environ brochures & New Arrivals Briefs & SOP course; on environ. tours.
		2005	X	Continue to disseminate environ brochures & New Arrivals Briefs & SOP course; on environ. tours.
		2006	X	Ongoing as in 2005.
Develop/distribute *additional* presentation materials on coastal and marine resources.	7.4.5	2002-3	O	Booth at “Day at the Docks” event at MCBH Marina, etc.
		2004	O	Continue to disseminate environ brochures & New Arrivals Briefs & SOP course; on environ. tours.
		2005	O	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Explore interagency cooperative projects to manage threats to MCBH’s coastal and marine resources.	7.4.6	2002-3	O	No significant activity to report on this item
		2004	O	MCBH hosted interagency funded alien seaweed workshop
		2005	O	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Explore interagency cooperative projects to implement regional coastal and marine conservation opportunities.	7.4.6	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Course of Action 7.5 Grounds Maintenance and Landscape Management				
Continue established approach (opportunistic) to improve existing grounds maintenance and landscape management.	7.5.1	2002-3	X	Ongoing advice provided in project designs to insert appropriate native landscaping in projects (goal 50% natives)
		2004	X	Ongoing advice provided in project designs to insert appropriate native landscaping in projects (goal 50% natives)
		2005	X	Ongoing advice provided in project designs to insert appropriate native landscaping in projects (goal 50% natives)
		2006	X	Ongoing advice provided in project designs to insert appropriate native landscaping in projects (goal 50% natives)

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Complete HI21001 Master Landscape Study.	7.5.1	2002-3	X	Completed in 2002
		2004	O	N/A
		2005	O	N/A
		2006	O	N/A
Evaluate and implement appropriate recommendations from the HI21001 Master Landscape Study.	7.5.1	2002-3	X	Study distributed to provide landscaping guidance at all relevant projects; other recommendations undergoing review
		2004	X	No significant activity to report on this item
		2005	X	Ongoing advice provided in project designs to insert appropriate native landscaping in projects (goal 50% natives)
		2006	X	Ongoing advice provided in project designs to insert appropriate native landscaping in projects (goal 50% natives)
Update Base Order 11014.19, "Grounds Maintenance and Police", to reference sustainable landscape guidance.	7.5.1	2002-3	X	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	N/A
		2006	O	No significant activity to report on this item.
Develop and implement generic contract specifications requiring adherence to federal directives on sustainable landscaping.	7.5.1	2002-3	X	No significant activity to report on this item
		2004	X	No significant activity to report on this item
		2005	X	Worked with Facilities Dept to prepare contract specs on specific vegetation removal BMPs in connection with Waimanalo stream maintenance & Barracks wetland basin project. Inputted to Facilities prep. of new handbook of generic contract specs on vegetation maintenance, this, erosion mitigation, & other natural resources-related topics
		2006	X	Worked with NAV FAC contract staff to insert relevant language in specs for Public-Priate Venture (PPV) Housing contract for MCBH lands
Ensure incorporation of not less than 50% native plants into new or renovated tree, shrub, and understory landscaping.	7.5.1	2002-3	X	LE staff review comments on projects continue to emphasize this standard
		2004	X	LE staff review comments on projects continue to emphasize this standard
		2005	X	LE staff review comments on projects continue to emphasize this standard
		2006	X	LE staff review comments on projects continue to emphasize this standard
Ensure a phased approach to inventory and eliminate/replace invasive, nuisance, high maintenance vegetation.	7.5.1	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	This is one objective of FY05 funded project HI20012 to develop an invasive species grass removal/replacement plan at MCTAB
		2006	X	Project HI20012 under preparation.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Initiate a Master Grounds Maintenance and Landscaping Study for MCTAB and implement appropriate recommendations.	7.5.1	2002-3	O	No significant activity to report on this item
		2004	X	No significant activity to report on this item
		2005	O	This is being accomplished as part of FY05 funded HI20012 assessment cited above.
		2006	O	This is still under development as part of FY05 funded HI20012 assessment cited above.
Update Facilities grounds maintenance zone maps to better reflect natural resource criteria and incorporate into Base Order 11014.19.	7.5.2	2002-3	X	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	O	No significant activity to report on this item
Implement a vegetation mapping and ecological field analysis study.	7.5.2	2002-3	O	FY03 HI20012 baseline vegetation Mapping project at MCTAB is underway ($125K).
		2004	X	HI20012 study completed in CY04
		2005	O	N/A
		2006	O	N/A
Evaluate and implement appropriate recommendations from the vegetation mapping and ecological field analysis study.	7.5.2	2002-3	O	No significant activity to report on this item
		2004	O	Initiated
		2005	O	Initiated with funding and began contract to implement HI20012 Invasive Species planning for MCTAB (cited above)
		2006	X	HI20012 FY05-funded study continues leading to a MCTAB vegetation control strategy. Final report expected in November 2006.
Continue established vegetation and grounds maintenance management practices for Ulupa‘u Head WMA and Range Facility.	7.5.3	2002-3	X	Continuing as documented in MCBH INRMP & HI21005 Ulupa’u Brushfire Mgt. Study (2002)
		2004	X	Continuing
		2005	X	Continuing
		2006	X	Continuing
Complete HI21005 Ulupa‘u Fire Management Study.	7.5.3	2002-3	X	Completed 2002
		2004	O	N/A
		2005	O	N/A
		2006	O	N/A
Evaluate and implement appropriate recommendations from the HI21005 Ulupa'u Fire Management Study.	7.5.3	2002-3	X	Evaluation underway, 2 sequel projects (HI20007 & 20008) funded in FY03 for design/build. Build contract awarded & construction to be completed in late CY03/early CY04.
		2004	X	HI20007 & HI20008 at Ulupa’u Crater begun late CY04; est completed early CY05
		2005	X	HI20007 (geotextile matting/weed suppression cover) completed in Jan 05; HI20008 (to improve water delivery for fire fighting with water cannons at Ulupa’u Crater) continued throughout CY05 with anticipated completion in early CY06.
		2006	X	HI20008 water cannons project encountered some technical difficulties, postponing its completion. Expected completion date is now not until early CY2007.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Formally assign grounds maintenance and landscape management oversight duties to responsible personnel.	7.5.4	2002-3	X	MCBH's Deputy Environ. Dept. Head & Supv. Environ. Protect. Specialist is formally assigned pesticide mgt. oversight duties; Nat. Res. Mgt. GS-11 is forester/certified arborist and performs landscape mgt. oversight
		2004	X	GS-11 Nat. Res Mgr returned from 3-years extended Marine Reserve Duty now ready to assume pest mgt. and grnds/landscape mgt. oversight duties.
		2005	X	GS-11 Nat. Res. Mgr returned from 3-years extended Marine Reserve Duty; received pesticide management oversight training/certification; assumed pest mgt. oversight duties and resumed grnds/landscape mgt. oversight duties until re-upped in Nov for another year away in Iraq.
		2006	X	No significant activity to report on this item while GS-ll Nat. Res. Mgr. was on reserve duty in Iraq
Ensure assigned personnel obtain focused training on sustainable landscaping BMPs and monitoring protocols.	7.5.4	2002-3	X	No significant activity to report on this item
		2004	X	No significant activity to report on this item
		2005	X	No significant activity to report on this item
		2006	X	No significant activity to report on this item while GS-ll Nat. Res. Mgr. was on reserve duty in Iraq
Complete HI20012 Invasive Species Management Study.	7.5.4	2002-3	X	Completed in 2002
		2004	O	N/A
		2005	O	N/A
		2006	O	N/A
Evaluate and implement appropriate recommendations from the HI20012 Invasive Species Management Study.	7.5.4	2002-3	X	Ongoing & follow-on FY03 HI20012 funded $125K baseline vegetation mapping study at MCTAB began.
		2004	X	HI20012 MCTAB veg GIS map study completed; follow on recommended actions under evaluation
		2005	X	Follow on assessment phase of HI20012 MCTAB Veg GIS map study started to develop implementation plan and cost estimates for recommended actions from that study. Follow-on design/construction of detailed project(s) IAO $350 programmed for FY06/07.
		2006	X	Follow-on projects cited in 2005 are now programmed for FY07/08 design/build.
Develop and apply performance measures to monitor landscape improvement projects, and make appropriate adjustments.	7.5.4	2002-3	O	No significant activity to report on this item
		2004	O	UH Grad student in Nat Res. Environ Mgt. initiated MS thesis topic on use of riparian vegetation as BMP—initiatives & constraints at MCBH-- under guidance of Sr. Nat. Res. Mgt. Spec. & affiliate UH faculty mber
		2005	O	UH Grad student in Nat Res. Environ Mgt. completed MS thesis topic on use of riparian vegetation as BMP—initiatives & constraints at MCBH-- under guidance of Sr. Nat. Res. Mgt. Spec. & affiliate UH faculty member. Thesis disseminated to faculty and students and available to public at UH library.
		2006	X	No significant activity to report on this item

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Sustain and improve the demonstration native plant landscape around the Environmental Department building complex at MCBH-KB.	7.5.5	2002-3	X	Ongoing—Environ. Dept. recognized by LF Maint. With Area of the Month recognition.
		2004	X	Ongoing
		2005	X	Ongoing
		2006	X	Ongoing
Sustain and improve the three demonstration native plant riparian gardens (on MCBH-KB and at MCTAB).	7.5.5	2002-3	X	Ongoing-with periodic volunteer events (HECO Legal Staff, youth groups, service clubs) & special term with UH intern for academic credit in environ. studies program
		2004	X	Ongoing-with periodic volunteer events
		2005	X	Ongoing-with periodic volunteer events
		2006	X	Ongoing-with periodic volunteer events
Sustain and improve the Front Gate Static Display project (HI20011) native landscaping component.	7.5.5	2002-3	X	End year FY03 funds programmed for further improvements
		2004	X	No significant activity to report on this item
		2005	X	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Evaluate placement of a volunteer coordinator billet in LE and implement appropriate recommendations.	7.5.5	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	N/A
		2006	O	No significant activity to report on this item
Course of Action 7.6 Quality of Life/Outdoor Recreation Management				
Complete HI41786 Draft Outdoor Recreation Study for MCBH-KB.	7.6.1	2002-3	O	No significant activity to report on this item
		2004	O	Project deferred; No action programmed in 2004
		2005	O	N/A
		2006	O	Project deterred to FY08 due to other priorities and limited staff for project management.
Evaluate and implement appropriate recommendations from the completed HI41786 Outdoor Recreation Study for MCBH-KB.	7.6.1	2002-3	O	No significant activity to report on this item
		2004	O	Project deferred; No action programmed in 2004
		2005	O	N/A
		2006	O	N/A
Initiate a study of Outdoor Recreation improvements needed on MCBH parcels acquired since 1994.	7.6.1	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	N/A
		2006	O	Project deferred to FY08 due to other priorities and limited staff for project management.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Display/distribute *available* presentation materials on outdoor recreation opportunities and constraints.	7.6.2	2002-3	X	Ongoing distribution of info in brochures, SOP class, New Arrivals briefs, environ. tours.
		2004	X	Continued ongoing distribution of info in brochures, SOP class, New Arrivals briefs, environ. tours.
		2005	X	Continued ongoing distribution of info in brochures, SOP class, New Arrivals briefs, environ. tours.
		2006	X	Continued ongoing distribution of info in brochures, SOP class, New Arrivals briefs, environ. tours.
Develop/distribute *additional* presentation materials on outdoor recreation opportunities and constraints.	7.6.2	2002-3	O	Nu'upia Ponds Run Trail designed/built (2003), to include posted- displays along route with information on OR opps/constraints.
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Review and update Base SOPs covering outdoor recreation activities that impact sensitive natural resources.	7.6.2	2002-3	X	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	X	Inputted to update of Base Regs published in CY05 & ensured that Nuupia Ponds Recreational Trail map and Dos/Don'ts was included.
		2006	X	No significant activity to report on this item
Review and update public access SOPs to clarify usage within mission and natural resource priorities.	7.6.2	2002-3	X	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	X	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Review and update fishing policies, practices, and access protocols to reflect latest laws, best science, and use constraints.	7.6.2	2002-3	X	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	X	Updates reflected in update to Base Regulators incorporating latest Fishing policies guidance, etc.
		2006	X	No significant activity to report on this item
Improve programs by which on- and off-base stakeholders participate in natural resource improvement projects as a recreational activity.	7.6.2	2002-3	??	Nu'upia Ponds Run Trail opened, to become annual event
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	X	No significant activity to report on this item
Design/Construct HI80726 Golf Course Pond/Endangered Waterbird Habitat Enhancement.	7.6.3	2002-3	X	Completed 2003
		2004	O	N/A
		2005	O	N/A
		2006	O	N/A

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Complete MCDC Flood Control Recreational "Parkway" Plan/Vision.	7.6.3	2002-3	X	HI20010 Watershed Repair/Restore, MCDC project design and EA progressed in CY03; project is on FY04 construction forecast for build award in March 04
		2004	X	HI20010 Watershed Repair/Restore, MCDC project design at 100% awaiting EA completion; USMC authorized advertise to construct in FY05, pending completion of EA approvals.
		2005	X	HI20010 Watershed Repair/Restore, MCDC project will complete this Vision, with EA and project bids completed in FY05 with funds awarded to build project IAO $596K in Nov 05. Anticipate "kick-off" meeting in early CY06.
		2006	X	HI20010 Project ongoing, with expected completion in 2007.
Continue to install interpretive signs and displays to enhance the environmental experience of recreational users.	7.6.3	2002-3	X	Nu'upia Ponds Recreational Run Trail interp. signs installed along rte; interp sign to be installed before end FY03 at Golf Course ponds.
		2004	X	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	O	No significant activity to report on this item
Design/Construct HI35636SM Erosion Control/Horse Trails, MCBH-CS.	7.6.3	2002-3	X	Design completed; await construction scheduling decision
		2004	O	N/A
		2005	X	Awaits completion of on-going project to cleanup Pb-contaminated soil before erosion mitigation design can be implemented.
		2006	X	Work in progress on removing lead-contaminated soil under the Installation Restoration Program. Anticipate design funds in FY07 to update already-completed design to convert eroded, discontinued horse trails into a sustainable hiking trail at Camp Smith.
Explore interagency cooperative projects to reduce regional ORV impacts.	7.6.3	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	O	No significant activity to report on this item
Review the State and local government outdoor recreation plans for INRMP compatibility and collaborative project opportunities.	7.6.3	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	O	No significant activity to report on this item
Develop a program at MCTAB's beach campground that incorporates natural resource sensitivity criteria.	7.6.3	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	O	No significant activity to report on this item; will require interagency cooperation with Air Force and C/C of Honolulu

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Review Bellows AFS outdoor recreation program for INRMP compatibility and collaborative project opportunities.	7.6.3	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	O	No significant activity to report on this item; but Air Force review comments on Draft INRMP update indicated willingness to collaboratively pursue funding for a project such as dissemination of environmental sensitivity brochures in Bellows beach cabins.
Course of Action 7.7 Resource Information Management				
Inventory available natural resource data, develop a bibliographic database, and determine archival priorities.	7.7.1	2002-3	X	Begun under HI20015 Nat. Res. archive/electronic datamgt. improvements project
		2004	O	Work continues under HI20015 project
		2005	O	Work continues under HI20015 project
		2006	O	Work continues under HI20015 project
Implement archival action priorities, as appropriate.	7.7.1	2002-3	O	No significant activity to report on this item
		2004	O	Began to scan priority documents
		2005	O	Continued to scan priority documents & began to convert VHS programs to DVD & Mpeg3 formats & acquired archival storage boxes for products
		2006	X	Finished major scanning tasks; continued to expand electronic bibliography to include manuscripts, photos, maps, file folders in project files, etc.
Inventory available natural resources data amenable for integration with MCBH's EGIS and determine conversion priorities.	7.7.1	2002-3	X	Ongoing under HI20015 project
		2004	O	Identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	O	Work on this continues as part of HQMC-funded GIS needs assmt. and layer standardization update process ongoing throughout CY05.
		2006	O	Work continues as part of HQMC-funded GIS project
Implement data conversion priorities for the MCBH EGIS, as appropriate.	7.7.1	2002-3	O	Ongoing under HI20015 project
		2004	O	Identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	O	Ongoing in HQMC GIS project for MCBH throughout CY05 (see above).
		2006	O	Ongoing in 2006
Review and update established MCBH's EGIS natural resource data files and associated metadata for compliance with DoD standards.	7.7.2	2002-3	X	Ongoing under HI20015 project & parallel EGIS functional analysis review under LE Dept. Head
		2004	X	Identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	X	Ongoing in HQMC GIS project for MCBH throughout CY05 (see above).
		2006	X	Ongoing in 2006

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Continue to update EGIS layers (opportunistically) obtained from MCBH contracts, activities or outside agencies.	7.7.2	2002-3	X	Ongoing—projects produce GIS layers & associated data & turned over the LE Geographer for integration after appropriate translations made.
		2004	X	Ongoing
		2005	X	Ongoing, with completion of each contractor deliverable
		2006	X	Ongoing, with completion of each contractor deliverable
Update EGIS layers (systematically) obtained from MCBH contracts, activities or outside agencies.	7.7.2	2002-3	O	Existing EGIS program undergoing functional area analysis to derive more efficiencies and improvements where needed.
		2004	O	Identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	O	Ongoing in HQMC GIS project for MCBH throughout CY05 (see above).
		2006	X	Ongoing in HQMC GIS project for MCBH
Inventory new natural resource data, add to bibliographic database; and incorporate into MCBH EGIS, as appropriate.	7.7.2	2002-3	O	No significant activity to report on this item
		2004	O	Developed Shearwater fallout/bird recovery tracking sheet w/US FWS collaboration
		2005	O	Continued throughout CY05 with assist of Nat. Res. Technician.
		2006	O	Continued throughout CY06 with assist of Nat. Res. Technician in the Archives project and the MCBH wildlife specialist contractor.
Develop and implement generic contract specifications to ensure delivery of EGIS and DoD compliant data sets.	7.7.2	2002-3	X	Draft specs initiated and undergoing internal staff review
		2004	X	Identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	X	Began to insert HQMC-defined generic contract specs in new contracts issued beginning CY05.
		2006	X	Continued as in 2005
Develop and implement a standardized SOP for tracking significant natural resource observations.	7.7.2	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	No significant activity to report on this item
		2006	X	Began to develop a database for noteworthy natural resources observations.
Establish a lead department or entity on MCBH in this area (e.g., LE, LF, ISMO) and clarify interdepartmental responsibilities.	7.7.3	2002-3	O	Interdepartmental responsibilities will be further clarified pending results of GIS/ISC/Nat. Res. Info functional analysis review and HI20015 project progress in CY03/CY04.
		2004	O	Identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	O	Being worked as part of the HQMC-funded/driven GIS project for MCBH ongoing throughout CY05.
		2006	O	Progress continued as in 2005.
Inventory available natural resource data for MCBH properties acquired since 1994 and integrate into the MCBH EGIS.	7.7.3	2002-3	O	Ongoing as part of HI20015 project
		2004	O	Ongoing
		2005	O	Ongoing
		2006	X	Ongoing under HI20015 project

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Review and update available data files and associated metadata for properties acquired since 1994 for compliance with DoD standards.	7.7.3	2002-3	O	Ongoing as part of HI20015 project and Environ Dept. Functional Analysis review of EGIS/ISC/NR Data Mgt. functions.
		2004	O	Improvements needed as identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	O	Being worked as part of the HQMC-funded/driven GIS project for MCBH ongoing throughout CY05.
		2006	X	Being worked on as part of the HQMC-funded/driven GIS project for MCBH started in CY05.
Update EGIS strategic plan to leverage limited EGIS and AutoCAD mapping capabilities of LE and LF regarding natural resource data.	7.7.4	2002-3	O	No significant activity to report on this item
		2004	O	Identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	O	HQMC-funded, directed contractors have begun to work on standardizing LE & LF GIS and CAD layers per a USMC-wide strategic plan
		2006	O	The HQMC-funded project continues to lead this effort
Evaluate and implement appropriate recommendations from the updated EGIS Strategic Plan.	7.7.4	2002-3	O	No significant activity to report on this item
		2004	O	Identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	O	See above
		2006	X	See above
Develop and implement coordination protocols between LE and LF to ensure use of current and standard natural resources data sets.	7.7.4	2002-3	X	Ongoing
		2004	X	Identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	X	Being worked as part of the HQMC-funded/driven GIS project for MCBH ongoing throughout CY05.
		2006	X	Continues to be worked as in 2005 (see above)
Perform benefit/cost and consultations regarding Base-wide adoption of real world coordinate system for use with GIS data.	7.7.4	2002-3	O	Base has adopted Real World coordinate system for GIS and currently upgrading technical equipment, programs, personnel training.
		2004	O	N/A
		2005	O	N/A
		2006	O	N/A
Inventory GIS and other databases developed by other agencies with similar natural resource mandates.	7.7.5	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	N/A
		2006	O	N/A
Explore development of cooperative data sharing agreements with other agencies.	7.7.5	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	Progress cannot be made until in-house USMC-wide geospatial data base is standardized (work in progress) & driven at a higher level
		2006	X	Progress not yet made until in-house GIS in order and ready to share

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Implement developed data-sharing agreements, as appropriate.	7.7.5	2002-3	O	No significant activity to report on this item
		2004	O	No significant activity to report on this item
		2005	O	N/A
		2006	O	N/A
Evaluate and update existing natural resources databases and administrative and technical support systems, as appropriate.	7.7.6	2002-3	X	Ongoing
		2004	O	Identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	X	Being worked as part of the HQMC-funded/driven GIS project for MCBH ongoing throughout CY05.
		2006	X	Ongoing as in 2005.
Develop, annually update, and implement an EGIS-specific training plan for relevant staff.	7.7.6	2002-3	X	No significant activity to report on this item
		2004	X	Identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	X	No significant activity to report on this item
		2006	X	No significant activity to report on this item.
Develop and implement an SOP for clarifying roles and responsibilities for users of the MCBH EGIS system.	7.7.6	2002-3	O	No significant activity to report on this item
		2004	O	Identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	O	Being worked as part of the HQMC-funded/driven GIS project for MCBH ongoing throughout CY05.
		2006	X	Work continues as in 2005.
Provide in-house personnel easier access to commonly used GIS maps and other natural resources data.	7.7.6	2002-3	O	No significant activity to report on this item
		2004	O	Identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	O	Being worked as part of the HQMC-funded/driven GIS project for MCBH ongoing throughout CY05.
		2006	X	Work continues as in 2005.
Maintain a readily accessible standard set of electronic natural resource management data.	7.7.6	2002-3	O	No significant activity to report on this item
		2004	O	Identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	O	Being worked as part of the HQMC-funded/driven GIS project for MCBH ongoing throughout CY05.
		2006	X	Work continues as in 2005.
Acquire an appropriate GPS unit for use by LE personnel.	7.7.7	2002-3	O	FY03 Funds IAO $13K committed for HI20016 project to provide tech. assist in evaluating various GPS unit models & to purchase most appropriate type, as well as staff training on its use.
		2004	X	HI20016 project almost completed; GPS units purchased; training SOP in progress at end CY04
		2005	O	N/A
		2006	O	N/A; GPS units acquired are now in use and require mostly on the job training.

Table E2-4: Detailed Progress Implementing MCBH INRMP Management Actions (2002-2006)

Summary of Planned Projects	INRMP Obj	Year	OPER ALT Actions Planned	Actions Accomplished
Develop and implement standards for collection of GPS data and its incorporation into MCBH's EGIS.	7.7.7	2002-3	O	To be performed under HI20016 project described above
		2004	O	In progress under HI20015
		2005	O	In progress under HI20015
		2006	X	In progress under HI20015
Develop an SOP for using GPS in the field and for data translation, with a software interface that is user friendly for LE personnel.	7.7.7	2002-3	O	To be performed under HI20016 project described above
		2004	O	Identified in HQMC-initiated GIS needs assmt. at end CY04
		2005	O	In progress by NFESC Navy coordinator of HI20015 project
		2006	O	No significant activity to report at this time.

2003 INRMP PROGRESS REPORT

UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002
MCBH KANEOHE BAY, HI 96863-3002

IN REPLY REFER TO:
5090
Ser LE/113/03

US Department of Interior
Fish and Wildlife Service
Attn: Dr. Paul Henson, Field Supervisor
Box 50088
Honolulu, HI 96850

Dear Dr. Henson:

Per Department of Defense and U.S. Marine Corps directives, we solicit your feedback on status of our Integrated Natural Resources Management Plan (INRMP) implementation progress. Please submit your written assessment and any recommendations by November 17, 2003.

In reviewing MCBH progress against established goals, objectives, management actions and timetables in our baseline Nov 2001 MCBH INRMP/EA, we believe we are "on target" in timely implementation of "must fund" projects. We are also ahead of schedule in some areas and have added new projects in pace with emergent priorities. See Encl (1) with Attachments A, B for details.

Per the Sikes Act Improvement Amendments and associated directives, MCBH strives to follow an "ecosystem management" approach to integrated natural resources management whereby important natural resources are managed to support military training requirements and improved quality of life, as well as conservation stewardship mandates. We look forward to receiving your independent assessment of our progress toward this end and will be responsive to any improvements you have to recommend.

Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, at 257-6920 x224, drigotdc@mcbh.usmc.mil.

Sincerely,

R. L. ROUSE
Major, USMC
Director, Environmental Compliance and
Protection Department

Enclosure: Integrated Natural Resources Management Plan Implementation
Progress at Marine Corps Base Hawaii (Nov 01 – Sep 03) w/Attachments

Integrated Natural Resources Management Plan Implementation Progress
At Marine Corps Base Hawaii (Nov 01 – Sep 03)

Per Marine Corps guidance for meeting Sikes Act Improvement Act (SAIA) requirements, we have reviewed our Integrated Natural Resources Management Plan (INRMP) progress since its inception (2001). There follows a list of five major components to this review and progress status of each. Attachments A and B provide further details.

Component 1. Sufficient numbers of professionally trained natural resources management staff are available to implement the INRMP

The three qualified natural resources staff at MCBH as described in the original INRMP/EA (pp 2-13, 2-14) remain on board. Supplements have been necessary to sustain adequate staff support:

a. Our GS-11 Natural Resources Manager has been away for two continuous years as an active-duty Marine Reservist. We have compensated by retaining a contractor with a Masters' degree from University of Hawaii in Geography (Conservation concentration).

b. Nuisance bird/animal damage control at MCBH Properties Camp Smith, Pu'uloa, and MCTAB are handled by contracted professionals from USDA Wildlife Services. Our GS-9 Wildlife Technician normally handles wildlife predator removal and assists the airfield staff in Bird Aircraft Strike Hazard (BASH) management on Mokapu Peninsula (MCBH-KB). He is currenty on extended training assignment at the Federal Law Enforcement Training Center for certification as a federal conservation law enforcement officer. During his three month absence, USDA/Wildlife Services' contract is expanded to sustain predator removal actions at Nu'upia Ponds endangered wildlife habitat and to continue BASH management assist.

c. Professional assistance has also been provided by: (1) contractors with professional credentials in natural resources-related fields pertinent to their contracted study or project design work; and (2) qualified volunteers (e.g., a Navy spouse/former US Fish and Wildlife Service employee with bachelor's degree in wildlife management; an undergraduate University of Hawaii intern earning academic credit toward an environmental studies major).

Component 2. Development of any significant changes to the installation's mission requirements or its natural resources.

a. The simultaneous occurrence of an extended drought and a USMC safety directive prohibiting manned fire crews in impact areas has increased the brushfire risk of destroying federally protected red-footed boobies and their habitat at the Ulupa'u Wildife Management Area.

b. FY03 funds IAO $350K were secured to improve fire-fighting ability based on recommendations from a Ulupa'u Brushfire Management Study (INRMP project HI21006) and an ongoing erosion assessment study (INRMP project HI20013). These funds have subsidized two new INRMP projects: HI21007 Improve Ground Cover/Reduce Brushfire Risk/Sustain Birds/Weapons Training and HI21008 Improve Water Delivery/Reduce Brushfire Risk/Sustain Birds/Weapons Training. These projects will install gravel-anchored geotextile matting over flammable invasive grass patches near vulnerable tree habitat and four remote-controlled water cannons in strategic locations within the wildlife area. Such actions further reduce the chance of brushfires endangering birds and their habitat at the Crater. Designs have been completed and a contract has been awarded to install these projects by May CY04. These projects, in combination with earlier improvements described in the original INRMP and the Ulupa'u Brushfire Management Study (2002) provide defense in depth against fire risk to the birds and their habitat. They will also reduce erosion effects of repeated brushfires that degrade the landscape and reduce its capacity to support weapons training.

Component 3. Extent to which "must fund" projects identified in the INRMP are adequately budgeted for and being implemented "on schedule."

Table 7 in the original INRMP (2001), p. 7-3, lists the major INRMP projects to be implemented over the CY02-06 timeframe. To date, all major INRMP projects listed therein are either already completed or are progressing toward timely completion. Attachment A depicts an updated, modified version of this table, showing project implementation status and additional projects funded since 2001. Focused staff time on the recently added projects caused some delay in completing environmental reviews and designs for Projects HI60834 and HI20010.

The new construction forecast dates for these projects are Feb 2004 and Mar 2004 respectively. In sum, all projects listed in the original INRMP as well as the new ones are being accomplished in a timely fashion within the forecasted CY02-06 INRMP time frame.

Component 4. Required Federal, State, and Installation coordination has occurred.

The Attachment A table also depicts current on-track status of coordination required for these INRMP projects. In addition, we enjoy continuing interagency coordination and cooperation on routine management actions covered in the INRMP (e.g., close coordination with our war-fighters in implementing the annual Nu'upia Ponds Mud Ops AAV maneuvers to control pickleweed in endangered stilt habitat, and close coordination with state and federal wildlife biologists in bird counts, spill response exercises, etc.).

Component 5. Progress toward implementing INRMP management actions linked to established INRMP goals and objectives is documented.

The tables in Appendix C of the original INRMP (2001) display systematic lists of management actions to be implemented, the linked INRMP objectives, and whether/when they are programmed for completion or initiation over a five-year time frame (02-06). Attachment B presents a modified version of Appendix C tables which document how our current "operational" level of effort is either on schedule and even ahead of schedule in some aspects. One column details actual management actions accomplished thus far (CY02-03). Another column shows what actions were planned (Operational Alternative) for CY02-03. A third column shows what actions have been taken ahead of schedule. The last column shows those actions that would be accomplished if the "optimal" level of management effort had been possible.

An analysis shows that out of the 131 actions taken to date, 34 or 26% of them are ahead of schedule. There were only 16 action items planned for accomplishment by 2003 that were insufficiently active to report.

As explained in the original INRMP (2001), some actions on the "Optimal" Alternative list may be do-able under an "Operational" level of effort if the opportunity arises. Many of these optimal action possibilities require regional-level interagency cooperation and pooled resources to support. We are moving in that direction with the FY03 funded interagency marine inventory in MCBH waters (INRMP Project HI20009) IAO $116K. These funds have been transferred to US Fish and Wildlife Service to assist in its implementation. We look forward to this and any future opportunities to coordinate and leverage resources with our Sikes Act partners in the coming years.

Modified Table 7.1. from Original INRMP of 2001; status of Must Fund Projects[1,2]

Project Number	Project Title (See INRMP Appdx C for funding details of completed projects)	COA Section	Level of NEPA required	Sec 7 ESA Consultations (Y/N)	Current Project Status (2003)
HI10007	Design/Construct Puuloa Range Impact Berm Repair (Build phase awarded IAO $663K)	7.3.2, 7.4.1	CATEX	N	Build Phase awarded end FY03
HI60834	Complete Wetland Restoration/Percolation Ditch Improvements	7.2.3	EA	Y	Finalizing EA & Design, Build Forecast for Feb 04
HI20004	Complete Wetland Delineation Study	7.2.1	N/A	N	Done 02
HI20009	Complete Coral Reef Ecosystem Management Study	7.4.1	N/A	N	Done O2
HI20010	Design/Construct Watershed Repair/Restore, MCDC (Programmed for construction in FY04 IAO $350K)	7.3.2	EA	Y	Finalizing EA & Design, Build Forecast for Mar 04
HI20011	Front Gate Static Display Project	7.5.5	CATEX	N	Done 02
HI20012	Complete Invasive Species Management Study	7.1.3, 7.5.4	N/A	N	Done 02
HI20013	Complete ECE-Mandated Erosion Assessment of MCBH Properties (Construction IAO $350K pending in FY04)	7.3.1	N/A	N	1st phase done, Next phase ongoing
HI20033	Complete MCTAB Watershed Impairment Study	7.3.1	N/A	N	Done 02
HI20033	Design/Construct MCTAB Watershed Impairment Solution	7.3.2	EA	Y	Delayed to 04
HI21002	Complete Master Landscape Study	7.5.1	N/A	N	Done 02
HI21004	Continue Endangered Species Habitat Improvements/ Mangrove Removal ($36K awarded in FY03 to design water circulation improvements in Sag Harbor wetland)	7.2.2	EA	Y	Mangrove removed done; design to improve water circulation funded
HI21005	Complete Ulupa'u Fire Management Study	7.5.3	N/A	N	Done 02
HI32168	Design/Construct Pa'akai Pond/Beach Restoration	7.3.2	EA	Y	Deferred
HI35636SM	Design/Construct Erosion Control, Horse Trails, MCBH-CS	7.3.2, 7.6.3	CATEX	N	1st phase done, next phase deferred
HI41786	Complete Draft Outdoor Recreation Study for MCBH-KB	7.6.1	N/A	N	Await Funds 04
HI80726	Design/Construct Golf Course Pond/Endangered Waterbird Enhancement Project	7.2.3, 7.6.3	CATEX	Y	Done 03
HI95156	Complete MCBH Hawaiian Stilt Regional Recovery Study	7.1.7	N/A	N	Done 02
	PROJECTS ADDED SINCE INRMP 2001 PUBLISHED:	7.6.2			
No Number	Nu'upia Ponds Recreational Run Trail (in-hse, no extra cost)		EA	Y	Done 02
HI21007	Imprve Grnd Cover/Reduce Fire Risk/Sustain Birds/Wpns Trng at Ulupa'u Crater (Build phase funded IAO $138K)	7.5.3, 7.3.1	CATEX	N	Build Phase awarded FY03
HI21008	Improve Water Delivery/Reduce Fire Risk/Sustain Birds/Wpns Trng at Ulupa'u Crater (Build IAO $197K)	7.5.3	CATEX	N	Build Phase awarded FY03
HI20009	Inventory/Imprve Mgt Marine Species in MCBH Waters (Study funded IAO $216K)	7.4.1	N/A	N	Awarded in FY03
HI20012	Invasive Sp/Erosion /Brushfire Cntrl-MCBH Trng Lands (Vegetation Mapping Study funded IAO $125K)	7.5.2	N/A	N	Awarded in FY03

[1] CATEX refers to a "Categorical Exclusion." Per 40 CFR 1508.4 and Section 12104.3 of MCO P5090.2A, actions that USMC has found to have no significant effect individually or cumulatively on the human environment and therefore do not require an Environmental Assessment (EA) or Environmental Impact Statement (EIS) are documented through a CATEX (i.e. a decision memorandum retained in the file as evidence that systematic environmental review was followed to reach this conclusion).

[2] The studies listed in this table have been/will be shared with Federal and State fish and wldlife and other relevant agencies for review. Actions involving ground disturbance in this table have or will require close coordination with the archaeological staff, native Hawaiian stakeholder groups, State & Federal regulatory agencies & relevant Native Hawaiian Organizations, where appropriate.

MCBH INRMP (2001 – 2006) IMPLEMENTATION STATUS AS OF SEP 2003

Report compiled by Dr. Diane Drigot, Sr. Nat. Res. Mgt. Specialist (INRMP Mgr.)

Summary of Planned Projects **(Excerpt from Appendix C, INRMP/EA (CY2002-2006), Table C3-1, showing planned projects under "operational stewardship" alternative adopted with its publication. Consult Baseline INRMP/EA for further details).**	**IN RMP Obj**	**Actions Accomplished (Actual) (2002, 2003)**	**OPER ALTV Actions Planned (2002-2003)**	**Extra Actions Taken beyond Planned (2002-2003)**	**OPTI ALTV Actions Planned (2002-2003)**
Course of Action: 7.1 Fish and Wildlife Management					
NPWMA/SHA: Control invasive plants with established in-house and contractor resources and methods (e.g., manual, mechanical).	7.1.1	-Annual AAV mud ops; -Finished HI21004 mangrove removal project -EEWF (2001-2002)	X		X
NPWMA/SHA: Control invasive plants with established volunteer-conducted activities	7.1.1	-Volunteer weed pull events at pond *Muli wai* garden & other shoreline locations (e.g., Sierra Club Ecology Camp 2001; Scout projects)	X		X
NPWMA/SHA: Evaluate and improve (systematically) invasive plant control methods.	7.1.1	EEWF *Pluchea* removal from shearwater colony area of ponds		X	X
NPWMA/SHA: Remove vertebrate predators (rats, cats, dogs, mongoose) with established methods.	7.1.1	Mechanical trapping & feral cat removal; enforcement of leash law	X		X
NPWMA/SHA: Evaluate and improve (systematically) vertebrate predator control methods.	7.1.1	2003-USDA Wildlife Service contract starts diaphacinone methods		X	X
NPWMA/SHA: Limit disturbance of nesting waterbirds with established methods.	7.1.1	Restricted public pond access continues	X		X
NPWMA/SHA: Continue established approach (opportunistic) to monitor fish and wildlife, evaluate results, and improve management.	7.1.1	Semi-annual waterbird cts & Annual Christmas bird counts continued	X		X
NPWMA/SHA: Monitor fish and wildlife (systematically), evaluate results, and improve management.	7.1.1	*No significant activity to report on this item*			X
NPWMA/SHA: Explore interagency partnerships to expand cooperative monitoring of fish and wildlife on a regional basis.	7.1.1	*No significant activity to report on this item*			X
NPWMA/PUA: Support required on-site access by natural resource partner agencies.	7.1.1	Continues—e.g., bird counts	X		X
NPWMA/PUA: Provide established resource-compatible on-site public access on a case-by-case basis.	7.1.1	Escorted environ. tours continued; summarized on separate table	X		X
NPWMA/PUA: Provide additional resource-compatible on-site public access on a scheduled basis.	7.1.1	2001 Ecology Camp; Opened N. Ponds Run Trail		X	X
NPWMA/PUA: Display/distribute *available* presentation materials on fish and wildlife management.	7.1.1	Continue distribute Ponds brochures	X		X

MCBH INRMP (2001 – 2006) IMPLEMENTATION STATUS AS OF SEP 2003

Report compiled by Dr. Diane Drigot, Sr. Nat. Res. Mgt. Specialist (INRMP Mgr.)

NPWMA/PUA: Develop/distribute *additional* presentation materials on fish and wildlife management.	7.1.1	Developed wetland do's/don'ts handouts; Pond Run Trail interp. signs		X	X
NPWMA/PUA: Host established project-specific volunteer service actions.	7.1.1	2001 Ecology Camp nest isles repair	X		X
NPWMA/PUA: Expand project-specific volunteer service actions.	7.1.1	2003-UH intern earned academic credit while maintaining pond plants		X	X
NPWMA/PUA: Provide off-site public outreach about fish and wildlife management.	7.1.1	Sr. Nat. Res. Mgt. Spec. Presentation at Wildlife Society's Wetland Workshop		X	X
NPWMA/PUA: Explore interagency cooperative partnerships to coordinate public education/access activities.	7.1.1	MCBH posts info on *Koolau.net* website; State Mokapu School posts Nu'upia Ponds website (won at internatl. cyberfaire competition 2002)		X	X
NPWMA/PUA: Develop interagency mechanisms to inform the public about resources, access, and volunteer service options.	7.1.1	*No significant activity to report on this item*			X
UHWMA/SHA: Move birds away from high-risk target areas using established methods	7.1.1	Built 2 new nest platforms in unoccupied habitat in lower risk area to lure birds	X		X
UHWMA/SHA: Update Ulupa'u Head WMA Boundary map to reflect current condtions.	7.1.1	New Map completed in 2003;based on outcome of Crater Brush Fire Mgt. Study 2002	X		X
UHWMA/SHA: Replace fire-prone vegetation using established methods.	7.1.1	Regular pest shop herbicide of firebreak roads	X		X
UHWMA/SHA: Maintain fire-fighting capabilities using established methods.	7.1.1	Fire breaks; first response truck; etc. continue as documented in Ulupa'u Brush fire mgt.study (02)	X		X
UHWMA/SHA: Improve fire-fighting capabilities.	7.1.1	2 FY03-funded design/build projects awarded: HI21007 (Improve Grnd Cover with Geotextile Matting; HI21008 Improve Water Delivery/Water Cannons (Total Value: $350K)		X	X
UHWMA/SHA: Remove vertebrate predators (rats, cats, dogs, mongoose) using established methods.	7.1.1	Wildlife Tech continues to remove cats and mongooses	X		X
UHWMA/SHA: Evaluate and improve (systematically) vertebrate predator control methods.	7.1.1	*No significant activity to report on this item*			X
UHWMA/SHA: Continue established approach (opportunistic) to monitor status of protected species, evaluate results, and improve management.	7.1.1	Regular Christmas Booby Counts continue	X		X
UHWMA/SHA: Monitor protected species' status (systematically), evaluate results, and improve management.	7.1.1	*No significant activity to report on this item*			X
UHWMA/PUA: Support required on-site access by natural resources partner agencies.	7.1.1	Ex: Annual Interagency Spill Response Exercises & a USFWS NRDAR trng drill hosted	X		X

2004 INRMP PROGRESS REPORT

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UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002
MCBH KANEOHE BAY, HI 96863-3002

IN REPLY REFER TO:
5090
LE/094-04

DEC 17 2004

US Department of Interior
Fish and Wildlife Service
Attn: Ms. Jean Shultz, Acting Field Supervisor
Box 50088
Honolulu, HI 96850

Dear Ms. Shultz:

Per Department of Defense and U.S. Marine Corps directives, we solicit your feedback on status of our Integrated Natural Resources Management Plan (INRMP) implementation progress in 2004. Please submit your written assessment and any recommendations by January 22, 2005.

In reviewing MCBH progress against established goals, objectives, management actions and timetables in our baseline Nov 2001 MCBH INRMP/EA, we believe we are "on target" in timely implementation of "must fund" projects. We are also ahead of schedule in some areas and have added new projects in pace with emergent priorities. See Enclosures (1) - (3) for details.

Per the Sikes Act Improvement Amendments and associated directives, MCBH strives to follow an "ecosystem management" approach to integrated natural resources management whereby important natural resources are managed to support military training requirements and improved quality of life, as well as conservation stewardship mandates. We look forward to receiving your independent assessment of our progress toward this end and will be responsive to any improvements you have to recommend.

Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, at 257-6920 x224, diane.drigot@usmc.mil. She will offer additional clarification as needed during the progress meeting scheduled for December 22, 2004.

Sincerely,

D. F. LEVI
Lt. Col., U.S. Marine Corps
Director, Environmental Compliance and Protection Department

Enclosures:

1. Integrated Natural Resources Management Plan Implementation Progress at Marine Corps Base Hawaii (Nov 01 - Dec 04) w/Attachments A and B
2. GIS Mapping and Control of Invasive Species/Erosion/Brushfire Control on MCBH Training Lands, Apr 04 by Geo Insight Internat'l. Inc. for MCBH
3. Landfill and Northeast Crater Catchments Erosion Assessment Report with Recommendations, June 2004, by SRGII for MCBH

Integrated Natural Resources Management Plan Implementation Progress
At Marine Corps Base Hawaii (Nov 03 – Dec 04) w/Attachments A and B

Per Marine Corps guidance for meeting Sikes Act Improvement Act (SAIA) requirements, we have reviewed our Integrated Natural Resources Management Plan (INRMP) progress since reported last year. There follows a list of five major components to this review and progress status of each. The Attachments provide further details.

Component 1. Sufficient numbers of professionally trained natural resources management staff are available to implement the INRMP

Three qualified natural resources staff at MCBH as described in the original INRMP/EA (pp 2-13, 2-14) remain on board. Supplements continued to be necessary in 2004 to sustain adequate staff support:

a. Our GS-11 Natural Resources Manager has been away for three continuous years as an active-duty Marine Reservist. We have compensated by retaining a "resident" contractor with a Masters' degree from University of Hawaii in Geography (Conservation concentration).

b. Our GS-9 Wildlife Technician and GS-11 Natural Resources Manager normally implement our predator removal program in our wildlife habitats and provided technical assistance in Bird Aircraft Strike Hazard (BASH) management at the Marine Corps Air Facility (MCAF) on MCBH Kaneohe Bay. With the extended absence of our GS-11 Natural Resources Manager, our nuisance bird/animal damage control at MCBH Kaneohe Bay, Camp Smith, Puuloa, and MCTAB continued with added assistance of contracted professionals from USDA Wildlife Services and oversight assistance from our "resident" contractor. Our GS-11 Environmental Protection Specialist at Camp Smith helps oversight of nuisance bird/animal damage control activities at Camp Smith and Puuloa. In late FY03, our GS-9 Wildlife Technician completed training at the Federal Law Enforcement Training Center to become a certified federal conservation law enforcement officer. During his three month off-site training period, our USDA/Wildlife Services' contract was expanded to include predator removal at Nu'upia Ponds' endangered waterbird habitat and BASH management assist. In 2004, our GS-9 Wildlife Tech duties shifted toward implementing USMC's new civilianized Conservation Law Enforcement program. Responsibility for financing BASH assistance has been transferred to MCAF, with continued oversight by in-house natural resources staff.

c. Professional assistance has also been provided by: (1) contractors with professional credentials in natural resources-related fields pertinent to their contracted study or project design work; (2) qualified volunteers (e.g., a base resident Navy spouse/former US Fish and Wildlife Service employee with bachelor's degree in wildlife management at Colorado State University; a base resident Navy spouse with undergrad major in wildlife/fisheries science/minor in environ mgt. at Penn State University; a Honolulu resident Master's degree candidate in natural resources and environmental management at University of Hawaii College of Tropical Agriculture and Human Resources; and a Kailua resident undergrad University of Hawaii intern earning academic credit toward an environmental studies major).

Component 2. Development of any significant changes to the installation's mission requirements or its natural resources.

a. As noted in our 2003 progress report, simultaneous occurrence of an extended drought and a USMC safety directive prohibiting manned fire crews in impact areas increased brushfire risk to federally protected red-footed boobies and their habitat at the Ulupa'u Crater. FY03 funds were secured to improve fire-fighting ability at the Crater, based on recommendations from a Ulupa'u Brushfire Management Study completed in 2002 (INRMP project HI21006). The FY03 funds subsidized design/construction of two new INRMP projects: HI21007 installs gravel-anchored geotextile matting over flammable invasive grass patches near vulnerable tree habitat and HI21008 installs four remote-controlled water cannons in strategic locations within the wildlife area. Such actions further reduce chance of brushfires destroying birds and their habitat at the Crater. At the time of our 2003 progress report, the designs were completed and a construction contract awarded to install these projects. However, due to contractor delay in acquiring the necessary bonding, construction did not begin until October 2004 with anticipated completion date in January 2005. These projects, in combination with earlier improvements described in the original INRMP and the Ulupa'u Brushfire Management Study (2002) provide defense in depth against fire risk to the birds and their habitat. They will also reduce erosion effects of repeated brushfires that degrade the landscape and reduce its capacity to support weapons training.

b. With the end of the extended drought in late 2003-early 2004, resumption of regular rainfall occurred simultaneous to the completion of a comprehensive erosion assessment of Ulupa'u Crater catchment (weapons range) and landfill locations (INRMP project HI20013). The completed report is submitted as Enclosure (3). It documents "hot spot" locations of erosion damage, aggravated by stormwater events, as well as recommended methods to mitigate the damage. Follow on construction projects to mitigate this damage are being programmed in FY06/FY07 while some quick-fix problems have already been remedied. These projects reduce likelihood of sediment runoff to the marine environment below the Crater.

c. Also in 2004, we expanded our inventory and assessment of natural resources to include a comprehensive GPS/GIS-based mapping of vegetation cover at Marine Corps Training Area Bellows (MCTAB). Although largely invasive in nature, the vegetation cover include a noteworthy stand of sandalwood (Santalum) that may represent a significant portion of a genetically-distinct population intermediate between the coastal species *ellipticum* and the inland species *freycinianatum* (See Enclosure (2) for details). We are in the process of evaluating the report recommendations and planning follow-on appropriate management actions.

Component 3. Extent to which "must fund" projects identified in the INRMP are adequately budgeted for and being implemented "on schedule."

Table 7 in the original INRMP (2001), p. 7-3, lists major INRMP projects to be implemented over the CY02-06 timeframe. To date, all major INRMP projects listed therein are either already completed or are progressing toward completion. Attachment A depicts an updated, modified version of this table, showing project implementation status and additional projects funded as of 2004. Focused staff time on the recently added projects caused some delay in completing environmental reviews and designs for "older" projects HI60834 and HI20010. These projects are now scheduled for CY2005 execution. In sum, all projects listed in the original INRMP as well as some new ones are being accomplished within the forecasted CY02-06 INRMP time frame.

Component 4. Required Federal, State, and Installation coordination has occurred.

Attachment A table depicts that current status of coordination required for these INRMP projects is on-track. We also enjoy continuing interagency coordination and cooperation on routine management actions covered in the INRMP (e.g., close coordination with our war-fighters in annual Nu'upia Ponds Mud Ops AAV maneuvers to control pickleweed in endangered stilt habitat, and close coordination with state/federal wildlife biologists in bird counts, spill response exercises, and project reviews).

Component 5. Progress toward implementing INRMP management actions linked to established INRMP goals and objectives is documented.

Tables in Appendix C of the original INRMP (2001) display systematic lists of management actions to be implemented, linked INRMP objectives, and whether/when they are programmed for completion or initiation over a five-year time frame (02-06). Attachment B table presents a modified version of the original INRMP Appendix C tables documenting how current "operational" level of effort tasks are either on schedule, ahead of schedule, or deferred. One column highlights actual management actions accomplished in CY04, next to a column summarizing actions accomplished in CY02-CY03 as reported last year, for ease of comparison purposes. Additional columns show what actions were planned in CY02-CY03 and in CY04, also for ease of comparison between those actions planned and those actually accomplished in any given year. The last column shows those actions that would be accomplished if the "optimal" level of management effort had been possible.

An analysis of this table shows that 120 actions were planned in CY04, while 123 actions were accomplished, with some being accomplished ahead of schedule or optional in nature. There were only 24 action items planned for accomplishment in 2004 that were insufficiently active to report.

As explained in the original INRMP (2001), some actions on the "Optimal" Alternative list may be do-able under an "Operational" level of effort if the opportunity arises. Many of these optimal action possibilities require regional-level interagency cooperation and pooled resources to support. We are moving in that direction with (1) the on-going FY03 funded interagency marine inventory in MCBH waters (INRMP Project HI20009); (2) the "mangrove busters" initiative (explained on Attachment B); and our successful efforts to persuade U.S. Department of Defense to join the new Hawaii-Pacific Cooperative Ecosystem Studies Unit (CESU) "stood up" in 2004 and hosted at the University of Hawaii. We look forward to future opportunities to coordinate and leverage resources with our Sikes Act partners in the coming years.

2004 Version of INRMP Table 7.1. (2001)—Current Status of "Must Fund" Projects[1,2]

Project Number	Project Title (See INRMP Appdx C for funding details of completed projects)	COA Section	Level of NEPA required	Sec 7 ESA Consultation (Y/N)	Current Project Status (2004)
HI10007	Design/Construct Puuloa Range Impact Berm Repair	7.3.2, 7.4.1	CATEX	N	Construction Completed-2004
HI60834	Complete Wetland Restoration/Percolation Ditch Improvements	7.2.3	EA	Y	EA done & authority to advertise granted in 04; Negotiations in process in early FY05 w/small, minority -owned business to execute work during non-nesting season of endangered Haw'n. stilt in nearby Nu'upia Ponds)
HI20004	Complete Wetland Delineation Study	7.2.1	N/A	N	Done 2002
HI20009	Complete Coral Reef Ecosystem Management Study	7.4.1	N/A	N	Done 20O2
HI20010	Design/Construct Watershed Repair/Restore, MCDC (Programmed for construction in FY05 IAO $507K)	7.3.2	EA	Y	EA & Design finalization delayed to late 04/early 05; Authority to advertise in FY05 pending EA completion.
HI20011	Front Gate Static Display Project	7.5.5	CATEX	N	Done 02
HI20012	Complete Invasive Species Management Study	7.1.3, 7.5.4	N/A	N	Done 02
HI20013	Complete ECE-Mandated Erosion Assessment of MCBH Properties (Construction IAO $350K pending in FY06/07)	7.3.1	N/A	N	Assmt. Study completed for Crater catchment/landfill in FY04; Documents being readied for Feb 05 validation for follow-on erosion mitigation projects in FY06/FY07.
HI20033	Complete MCTAB Watershed Impairment Study	7.3.1	N/A	N	Done 2002
HI20033	Design/Construct MCTAB Watershed Impairment Solution	7.3.2	EA	Y	Delayed to FY07/FY08 (EA & Validation of project under DD-Form 1391= pending)
HI21002	Complete Master Landscape Study	7.5.1	N/A	N	Done 2002
HI21004	Continue Endangered Species Habitat Improvements/Mangrove Removal (Design Funds awarded in FY03 to design water circulation improvements in Sag Harbor wetland)	7.2.2	EA	Y	Mangrove removed done; design to improve water circulation don e as well
HI21005	Complete Ulupa'u Fire Management Study	7.5.3	N/A	N	Done 2002
HI32168	Design/Construct Pa'akai Pond/Beach Restoration	7.3.2	EA	Y	Deferred Indefinitely
HI35636SM	Design/Construct Erosion Control, Horse Trails, MCBH-CS	7.3.2, 7.6.3	CATEX	N	1st phase done, next phase deferred
HI41786	Complete Draft Outdoor Recreation Study for MCBH-KB	7.6.1	N/A	N	Deferred
HI80726	Design/Construct Golf Course Pond/Endangered Waterbird Enhancement Project	7.2.3, 7.6.3	CATEX	Y	Done 2003
HI95156	Complete MCBH Hawaiian Stilt Regional Recovery Study	7.1.7	N/A	N	Done 2002

[1] CATEX refers to a "Categorical Exclusion." Per 40 CFR 1508.4 and Section 12104.3 of MCO P5090.2A, actions that USMC has found to have no significant effect individually or cumulatively on the human environment and therefore do not require an Environmental Assessment (EA) or Environmental Impact Statement (EIS) are documented through a CATEX (i.e. a decision memorandum retained in the file as evidence that systematic environmental review was followed to reach this conclusion).

[2] The studies listed in this table have been/will be shared with Federal and State fish and wldlife and other relevant agencies for review. Actions involving ground disturbance in this table have or will require close coordination with the archaeological staff, native Hawaiian stakeholder groups, State & Federal regulatory agencies & relevant Native Hawaiian Organizations, where appropriate.

MCBH INRMP (2001 – 2006) IMPLEMENTATION STATUS AS OF DEC 2004

Report compiled by Dr. Diane Drigot, Sr. Nat. Res. Mgt. Specialist (INRMP Mgr.)

Summary of Planned Projects **(Excerpt from Appendix C, INRMP/EA (CY2002-2006), Table C3-1, showing planned projects under "operational stewardship" alternative adopted with its publication. Consult Baseline INRMP/EA for further details).**	**IN RMP Obj**	**OPER ALTV Actions Planned (02-03)**	**Actions Accomplished (2002-2003)**	**OPER ALTV Actions Planned (2004)**	**Actions Accomplished (2004)**	**OPTI ALTV Actions Planned (2004)**
Course of Action: 7.1 Fish and Wildlife Management						
NPWMA/SHA: Control invasive plants with established in-house and contractor resources and methods (e.g., manual, mechanical).	7.1.1	X	-Annual AAV mud ops; -Finished HI21004 mangrove removal project -EEWF (2001-2002)	X	-Annual AAV mud ops	X
NPWMA/SHA: Control invasive plants with established volunteer-conducted activities	7.1.1	X	-Volunteer weed pull events at pond *Muli wai* garden & other shoreline locations (e.g., Sierra Club Ecology Camp 2001; Scout projects)	X	--Sierra Club & base girl scouts repaired tire-nest islands for stilt in Pa'akai Pond	X
NPWMA/SHA: Evaluate and improve (systematically) invasive plant control methods.	7.1.1	O	EEWF *Pluchea* removal from shearwater colony area of ponds	O	*No significant activity to report on this item*	X
NPWMA/SHA: Remove vertebrate predators (rats, cats, dogs, mongoose) with established methods.	7.1.1	X	Mechanical trapping & feral cat removal; enforcement of leash law	X	Mechanical trapping & feral cat removal; enforcement of leash law	X
NPWMA/SHA: Evaluate and improve (systematically) vertebrate predator control methods.	7.1.1	O	2003-USDA Wildlife Service contract starts diaphacinone methods	O	USDA Wildlife Service contract ors continued use of diaphacinone	X
NPWMA/SHA: Limit disturbance of nesting waterbirds with established methods.	7.1.1	X	Restricted public pond access continues	X	Restricted public pond access continues	X

Attachment B

		7.6.2			
PROJECTS ADDED SINCE INRMP 2001 PUBLISHED:					
No No.	Nu'upia Ponds Recreational Run Trail (in-hse, no extra cost)		EA	Y	Done 2002
HI21007	Imprve Grnd Cover/Reduce Fire Risk/Sustain Birds/Wpns Trng at Ulupa'u Crater (Build phase funded IAO $138K)	7.5.3, 7.3.1	CATEX	N	Design completed & construction awarded FY03; per bonding difficulties, contractor delayed until fall 2004 to begin work.
HI21008	Improve Water Delivery/Reduce Fire Risk/Sustain Birds/Wpns Trng at Ulupa'u Crater (Build IAO $197K)	7.5.3	CATEX	N	
HI20009	Inventory/Imprve Mgt Marine Species in MCBH Waters (Study funded IAO $116K)	7.4.1	N/A	N	Awarded in FY03; Field work almost complete in Dec 04; report write up & project completion due by Sep 05.
HI20012	Invasive Sp/Erosion /Brushfire Cntrl-MCBH Trng Lands (Vegetation Mapping Study funded IAO $125K)	7.5.2	N/A	N	Awarded in FY03; Completed in 2004

Attachment A

MCBH INRMP (2001 – 2006) IMPLEMENTATION STATUS AS OF DEC 2004

Report compiled by Dr. Diane Drigot, Sr. Nat. Res. Mgt. Specialist (INRMP Mgr.)

NPWMA/PUA: Expand project-specific volunteer service actions.	7.1.1		2003-UH intern earned academic credit while maintaining pond plants	X	*No significant activity to report on this item*	X
NPWMA/PUA: Provide off-site public outreach about fish and wildlife management.	7.1.1		Sr. Nat. Res. Mgt. Spec. Presentation at Wildlife Society's Wetland Workshop	X	Sr. Nat. Res. Mgt. Spec. continues to publish & present off-site to general public, military and school audiences; Wildlife Tech presents to variety of resource users during enforcement patrols	X
NPWMA/PUA: Explore interagency cooperative partnerships to coordinate public education/access activities.	7.1.1	O	MCBH posts info on *Koolau.net* website; State Mokapu School posts Nu'upia Ponds website (won at internatl. cyberfaire competition 2002)	O	Helped stand up Hawaii-Pacific Cooperative Ecosystems Studies Unit at UH; DoD is CESU partner & Sr. Nat. Res. Spec. is DoD rep to this CESU	X
NPWMA/PUA: Develop interagency mechanisms to inform the public about resources, access, and volunteer service options.	7.1.1	O	*No significant activity to report on this item*	O	USMC/USFWS Poster re Masters of Amphib Assault at N. Ponds as part of "Saving a Few Good Species" Poster Series; Sierra Club Newsletter advertised scheduled service projects; Persuaded DoD to join Hawaii-Pacific CESU set up at UH to expand potential for interagency fund sharing to support resource mgt. projects of mutual concern	X
UHWMA/SHA: Move birds away from high-risk target areas using established methods	7.1.1	X	Built 2 new nest platforms in unoccupied habitat in lower	X	Placed decoys to lure boobies to new nesting platforms; decoys too light	X

MCBH INRMP (2001 – 2006) IMPLEMENTATION STATUS AS OF DEC 2004

Report compiled by Dr. Diane Drigot, Sr. Nat. Res. Mgt. Specialist (INRMP Mgr.)

NPWMA/SHA: Continue established approach (opportunistic) to monitor fish and wildlife, evaluate results, and improve management.	7.1.1	X	Semi-annual waterbird cts & Annual Christmas bird counts continued	X	Semi-annual waterbird cts & Annual Christmas bird counts continued	X
NPWMA/SHA: Monitor fish and wildlife (systematically), evaluate results, and improve management.	7.1.1	O	*No significant activity to report on this item*	O	*No significant activity to report on this item*	X
NPWMA/SHA: Explore interagency partnerships to expand cooperative monitoring of fish and wildlife on a regional basis.	7.1.1	O	*No significant activity to report on this item*	O	Initiated "mangrove buster" discussions with regional stakeholders	X
NPWMA/PUA: Support required on-site access by natural resource partner agencies.	7.1.1	X	Continues—bird counts, spill exercises, etc.	X	Continues—bird counts, spill exercises, etc.	X
NPWMA/PUA: Provide established resource-compatible on-site public access on a case-by-case basis.	7.1.1	X	Escorted environ. tours continued; summarized on separate table	X	Escorted environ. tours continued; summarized on separate table	X
NPWMA/PUA: Provide additional resource-compatible on-site public access on a scheduled basis.	7.1.1	O	2001 Ecology Camp; Opened N. Ponds Run Trail	O	Continued use of N. Ponds Run Trail	X
NPWMA/PUA: Display/distribute *available* presentation materials on fish and wildlife management.	7.1.1	X	Continue distribute Ponds brochures	X	Ponds brochures distribution continued	X
NPWMA/PUA: Develop/distribute *additional* presentation materials on fish and wildlife management.	7.1.1	O	Developed wetland do's/don'ts handouts; Pond Run Trail interp. signs	O	Continued distributon of wetland do's/don'ts handouts; Maintained Pond Run Trail interp. sign	X
NPWMA/PUA: Host established project-specific volunteer service actions.	7.1.1	X	2001 Ecology Camp nest isles repair	X	*Sierra Club/Mokapu Girl Scouts Nest Isle Repair Activity*	X

2005 INRMP PROGRESS REPORT

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UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 630002
MCBH KANEOHE BAY, HI 96863-3002

RECEIVED
JAN 12 200
U.S. FISH & WILDLIFE
PACIFIC ISLANDS FI
HONOLULU, HI 96

IN REPLY REFER TO:
5090
Ser LE/003-06

JAN 12 2006

US Department of Interior
Fish and Wildlife Service
Attn: Patrick Leonard, Field Superviser
Box 50088
Honolulu, HI 96850

Dear Mr. Leonard:

Per Department of Defense and U.S. Marine Corps directives, we solicit your feedback on status of our Integrated Natural Resources Management Plan (INRMP) implementation. The enclosure, with attachments A-C, provides details of our INRMP implementation progress to date. Your written assessment is particularly important as we enter our last implementation year of the current INRMP covering CY01-CY06. We have already begun work on the updated plan, to cover CY07-CY11. A written response by no later than February 28, 2006 is appreciated.

Per the enclosure, our first 5-year MCBH INRMP/EA is 85% executed after 4 years, and on track for timely update. Highlights: reduced brushfire/erosion risks in training areas; combined military/volunteer control of invasive species; new conservation law enforcement program progress; enhanced endangered species habitat; expanded inventory coverage to caves and coral reefs; and construction of $1.1M stream corridor/wetland restoration begun.

We appreciate your staff's recognition of our INRMP efforts by nominating our Base for the 2004 Military Installation Conservation Partner Award and will work to sustain this recognition. We are ready to meet with your staff to review and clarify anything in this progress report and to work together in the plan update process. We appreciate continuing, conscientious efforts of your INRMP review staff, especially Mr. Michael Molina. We look forward to your timely feedback on our progress in balancing our Sikes Act-mandated efforts at conservation of natural resources while ensuring "no net loss" of training opportunities.

Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, at 257-6920 x224, diane.drigot@usmc.mil.

Sincerely,

D. F. LEVI
LtCol, USMC
Director, Environmental Compliance and Protection Department

Enclosure:

1. Integrated Natural Resources Management Plan Implementation Progress at Marine Corps Base Hawaii (Nov 04 - Dec 05) w/Attachments A, B, and C

Integrated Natural Resources Management Plan Implementation Progress
At Marine Corps Base Hawaii (Nov 04 – Dec 05) w/Attachments A, B, and C

Per Marine Corps guidance for meeting Sikes Act Improvement Act (SAIA) requirements, we have reviewed our Integrated Natural Resources Management Plan (INRMP) progress since reported last year. There follows a list of five major components to this review and progress status of each. The Attachments provide further details.

Component 1. Sufficient numbers of professionally trained natural resources management staff are available to implement the INRMP

Three qualified natural resources staff at MCBH as described in the original INRMP/EA (pp 2-13, 2-14) remain on board. Supplements continued to be necessary in 2005 to sustain adequate staff support:

a. Our GS-11 Natural Resources Manager has been almost continuously serving the country in another capacity for the past four years as an active-duty Marine Reservist. We have been ably assisted in his absence by interagency partnering and contractor help.

b. Since FY03, when our GS-9 Wildlife Technician became a commissioned federal conservation law enforcement officer, he has worked to help launch USMC's conservation resource enforcement program detailed in a new Marine Corps Order (MCO 5090.4). For years before that, he had already served as a State-commissioned fish and wildlife law enforcement officer in Hawaii's Department of Conservation and Enforcement (DOCARE) program. In 2005, he has helped Headquarters Marine Corps "stand up" and design training classes for the new nationwide USMC program based on his extensive experience. As a USMC combat veteran and dual-commissioned state and federal enforcement officer, he mentors many young Marines, state and federal law enforcement personnel, and successfully prosecutes numerous natural resources violations in both state and federal courts. Prior to this initiative, there was no venue on MCBH to directly research, investigate, and process conservation law enforcement violations on Marine Corp property. Cases were "handed off" to overloaded state and federal fish and wildlife law enforcement personnel to finalize the investigations. Now, due to the vigor with which he pursues his cases and his dedication to service, there is dramatic increase in awareness, training, and case load manageable by MCBH in partnership with state and federal FWS enforcement personnel. No other military service to date has "stood up" such a program.

Due to his expanded law enforcement duties, much of his predator trapping and Bird Aircraft Strike Hazard (BASH) duties have been picked up under a contract with USDA Wildlife Services. Under continuing MCBH natural resources staff oversight, USDA Wildlife Services personnel carry out predator trapping program at sensitive MCBH wildlife habitats and provide technical assistance in BASH management for our Marine Corps Air Facility (MCAF) on MCBH Kaneohe Bay. Nuisance bird/animal damage control at MCBH Kaneohe Bay, Camp Smith, Puuloa, and MCTAB also continues with USDA Wildlife Services support. Our GS-11 Environmental Protection Specialist at Camp Smith oversees USDA Wildlife Services' nuisance bird/animal damage control activities at both Camp Smith and Puuloa locations.

c. Our GS-12 Senior Natural Resources Manager continues to focus on rigorous oversight and implementation of INRMP management actions, timely and regular review of plan elements with regulators and stakeholders, and programming any required INRMP updates by the regulatory deadline of November 2006 deadline. She remains the primary point of contact for INRMP implementation progress status as reported herein. Due to her academic credentials (M.S. and Ph.D. in Natural Resources Management, publications), and prior years of experience in university teaching and program management, Dr. Drigot also holds an appointment as an affiliate graduate faculty member at University of Hawaii and mentors future natural resources managers in various ways that benefit MCBH's INRMP implementation. For example, in 2005, she mentored a successful master's degree candidate in preparing her thesis on a MCBH project. The thesis included an evaluation of lessons learned from MCBH's installation of native plant vegetation strips around Klipper golf course ponds/wetlands. That project resulted in successful implementation of stormwater Best Management Practices as well as enhancing habitat for resident native waterfowl attracted to this location (INRMP Project HI80726). In addition, Dr. Drigot continues to serve as Department of Defense's technical representative to the new Hawai'i-Pacific Cooperative Ecosystem Studies Unit (CESU), based at UH, with other federal university and research institution partners spanning Hawaii and the Pacific (including US Fish and Wildlife Service). We consider the CESU mechanism as a promising vehicle for pooling limited resources of partner agencies in working toward solution of shared problems such as regional invasive mangrove encroachment on Hawaii's wetland/waterbird habitat.

d. Professional assistance has also been provided by: (1) contractors with professional credentials in natural resources-related fields pertinent to their contracted study or project design work; and (2) qualified volunteers. Most notable volunteers in 2005 have been: (a) bird counting and invasive weed removal assistance from a MCBH resident/Marine spouse with a bachelor's degree in wildlife/environmental management from Pennsylvania State University, and (b) ongoing weeding services from Sierra Club, Hawai'i Chapter and military volunteers, coordinated through an experienced Sierra Club outing leader, to help sustain MCBH wetland habitat for benefit of native fish and wildlife. Our ongoing partnership in this regard was publicized in the November/December issue of the national Sierra Club Magazine and website.

Component 2. Development of any significant changes to the installation's mission requirements or its natural resources.

a. As noted in our 2003 and 2004 progress reports, simultaneous occurrence of an extended drought and a USMC safety directive prohibiting manned fire crews in impact areas increased brushfire risk to federally protected red-footed boobies and their habitat at the Ulupa'u Crater. FY03 funds were secured to improve fire-fighting ability at the Crater, based on recommendations from Ulupa'u Brushfire Management Study completed in 2002 (INRMP project HI21006). The FY03 funds subsidized design/construction of two initiatives: INRMP project HI21007 to install gravel-anchored geotextile matting over flammable invasive grass patches near vulnerable tree habitat; and INRMP project HI21008 to install four remote-controlled water cannons in strategic locations within the wildlife area. Such actions further reduce chance of brushfires destroying birds and their habitat at the Crater. At the time of this report, installation of the gravel-anchored geotextile matting project has been completed and installation of the water cannons is nearly complete, with a final performance test scheduled for January 2006. These projects, in combination with earlier improvements described in the original INRMP and INRMP Project HI21007, Ulupa'u Brushfire Management Study (2002), provide defense in depth against fire risk to the birds and their habitat. They will also reduce erosion effects of repeated brushfires that degrade the landscape and reduce its capacity to support weapons training.

b. With the end of the extended drought in late 2003-early 2004, resumption of regular rainfall occurred simultaneous to the completion of an erosion assessment study of Ulupa'u Crater catchment (weapons range) and landfill locations (INRMP project HI20013). This study documents "hot spot" locations of erosion damage, as well as recommended methods to mitigate the damage. In 2005, follow-on detailed design work has been funded and begun, with follow-on construction programmed for FY06/FY07, while some quick-fix problems have already been remedied. Also in 2005, MCBH initiated the next phase of the Crater erosion assessment, INRMP project HI0920013M, covering the north-facing slopes outside the Crater interior facing North Beach, and along the Crater's southeast shoreline facing Kailua Bay. These assessments will result in additional design/build project remedies programmed for execution in the FY08/FY09 timeframe. Cumulatively, these projects reduce erosion damage and likelihood of sediment runoff into the sensitive marine environment below the Crater, while extending Ulupa'u Crater's use as a training platform and the Ulupa'u Head Wildlife Management Area as a seabird sanctuary for the red-footed boobies.

c. After logistical and weather delays, the fieldwork phase of the FY03-funded, US FWS-led marine resources inventory in MCBH's 500-yard seaward buffer zone (INRMP project HI20009) was completed in 2005. The final report is expected in early 2006. MCBH intends to consider the findings and recommendations of this report in the INRMP update effort. Preliminary noteworthy findings include the discovery of a native sea grass meadow not previously known in Kane'ohe bay—supporting rare sea horses and threatened green sea turtles. The lead USFWS biologist on this survey noted MCBH waters rival "some of the best sites within the Northwestern Hawaiian Islands." Significant cost savings were achieved in marine survey execution through boating support assistance from MCBH's military waterfront operations personnel in coordination with MCBH natural resources staff.

(2) While not specifically completed as part of a programmed INRMP project, the need emerged, was funded, and completed in 2005, to perform a natural resources inventory of a small cave on the slopes of Pu'u Hawai'i Loa hill for MCBH project No. HI86749 Reburial of Repatriated Remains). Native Hawaiian claimants consider this cave a viable proposed place for re-interment of over 1500 sets of human remains extracted from Mokapu over the last century, now in curation at Bishop Museum until an acceptable re-interment location can be found. This survey was completed by Bishop Museum cave ecology experts. No known unique cave-dwelling organisms in the cave were found. However, the surveyors discovered the larvae of a case-making moth species on the barren rock faces near the cave entrance. They are believed to belong to a heretofore unnamed species of an endemic genus [*Hyposmocoma*] in the worldwide family *Cosmopterygidae*. According to Dr. Howarth of the Bishop

Museum study team, "*Hyposmocoma* has about 350 known species, and many, many more yet to be described. Their radiation in Hawaii is remarkable not only for being one of the largest anywhere in number of species, but also in the incredible diversity of forms, habitats and behaviors: e.g. wood-borers, predators, leaf-gleaners, lichen-feeders and from dry to truly aquatic habitats from sea level to vegetation-line. The caterpillars of about half the known species make cases; the others are free-living." The survey report recommended how the cave reburial project could proceed with some relatively-easy preparatory procedures followed to avoid potential adverse impacts to the moth's habitat and allow for continuing access to the general vicinity by biological surveys in future years. This cave survey report will be used to help complete an Environmental Assessment on the cave reburial project. The cave survey report will be submitted by MCBH staff to US Fish and Wildlife Service for review and comment under separate letter as part of the Section 7 ESA and NEPA consultation processes associated with this non-INRMP re-interment project. Opportunities for additional programming of follow-on invertebrate surveys in potential habitat areas on MCBH lands will be considered in the next INRMP update.

(3) Recall that in 2004, we expanded our inventory and assessment of natural resources to Marine Corps Training Area-Bellows (MCTAB). That year, we completed a comprehensive GPS/GIS-based mapping of vegetation cover there. Although the completed survey confirmed the largely invasive nature of existing vegetation cover there, it confirmed existence of a noteworthy stand of coastal sandalwood (*Santalum*) that may represent a significant portion of a genetically-distinct population intermediate between the coastal species *ellipticum* and the inland species *freycinianatum* (See earlier-forwarded report for details). It also included recommendations for landscape change to reduce brush fire risk. As a follow on to that effort, in 2005 we funded and awarded INRMP Project 20012M, Replace Invasive Vegetation-Reduce Fire Risk-MCTAB, which will develop concept designs and general cost estimates for implementing a phased ten-year vegetation modification plan at MCTAB, to reduce brush fire risk, accommodate more sustainable training as well as a more stable environment to support remnant populations of native flora and fauna there. Also in 2005, we continued our cooperative, interagency monitoring and control of an incipient population of Ft. Grass on MCTAB, with the help of O'ahu Island Invasive Species Committee technicians, Hawaii Army National Guard, and Air Force staff.

(4) In 2005, MCBH is realizing a vision created by earlier staff investments in: watershed education workshops; a watershed education manual; installation of native plant gardens along MCBH stream corridors (involving 1,000 military and civilian volunteers); and completion of concept- and detailed project designs for wetland/watershed improvements in several MCBH locations. Thus, in 2005, the following INRMP projects significantly progressed:
(a) INRMP Project HI60834, Complete Wetland Restoration/Percolation Ditch Replacement. The EA and design were completed, and construction began on this $507K project just north of Nu'upia Ponds. This project replaces a dysfunctional, weed-choked drainage ditch with a constructed wetland, lined with native plants, in an area draining surface stormwater runoff from a combat vehicle maintenance compound. When finished, it will become a freshwater foraging and loafing opportunity for native and migratory waterfowl. US FWS staff reviewed and concurred in this project during the EA and Section 7 consultation phases.
(b) INRMP Project HI20010, Design/Construct Watershed Repair/Restore, Mokapu Central Drainage Channel. This project will replace 3 acres of invasive weed-choked "fill" land along the stream corridor, with meandering, terraced, native plant-lined "pocket" wetland to better contain floodwaters, filter stormwater runoff, restore historic habitat for native avian and aquatic life, enhance scenery and a Hawaiian "sense of place." This project replaces a more conventional flood control approach that would have "hardened" streambanks and further degraded the stream corridor's scenic, wildlife, and water quality values.
(c) Elsewhere on MCBH, $1.5M worth of native plant landscaping has been installed over the past two years around family and barracks housing, administrative buildings and static displays, following MCBH's CY02 Master INRMP landscaping guide (INRMP Project HI21002). This progress follows a standard established in that guide to require use of not less than 50% native plants from a preferred plant list in compliance with federal guidelines to promote native plant use in landscape schemes.

Component 3. Extent to which "must fund" projects identified in the INRMP are adequately budgeted for and being implemented "on schedule."

Table 7 in the original INRMP (2001), p. 7-3, lists major INRMP projects to be implemented over the CY02-06 timeframe. To date, all major INRMP projects listed therein are either already completed or are progressing toward completion. Attachment A depicts an updated, modified version of this table, showing project implementation status and additional projects funded as of 2005. Focused staff time on the recently added projects caused some delay in completing environmental reviews and designs for "older" projects HI60834 and HI20010. These wetland and watershed improvement projects--INRMP Projects HI60834 and HI21002--

described above, are in construction and will be completed in CY2006. In sum, all projects listed in the original INRMP as well as some new ones are being accomplished within the forecasted CY02-06 INRMP time frame.

Component 4. Required Federal, State, and Installation coordination has occurred.

Attachment A to this Enclosure depicts the NEPA, Section 7 Endangered Species Act consultations, and permitting coordination required for the "must fund" INRMP projects listed and that they are either completed or "on-track." We also enjoy continuing interagency coordination and cooperation on routine management actions described in the INRMP (e.g., close coordination with our war-fighters in annual Nu'upia Ponds Mud Ops AAV maneuvers to control pickleweed in endangered stilt habitat, close coordination with state/federal wildlife biologists in bird counts, spill response exercises, invasive species surveys, and individual project reviews). In 2005, MCBH contributed review comments to the Service's updated Draft of the Hawaii Endangered Waterbird Recovery Plan, and was an active participant in Hawaii State Department of Land and Natural Resources (DLNR)'s development of a Hawaii Comprehensive Wildlife Conservation Strategy. MCBH participated at meetings of the State's Invasive Species Committee and related fieldwork (e.g., Ft. grass surveys on MCTAB, discussed in the previous section). MCBH also participated in a DoD-National Wildlife Federation coordinated report--"Under Siege: Invasive Species on Military Bases"—which includes MCBH successes and is posted at NWF's website. We also shared transferable lessons learned at the August 2005 invitation-only White House Conference on Cooperative Conservation, attended by over a thousand invitees around the country, including MCBH natural resources and military operator staff and partner representatives from Hawai'i Sierra Club, Hawai'i Audubon Society, and Hawai'i State DLNR.

Component 5. Progress toward implementing INRMP management actions linked to established INRMP goals and objectives is documented.

Tables in Appendix C of the original INRMP (2001) display systematic lists of management actions to be implemented, linked INRMP objectives, and whether/when they are programmed for completion or initiation over a five-year time frame (02-06). Over the years since its implementation, in each annual progress report, we have been displaying a table showing numbers of INRMP actions accomplished as compared to those planned in every given year, since 2001, as a measure of execution rate. Attachment B to this enclosure presents the latest version of this table, showing numbers of actions planned vs. those accomplished in each successive year between 2001 and 2005. Note especially the information displayed in the far right hand columns of the table, which focus on the most recent 2005 actions accomplished as compared to those actions originally planned for execution that year back in 2001. Also note that some of the so called "optimal" actions were also accomplished—i.e., those at a higher, "optimal" level of effort that we did not commit to in 2001. As explained in the original INRMP (2001), some actions on the "Optimal" Alternative list may be do-able under an "Operational" level of effort if the opportunity arises. This turned out to be the case as we implemented the INRMP.

Attachment C to this enclosure provides a tabular summary overview of these findings. As noted, in the four years since the 2001 MCBH's INRMP/EA was first published and implemented, steady progress has been made at an 85% execution rate to implement planned actions at the "operational" level of effort. Thus, by 2005, most of the management actions planned at time of initial INRMP implementation are either completed, started, or in progress. Some actions were implemented ahead of schedule, some optimal action opportunities were exploited (e.g., regional partnering and conferencing initiatives), and some less critical management actions were deferred in order to address emergent priorities. In addition, $150K has been obligated and work has begun to complete a mandated INRMP review and update by November 2006. While emergent priorities (e.g., increased tempo of war-fighter training since "9-11") and changing environmental conditions (e.g., prolonged drought and enhanced brushfire risk) caused a shift in project implementation sequence, our overall INRMP is being implemented on time and within budget.

2005 Version of INRMP Table 7.1 (2001)—Current Status of "Must Fund" Projects

Report compiled by Dr. Diane Drigot, Sr. Nat. Res. Mgt. Specialist (INRMP Mgr.)

Project Number	Project Title	COA Section	Level of NEPA Required	Sec 7 ESA Consultation (Y/N)	Permits (Y/N)	Current Project Status (2005)
HI10007	Design/Construct Puuloa Range Impact Berm Repair	7.3.2, 7.4.1	CATEX	N	N	Done 2004
HI60834	Complete Wetland Restoration/Percolation Ditch Improvements (Construction awarded IAO $507)	7.2.3	EA	Y	Y	EA done & project awarded in late 04; Construction began in Oct 05; after Hawaiian stilt nesting season in nearby Nu'upia Ponds. Excavation work to be completed by Feb 06 followed by installation of native plants along riparian shore of this constructed wetland & one year maintenance period to ensure firmly established prior to turn-over to gov't.
HI20004	Complete Wetland Delineation Study	7.2.1	N/A	N	N	Done 2002
HI20009	Complete Coral Reef Ecosystem Management Study	7.4.1	N/A	N	N	Done 2002
HI20010	Design/Construct Watershed Repair/Restore, MCDC (Construction phase awarded IAO $596K)	7.3.2	EA	Y	Y	EA & Design done in Aug. 05; Army COE permit under Nationwide #27 (Stream and Wetland Restoration) authority issued in July 05; Negotiations completed in Sep 05; Funds awarded in Oct 05; construction to begin early CY06.
HI20011	Front Gate Static Display Project	7.5.5	CATEX	N	N	Done 02
HI20012	Complete Invasive Species Management Study	7.1.3, 7.5.4	N/A	N	N	Done 02
HI20013	Complete ECE-Mandated Erosion Assessment of MCBH Properties	7.3.1	N/A	N	N	Assmt. Study done in CY04 for Crater catchment (interior) and base landfill along Crater southern slopes; See "New Projects" section of this table for follow-on phases of this assessment & implementation of design/construction solutions begun in CY05.
HI20033	Complete MCTAB Watershed Impairment Study	7.3.1	N/A	N	N	Done 2002
HI20033	Design/Construct MCTAB Watershed Impairment Solution (now titled: Repair/Restore Streams-MCTAB)	7.3.2	EA	Y	Y	Delayed to FY07/FY08 (Validation of project for design funding pending early CY06; EA & Army COE permit will be required.)

2005 Version of INRMP Table 7.1 (2001)—Current Status of "Must Fund" Projects

Report compiled by Dr. Diane Drigot, Sr. Nat. Res. Mgt. Specialist (INRMP Mgr.)

Project Number	Project Title	COA Section	Level of NEPA Required	Sec 7 ESA Consultation (Y/N)	Permits (Y/N)	Current Project Status (2005)
HI21008	Improve Water Delivery/Reduce Fire Risk/Sustain Birds/Wpns Trng at Ulupa'u Crater (e.g., Install Water Cannons near Booby Trees) (Build IAO $197K)	7.5.3	CATEX	N	N	Design completed 04; Construction almost completed at end CY05, after resolving technological issues & completion setbacks due to bullet and brushfire damage sustained to infrastructure while under construction; Final performance test scheduled in Jan 2006.
HI20009	Inventory/Improve Mgt Marine Species in MCBH Waters (Study funded IAO $116K)	7.4.1	N/A	N	N	Awarded FY03 to USFWS; Field work done in 05; await report completion in early CY06 from USFWS.
HI20012	Invasive Sp/Erosion /Brushfire Control-MCBH Trng Lands (i.e., Vegetation Mapping Study at MCTAB IAO $125K)	7.5.2	N/A	N	N	Awarded in FY03; Completed in 04
HI20012M	Invasive Sp/Erosion/Brushfire Control-Veg Mgt Plan-MCTAB (i.e., Follow on evaluation of recommendations from above Vege. Mapping Study at MCTAB to develop concept design solutions and estimates for design & build in FY07/08. New Project Title: Replace Invasive Vegetation-Reduce Fire Risk-MCTAB	7.5.2	N/A	N	N	Awarded in FY05 IAO $100K; follow on to Vegetation Map phase cited above; study to develop concept designs & general cost estimates for implementing phased 10-year plan for vegetation change on Bellows to accommodate more sustainable training use & environmental BMPs.
HI20013	Sustain Weapons Range-Install Erosion Control BMPs (in Crater Catchment-Interior) (Funded IAO $100K)	7.3.1	CATEX	N	N	Follow-on design work to implement erosion mitigation recommendations from initial assessment report done in CY04 (cited above).
HI0920013M	Install Erosion BMPs: Crater Slope and Shoreline (at north-facing outer slopes and along southeast shoreline)	7.3.1	CATEX	N	N	Assessment begun 05 with $95K (FY05) to develop erosion mitigation strategies for multiple erosion spots.
HI20014	Update MCBH Integrated Natural Resources Mgt. Plan (existing plan to be updated as primary in-house effort, with some techn assist IAO $150K for data management aspects).	N/A	CATEX	Y	N	Existing INRMP to be updated as required by Nov 06 for timeframe extending from FY07-FY11
HI20015	Natural Resources Data Archive/Electronic Retrieval System (Funded IAO $30K thus far)	7.7	NA	N/A	N/A	Ongoing inventory of natural resources data, their condition, development of conversion priorities for archival storage and retrieval, scan documents, convert audio & video cassettes to DVD, etc.

2005 Version of INRMP Table 7.1 (2001)—Current Status of "Must Fund" Projects

Report compiled by Dr. Diane Drigot, Sr. Nat. Res. Mgt. Specialist (INRMP Mgr.)

Project Number	Project Title	COA Section	Level of NEPA Required	Sec 7 ESA Consultation (Y/N)	Permits (Y/N)	Current Project Status (2005)
HI21002	Complete Master Landscape Study	7.5.1	N/A	N	N	Done 2002
HI21004	Continue Endangered Species Habitat Improvements/Mangrove Removal	7.2.2	EA	Y	Y	Done in 2004
HI0821015M	Sag Harbor Wetland Restoration	7.2.2	EA	Y	Y	Design with FY03 funds to improve water circulation at Sag harbor wetland (now that mangrove is removed) was done in CY04 as part of HI21004 project. Added design work + secure permits programmed in FY07. Anticipate ready to construct in FY08 .
HI21005	Complete Ulupa'u Fire Management Study	7.5.3	N/A	N	N	Done 2002
HI32168	Design/Construct Pa'akai Pond/Beach Restoration	7.3.2	EA	Y	Y	Deferred Indefinitely
HI35636SM	Design/Construct Erosion Control, Horse Trails, MCBH-CS	7.3.2, 7.6.3	CATEX	N	N	Design completed; next phase deferred until Pb-contaminated soil clean up in vicinity is done.
HI41786	Complete Draft Outdoor Recreation Study for MCBH-KB	7.6.1	N/A	N	N	Deferred to FY08
HI80726	Design/Construct Golf Course Pond/Endangered Waterbird Enhancement Project	7.2.3, 7.6.3	CATEX	Y	N	All project components done 2004: Pond dredging & plants installed in CY03; one-year monitoring of bird use and plant success done in CY04; Interpretive sign installed in 2004.
HI95156	Complete MCBH Hawaiian Stilt Regional Recovery Study	7.1.7	N/A	N	N	Done 2002
	"MUST FUND" PROJECTS STARTED &/OR COMPLETED SINCE INRMP 2001 WAS PUBLISHED:					
N/A	Nu'upia Ponds Recreational Run Trail & Interpretive Signs along Route (in-hse, no extra cost)	7.1.1,7.6.2	EA	Y	N	Done 2002
HI21007	Improve Grnd Cover/Reduce Fire Risk/Sustain Birds/Wpns Trng at Ulupa'u Crater (Build phase funded IAO $138K)	7.5.3, 7.3.1	CATEX	N	N	Done 2005; Installed gravel-anchored, geotextile matting around key booby nest trees to suppress weed growth, erosion & fire risk.

MCBH INRMP (2001 – 2006) IMPLEMENTATION STATUS AS OF DEC 2005

Report compiled by Dr. Diane Drigot, Sr. Nat. Res. Mgt. Specialist (INRMP Mgr.)

Excerpt from Appendix C, INRMP/EA (CY2002-2006), Table C3-1, showing planned projects under "operational stewardship" alternative adopted with its publication. Consult Baseline INRMP/EA for further details.

Summary of Planned Projects	INRMP Obj	OPER ALTV Actions Planned (02-03)	Actions Accomplished (2002-2003)	OPER ALTV Actions Planned (2004)	Actions Accomplished (2004)	OPER ALTV Actions Planned (2005)	Actions Accomplished (2005)	OPTI ALTV Actions Planned (2005)
Regular review and update of the INRMP (HI20014)						X		X
Course of Action: 7.1 Fish and Wildlife Management								
NPWMA/SHA: Control invasive plants with established in-house and contractor resources and methods (e.g., manual, mechanical).	7.1.1	X	-Annual AAV mud ops;-Finished HI21004 mangrove removal project-EEWF (2001-2002)	X	-Annual AAV mud ops continued	X	-Annual AAV mud opscontinued	X
NPWMA/SHA: Control invasive plants with established volunteer-conducted activities	7.1.1	X	-Volunteer weed pullevents at pond *Muli wai* garden & other shoreline locations (e.g., Sierra Club Ecology Camp 2001; Scout projects)	X	--Sierra Club & base girl scoutsrepaired tire-nestislands for stilt in Pa'akai Pond	X	--Sierra Club, Active & retired military, & other civic groups continued to perform mangrove & other invasive weed pulling events at Nu'upia Ponds & other MCBH wetlands	X
NPWMA/SHA: Evaluate and improve (systematically) invasive plant control methods.	7.1.1	O	EEWF *Pluchea* removal from shearwater colony area of ponds	O	*No significant activity to report on this item*	O	*No significant activity to report on this item*	X
NPWMA/SHA: Remove vertebrate predators (rats, cats, dogs, mongoose) with established methods.	7.1.1	X	Mechanical trapping & feral cat removal; enforcement of leash law	X	Mechanical trapping & feral cat removal; enforcement of leash law	X	Mechanical trapping & feral cat removal; enforcement of leash law continued with assist of USDA Wildlife Services & Military Police Game Wardens	X
NPWMA/SHA: Evaluate and improve (systematically) vertebrate predator control methods.	7.1.1	O	2003-USDA Wildlife Service contract starts diaphacinone methods	O	USDA Wildlife Service contract ors continued use of diaphacinone	O	USDA Wildlife Service contractors continued use of diaphacinone	O
NPWMA/SHA: Limit disturbance of nesting waterbirds with established methods.	7.1.1	X	Restricted public pond access continues	X	Restricted public pond access continues	X	Restricted public pond access continues	X
NPWMA/SHA: Continue established approach (opportunistic) to monitor fish and wildlife, evaluate results, and improve management.	7.1.1	X	Semi-annual waterbird cts & Annual Christmas bird counts continued	X	Semi-annual waterbird cts & Annual Christmas bird counts continued	X	Semi-annual waterbird cts & Annual Christmas bird counts continued	X
NPWMA/SHA: Monitor fish and wildlife (systematically), evaluate results, and improve management.	7.1.1	O	*No significant activity to report on this item*	O	*No significant activity to report on this item*	O	*No significant activity to report on this item*	O

2005 Version of INRMP Table 7.1 (2001)—Current Status of "Must Fund" Projects

Report compiled by Dr. Diane Drigot, Sr. Nat. Res. Mgt. Specialist (INRMP Mgr.)

Project Number	Project Title	COA Section	Level of NEPA Required	Sec 7 ESA Consultation (Y/N)	Permits (Y/N)	Current Project Status (2005)
HI0920017M	Invasive Mangrove Remove-Kane'ohe Bay Shoreline (Funded IAO $30K)	7.1.7;7.5.5	N/A	N	N	Feasibility study on mangrove removal & permits involved, along K-Bay shoreline & State's H-3 causeway at MCBH entrance; to assist in collaborating with other stakeholders (state, federal, non-profit), to remove mangrove "seed bed" from rest of Kane'ohe bay so as not to re-infest MCBH wetlands & make MCBH's successful mangrove removal efforts more sustainable in the long run.
HI86749	Invertebrate Biological Survey—of Cave on slopes of Pu'u Hawai'i Loa Hill.(Funded IAO $6K)	N.A	N/A (Report is input to NEPA compliance for the Native Hawaiian 'iwi reinterment project)	N/A (Report is input to Section 7 consultation for the Native Hawaiian 'iwi reinterment project)	N	Done Nov 2005; to assist Section 7 & NEPA compliance to assess potential natural resources impacts of proposed project to re-bury Native Hawaiian 'iwi (burial remains) in cave

MCBH INRMP (2001 – 2006) IMPLEMENTATION STATUS AS OF DEC 2005

Report compiled by Dr. Diane Drigot, Sr. Nat. Res. Mgt. Specialist (INRMP Mgr.)

Summary of Planned Projects	INRMP Obj	OPER ALTV Actions Planned (02-03)	Actions Accomplished (2002-2003)	OPER ALTV Actions Planned (2004)	Actions Accomplished (2004)	OPER ALTV Actions Planned (2005)	Actions Accomplished (2005)	OPTI ALTV Actions Planned (2005)
NPWMA/SHA: Explore interagency partnerships to expand cooperative monitoring of fish and wildlife on a regional basis.	7.1.1	O	*No significant activity to report on this item*	O	Initiated "mangrove buster" discussions with regional stakeholders	O	To benefit "mangrove buster" h regional stakeholders, acquired funds to perform project HI092017M Feasibility study of phased mangrove removal along state-submerged lands abutting Nu'upia Ponds/MCBH entrance/shoreline.	X
NPWMA/PUA: Support required on-site access by natural resource partner agencies.	7.1.1	X	Continued bird counts, interagency spill exercises, etc.	X	Continued bird counts, interagency spill exercises, etc.	X	Continued bird counts, interagency spill exercises, Nat Res. Damage Assessment & Restoration team visits, supported FWS-led interagency team performing marine resources inventory in MCBH 500-yard security buffer zone under project HI20009; FWS & State DLRN Enforcement vessels now hosted at MCBH waterfront ops under agreements, etc.	X
NPWMA/PUA: Provide established resource-compatible on-site public access on a case-by-case basis.	7.1.1	X	Escorted environ. tours continued	X	Escorted environ. tours continued	X	Escorted environ. tours continued	X
NPWMA/PUA: Provide additional resource-compatible on-site public access on a scheduled basis.	7.1.1	O	2001 Ecology Camp;Opened N. Ponds Run Trail	O	Continued use of N. Ponds Run Trail	O	Continued support of use of N. Ponds Run Trail for solo joggers, organized fun-run events; and limited unit formation runs.	X
NPWMA/PUA: Display/distribute *available* presentation materials on fish and wildlife management.	7.1.1	X	Continue distribute Ponds brochures	X	Ponds brochures distribution continued	X	Ponds brochures distribution continued	X

OVERVIEW - MCBH INRMP (2001 – 2006) IMPLEMENTATION STATUS AS OF DEC 2005

Report compiled by Dr. Diane Drigot, Sr. Nat. Res. Mgt. Specialist (INRMP Mgr.)

Level of Effort	Number of Actions	CY02-03	CY04	CY05	CY02-CY05	CY06
Operational Stewardship Level	Implemented	99	73	80	252	Next Year's Report
Operational Stewardship Level	Planned	116	89	91	296	86
Execution Rate (%)		85	82	88	85	Next Year's Report
Optimal Stewardship Level	"Extra" Actions implemented at Optimal Level	34	51	37	122	Next Year's Report
Operational & Partial Optimal Combined	Total Actions completed at Operational Level + "Extra" at Optimal Level	133	124	117	374	Next Year's Report
Optimal Stewardship Level	Planned (if committed to Optimal Level)	291	138	150	579	143
Execution Rate (%)	If committed to Optimal level	46	90	78	71	Next Year's Report

E3. ACTIVE AND PROGRAMMED MANAGEMENT ACTIONS

This appendix summarizes information related to active and programmed management actions in this updated INRMP. Note that Table E3-1 includes projects active in 2005 and 2006, in addition to the period covered by the INRMP update (2007 – 2011). This wider coverage is included to make it clearer to the reader that many projects in 2007 and beyond had their "roots" in earlier phases of effort or funding in the immediate preceding years (at the end of the period covered by the original INRMP/EA (2001 – 2006).

This appendix includes the following tables:

Table E3-1. MCBH INRMP Active and Programmed Project Funding Table (2005 – 2011)

Table E3-2. MCBH INRMP Update - COA Five Year Implementation Plan (CY07-CY11)

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Table E3-1: MCBH INRMP Active and Programmed Project Funding Table (2005 - 2011)

	Prim Obj	FY05 $K	FY05 Phase	FY06 $K	FY06 Phase	FY07 $K	FY07 Phase	FY08 $K	FY08 Phase	FY09 $K	FY09 Phase	FY10 $K	FY10 Phase	FY11 $K	FY11 Phase	Total 07-11 ($K)
Overall Program Management																
HI40101 Natural Resources Labor *		415	N/A	436	N/A	457	N/A	480	N/A	504	N/A	529	N/A	556	N/A	2526
HI40401 Equipment/Supplies Natural Resources Program Support		11	N/A	12	N/A	13	N/A	14	N/A	15	N/A	16	N/A	17	N/A	75
HI40601 Training & Associated Travel-Natural Resources Core Staff **		6	N/A	3	N/A	10	N/A	12	N/A	14	N/A	16	N/A	18	N/A	70
HI20014 Update MCBH INRMP (Tech. Support)		150	P									250	P			250
Course of Action: 7.1 Fish and Wildlife Management																374
HI21006 Predator and Nuisance Animal Control***	7.1.1	Dif.Cat	N/A	40	N/A	42	N/A	44	N/A	45	N/A	46	N/A	47	N/A	224
HI20018 Assess Natural Resources Status of Waikane Valley	7.1.3							75	M					75	M	150
Course of Action: 7.2 Wetland Management																985
HI20004 Wetland Delineation/Mapping/Review and Update	7.2.1							75	A							75
HI0821015M Sag Harbor Wetland Restoration	7.2.3					60	D	450	C							510
HI60834 Wetland Restoration/Percolation Ditch Replacement	7.2.3	868	C	4	PCAS							50	A			50
HI0080726M Restore Endangered Waterbird Wetlands at Golf Course	7.2.3							50	A			50	D	250	C	350
Course of Action 7.3 Watershed Management																2685
HI20013 Sustain Weapons Range-Install Erosion Control BMPs	7.3.1	58	D			515	C									515
HI0920013M Install Erosion BMPS: Crater Slope and Shoreline	7.3.1	114	A			80	D			800	C					880
HI20010 Watershed Repair/Restore, MCDC	7.3.2			605	C/PCAS											0
HI0820033M Repair/Restore Waimanalo Stream, MCTAB	7.3.2					90	D			800	C					890
HI0835636M Erosion Control/Former Horse Trails, MCBH-CS	7.3.2					50	D	350	C							400
Course of Action 7.4 Coastal and Marine Resources Management																835
HI20009 Invntry/Imprve Mgt of Marine T&E/Invas Spps in MCBH waters	7.4.1							75	A	80	P			90	D/B	245
HI0920017M Invasive Mangrove Remove-K-Bay Shoreline	7.4.1	27	A			90	D			500	C					590
Course of Action 7.5 Grounds Maintenance and Landscape Mgt																765
HI20012 Invasive Sp/Erosion/Brushfire Cntrl-Veg Mgt Planning, MCTAB	7.5.2	100	A													0
HI0820012M Replace Invasive Vegetation-Reduce Fire Risk, MCTAB	7.5.2					75	D	350	C							425
HI21005 Ulupa'u Fire Management Study - Update/Revise	7.5.3													80	A	80
HI21008 Imprve Crater Water Delivery w_Water Cannons/Reduce Fire Risk	7.5.3	20	D	17	D	50	RECUR	51	RECUR	52	RECUR	53	RECUR	54	RECUR	260
Course of Action 7.6 Quality of Life/Outdoor Recreation Management																130
HI41786 Outdoor Recreation Study to Update INRMP	7.6.1							130	P							130
Course of Action 7.7 Resource Information Management																50
HI20015 Natural Resources Data Archive/Electronic Retrieval System	7.7.1	31	D/B	25	D/B			25	D/B			25	D/B			50
TOTALS:		1801		1141		1532		2181		2810		1035		1187		8745

NOTES:

Phases: P=Plan, A=Assessment, D=Design, D/B=Design/Build, C=Construction, PCAS=Post Construction Award Services, M=Monitor, RECUR = Recurring Maintenance

Primary objectives for each project are listed. Other objectives may apply.

Funding for FY05-FY11 is included since some projects straddle the original and updated INRMP timeframes.

*****Labor Costs reflect fully-burdened rates of Core Natural Resources Staff and a portion of the fully-burdened rates of other Environmental Staff contributing to Natural Resources Program

**Training/Travel Costs in this table reflect only those of Core Natural Resources Staff

***Different Category means that this function was formerly included under labor costs.

Table E3-2: MCBH INRMP Update - COA Five Year Implementation Plan (CY07-CY11)

Active and Programmed Management Actions	Obj	CY 07	08	09	10	11	Alternatives OperS	ComS	OptiS	Remarks
Course of Action: 7.0 Overall Program Management										
HI40101 Natural Resources Labor		*	*	*	*	*	X	X	X	
HI40401 Equipment/Supplies Natural Resources Program Support		*	*	*	*	*	X	X	X	
HI40601 Training & Associated Travel-Natural Resources Core Staff *		*	*	*	*	*	X	X	X	
Regular review and update of the INRMP (HI20014)					*		X	X	X	
Course of Action: 7.1 Fish and Wildlife Management										
NPWMA/SHA: Control invasive plants with established in-house and contractor resources and methods (e.g., manual, mechanical).	7.1.1	*	*	*	*	*	X	X	X	
NPWMA/SHA: Control invasive plants with established volunteer-conducted activities	7.1.1	*	*	*	*	*	X		X	
NPWMA/SHA: Evaluate and improve (systematically) invasive plant control methods.	7.1.1		*		*				X	
NPWMA/SHA: Remove vertebrate predators (rats, cats, dogs, mongoose) using established methods.	7.1.1	*	*	*	*	*	X	X	X	
NPWMA/SHA: Evaluate and improve (systematically) vertebrate predator control methods.	7.1.1			*		*			X	
NPWMA/SHA: Limit disturbance of nesting waterbirds with established methods.	7.1.1	*	*	*	*	*	X	X	X	
NPWMA/SHA: Continue established approach (opportunistic) to monitor fish and wildlife, evaluate results, and improve management.	7.1.1	*	*	*	*	*	X	X	X	
NPWMA/SHA: Monitor fish and wildlife (systematically), evaluate results, and improve management.	7.1.1		*		*				X	
NPWMA/SHA: Explore interagency partnerships to expand cooperative monitoring of fish and wildlife on a regional basis.	7.1.1					*			X	
NPWMA/PUA: Support required on-site access by natural resource partner agencies.	7.1.1	*	*	*	*	*	X	X	X	
NPWMA/PUA: Provide established resource-compatible on-site public access on a case-by-case basis.	7.1.1	*	*	*	*	*	X		X	
NPWMA/PUA: Provide additional resource-compatible on-site public access on a scheduled basis.	7.1.1	*	*	*	*	*			X	
NPWMA/PUA: Display/distribute available presentation materials on fish and wildlife management.	7.1.1	*	*	*	*	*	X	X	X	

Table E3-2: MCBH INRMP Update - COA Five Year Implementation Plan (CY07-CY11)

Active and Programmed Management Actions	Obj	CY 07	08	09	10	11	Alternatives OperS	ComS	OptiS	Remarks
NPWMA/PUA: Develop/distribute additional presentation materials on fish and wildlife management.	7.1.1	*	*	*	*	*			X	
NPWMA/PUA: Host established project-specific volunteer service actions.	7.1.1	*	*	*	*	*	X		X	
NPWMA/PUA: Expand project-specific volunteer service actions.	7.1.1	*	*	*	*	*			X	
NPWMA/PUA: Provide off-site public outreach about fish and wildlife management.	7.1.1	*	*	*	*	*	X		X	
NPWMA/PUA: Explore interagency cooperative partnerships to coordinate public education/access activities.	7.1.1					*			X	
NPWMA/PUA: Develop interagency mechanisms to inform the public about resources, access, and volunteer service options.	7.1.1		*		*		X		X	
UHWMA/SHA: Move birds away from high-risk target areas using established methods	7.1.1	*	*	*	*	*	X	X	X	
UHWMA/SHA: Replace fire-prone vegetation using established methods.	7.1.1	*	*	*	*	*	X	X	X	
UHWMA/SHA: Maintain fire-fighting capabilities using established methods.	7.1.1	*	*	*	*	*	X	X	X	
UHWMA/SHA: Improve fire-fighting capabilities.	7.1.1	*	*	*	*	*			X	
UHWMA/SHA: Remove vertebrate predators (rats, cats, dogs, mongoose) using established methods.	7.1.1	*	*	*	*	*	X	X	X	
UHWMA/SHA: Evaluate and improve (systematically) vertebrate predator control methods.	7.1.1	*	*	*	*	*			X	
UHWMA/SHA: Continue established approach (opportunistic) to monitor status of protected species, evaluate results, and improve management.	7.1.1	*	*	*	*	*	X	X	X	
UHWMA/SHA: Monitor protected species' status (systematically), evaluate results, and improve management.	7.1.1	*	*	*	*	*			X	
UHWMA/PUA: Support required on-site access by natural resources partner agencies.	7.1.1	*	*	*	*	*	X	X	X	
UHWMA/PUA: Provide on-site public access within limits set by mission, safety, and natural resource sensitivities.	7.1.1	*	*	*	*	*	X		X	
UHWMA/PUA: Provide off-site public education program to compensate for limited public access to natural resources.	7.1.1	*	*	*	*	*	X	X	X	

Table E3-2: MCBH INRMP Update - COA Five Year Implementation Plan (CY07-CY11)

Active and Programmed Management Actions	Obj	CY 07	08	09	10	11	Alternatives OperS	ComS	OptiS	Remarks
UHWMA/PUA: Display/distribute available presentation materials on wildlife management.	7.1.1	*	*	*	*	*	X	X	X	
UHWMA/PUA: Develop/distribute additional presentation materials on wildlife management.	7.1.1	*	*	*	*	*			X	
UHWMA/PUA: Host established project-specific volunteer service actions within limits set by mission, safety and natural resource sensitivities.	7.1.1	*	*	*	*	*	X		X	
UHWMA/PUA: Expand project-specific volunteer service actions within limits set by mission, safety, and natural resource sensitivities.	7.1.1	*	*	*	*	*			X	
UHWMA/PUA: Coordinate interdepartmental MCBH staff public access/education program on natural resources and management.	7.1.1	*	*	*	*	*	X		X	
UHWMA/PUA: Explore interagency cooperative partnerships to monitor natural resources.	7.1.1					*			X	
UHWMA/PUA: Explore interagency cooperative partnerships to coordinate public education/access activities.	7.1.1					*			X	
UHWMA/PUA: Develop interagency mechanisms to inform the public about resources, access and volunteer service options.	7.1.1	*	*	*	*	*			X	
Conduct monitoring of protected/pest fish and wildlife in small wetlands at MCBH-KB and appropriate follow-on actions.	7.1.2	*		*		*			X	
Incorporate updated fisheries/marine mammal policy into Base Plans, Projects, and Protocols as appropriate.	7.1.2	*	*				X	X	X	
HI20018 Assess Natural Resources Status of Waikane Valley	7.1.3		*			*	X	X	X	New action in 2006 INRMP
Evaluate and implement appropriate recommendations from the HI20012 Invasive Species Management Study (ISMS).	7.1.3	*	*	*	*	*	X		X	
Implement closer integration between established pest management plans and invasive species management activities.	7.1.3	*	*	*	*	*	X		X	
Continue reporting on monitoring efforts and perform related data management in response to specific requests and requirements.	7.1.4	*	*	*	*	*	X	X	X	

Table E3-2: MCBH INRMP Update - COA Five Year Implementation Plan (CY07-CY11)

Active and Programmed Management Actions	Obj	CY 07	08	09	10	11	Alternatives OperS	ComS	OptiS	Remarks
Evaluate current status of monitoring reports and related data management and identify requirements for system improvements.	7.1.4	*		*		*			X	
Continue designing/implementing system improvements to take advantage of extensive existing information on MCBH's protected/pest species.	7.1.4		*		*				X	
Improve capability for staff access to the MCBH EGIS for information sharing on protected/pest species.	7.1.4		*		*				X	
Ensure MCAF and their USDA/Wildlife Services contractors continue the established data collection and management system for BASH as described in the current MCAF BASH Plan.	7.1.5	*	*	*	*	*	X	X	X	Reworded to better reflect activity
Ensure MCAF and their USDA/Wildlife Services contractors develop an improved data collection and management system for BASH.	7.1.5	*	*	*	*	*			X	Reworded to better reflect activity
Track airfield staff in proper execution of their BASH Program responsibilities as spelled out in the current MCAF BASH Plan and to regularly update the plan, as required.	7.1.5	*	*	*	*	*	X	X	X	Reworded to better reflect activity
Identify and assist appropriate personnel to incorporate BASH considerations into airfield and other Base SOWs, Plans, and Project Specifications.	7.1.5	*	*	*	*	*	X		X	
Gather and review information through meetings, reports, and other media.	7.1.6	*	*	*	*	*	X	X	X	
Participate in interagency initiatives on invasive species problems.	7.1.6	*	*	*	*	*	X		X	
Collect and evaluate information on other agency plans impacting MCBH fish and wildlife activities.	7.1.6	*	*	*	*	*			X	
Improve data management, agency contacts, and response to other agency impacts.	7.1.6		*		*				X	
Implement revisions in data management system as necessary.	7.1.6	*	*	*	*	*	X		X	
Evaluate and implement appropriate recommendations from the HI95156 MCBH Hawaiian Stilt Regional Recovery Study.	7.1.7		*		*		X		X	
Host appropriate projects to enhance habitat of fish and wildlife on and around MCBH land and water parcels.	7.1.7	*	*	*	*	*			X	

Table E3-2: MCBH INRMP Update - COA Five Year Implementation Plan (CY07-CY11)

Active and Programmed Management Actions	Obj	CY 07	08	09	10	11	Alternatives OperS	ComS	OptiS	Remarks
Improve regional capacity to plan for, reduce risks, assess and recover from damages to fish and wildlife due to catastrophic events.	7.1.7	*	*	*	*	*			X	
Improve regional capacity to protect, reduce risks to, and rehabilitate fish and wildlife and/or their habitat affected by IR program contaminated sites.	7.1.7	*	*	*	*	*			X	
Formally assign fish and wildlife protection and/or control duties to MCBH personnel who assist MCBH natural resources staff.	7.1.8	*	*	*	*	*	X	X	X	
Ensure relevant personnel obtain focused training on proper protection and/or control of fish and wildlife species.	7.1.8	*	*	*	*	*	X	X	X	
Regularly review and update staff training to ensure latest management and/or control policies, regulations, and techniques are included.	7.1.8	*		*		*	X	X	X	
Clarify wildlife enforcement policy, identify lead responsible unit at MCBH, and make appropriate recommendations for improvement.	7.1.8	*	*	*	*	*	X	X	X	
Evaluate placement of wildlife and natural resources enforcement billet in MP or LE and implement appropriate recommendations.	7.1.8	*	*	*	*	*	X	X	X	
Continue to implement established public awareness programs on MCBH's wildlife protection and control efforts.	7.1.8	*	*	*	*	*	X		X	
Evaluate placement of a volunteer coordinator billet in LE and implement appropriate recommendations.	7.1.8	*		*		*			X	
Develop and apply performance measures to improve effectiveness of both fish and wildlife protection and pest species control.	7.1.8	*	*	*	*	*			X	
Course of Action: 7.2 Wetland Management										
HI20004 Wetland Delineation/Mapping/Review and Update.	7.2.1		*				X	X	X	New action in 2006 INRMP
Update wetland GIS boundary layers in EGIS.	7.2.1		*				X	X	X	
Explore development of cooperative data sharing agreements for GIS layers.	7.2.1					*			X	
Continue invasive plant and animal species control at MCBH-KB wetlands.	7.2.2	*	*	*	*	*	X	X	X	

Table E3-2: MCBH INRMP Update - COA Five Year Implementation Plan (CY07-CY11)

Active and Programmed Management Actions	Obj	CY 07	CY 08	CY 09	CY 10	CY 11	Alternatives OperS	Alternatives ComS	Alternatives OptiS	Remarks
Expand invasive plant and animal species control to MCTAB wetlands.	7.2.2	*	*	*	*	*	X		X	
Identify and assist appropriate personnel (e.g., planners, operators) to detect and address threats to MCBH wetlands.	7.2.2	*	*	*	*	*	X		X	
Explore interagency cooperative projects to control wetland threats that transcend Base borders.	7.2.2		*		*	*	X		X	
Improve regional capacity to identify factors and forces that encroach on wetlands and develop remedies.	7.2.2					*	X		X	
HI60834 Wetland Restoration/Percolation Ditch Replacement.	7.2.3				*		X		X	Carryover project
HI80726M Restore Endangered Waterbird Wetlands at Golf Course.	7.2.3		*		*	*	X		X	Carryover project
Complete HI0821015M Sag Harbor Wetland Restoration	7.2.3	*	*				X		X	New action in 2006 INRMP
Formally assign wetland monitoring and management responsibilities to appropriate personnel.	7.2.4			*			X		X	
Ensure assigned personnel obtain focused training on wetland delineation, regulations, and/or monitoring protocols.	7.2.4			*			X		X	
Explore interagency cooperative projects to implement regional wetland enhancement and monitoring opportunities.	7.2.4		*		*				X	Reworded to reflect consolidation with another management action.
Display/distribute *available* presentation materials on wetland resources and management.	7.2.4	*	*	*	*	*	X		X	
Develop/distribute *additional* presentation materials on wetland resources and management.	7.2.4	*	*	*	*	*			X	
Continue established approach (opportunistic) to monitor MCBH wetlands, evaluate results, and improve management.	7.2.4	*	*	*	*	*	X		X	
Evaluate and improve (systematically) wetland monitoring methods.	7.2.4	*	*	*	*	*			X	
Develop and apply performance measures to improve effectiveness of wetland resource management.	7.2.4	*	*	*	*	*			X	
Clarify jurisdictional status of wetlands when necessary.	7.2.5	*	*	*	*	*	X	X	X	
Obtain wetland-related permits (404, 401, 27) as needed.	7.2.5	*	*	*	*	*	X	X	X	
Streamline permitting process where possible.	7.2.5	*	*	*	*	*			X	

Table E3-2: MCBH INRMP Update - COA Five Year Implementation Plan (CY07-CY11)

Active and Programmed Management Actions	Obj	CY 07	08	09	10	11	Alternatives OperS	ComS	OptiS	Remarks
Course of Action 7.3 Watershed Management										
HI20013 Sustain Weapons Range-Install Erosion Control BMPs	7.3.1	*					X	X	X	Carryover project, follow on phase to HI20013 Assess phase in 2001 INRMP
HI0920013M Install Erosion BMPS: Crater Slope and Shoreline	7.3.1	*		*			X	X	X	New action in 2006 INRMP
Initiate systematic monitoring of ambient erosion conditions and implement appropriate follow-on actions.	7.3.1	*	*	*	*	*			X	
Develop and apply performance measures to monitor erosion control projects, and make appropriate adjustments.	7.3.1	*	*	*	*	*			X	
HI20010 Watershed Repair/Restore, Mokapu Central Drainage Channel, MCDC.	7.3.2	*					X	X	X	Carryover project
Design/Construct HI0835636M Erosion Control/Former Horse Trails, MCBH-CS.	7.3.2	*	*				X	X	X	Carryover project, delay reqd - external reasons
Design/Construct HI20033 MCTAB Watershed Impairment Solution.	7.3.2	*		*			X	X	X	Carryover project, delay in execution - other priorities
Continue established approach to voluntary service and outreach in MCBH watersheds.	7.3.2	*	*	*	*	*	X		X	
Explore interagency cooperative projects to enhance regional watershed restoration opportunities for all stakeholders.	7.3.2	*	*	*	*	*			X	
Review and update all relevant plans and SOPs to integrate BMPs.	7.3.3	*	*	*	*	*	X		X	
Identify and assist appropriate personnel to incorporate BMPs into operational guidelines and SOPs.	7.3.4	*	*	*	*	*	X	X	X	
Develop and apply performance measures to document effects of implementing BMPs, and make appropriate adjustments.	7.3.4	*	*	*	*	*			X	
Formally assign watershed management and assessment responsibilities to appropriate MCBH personnel.	7.3.5	*	*	*	*	*			X	
Ensure relevant personnel obtain focused training on watershed BMPs.	7.3.5	*	*	*	*	*			X	
Display/distribute *available* presentation materials on watershed health, assessment and BMPs.	7.3.5	*	*	*	*	*	X		X	
Develop/distribute *additional* presentation materials on watershed health, assessment and BMPs.	7.3.5	*	*	*	*	*			X	

Table E3-2: MCBH INRMP Update - COA Five Year Implementation Plan (CY07-CY11)

Active and Programmed Management Actions	Obj	CY 07	08	09	10	11	Alternatives OperS	ComS	OptiS	Remarks
Course of Action 7.4 Coastal and Marine Resources Management										
Continue CZM Consistency/Shoreline Determination Improvements.	7.4.1	*	*	*	*	*	X	X	X	Reworded to better reflect activity
Initiate systematic monitoring of ambient shoreline and off-shore erosion conditions and implement appropriate follow-on actions.	7.4.1					*			X	
Evaluate and implement appropriate recommendations from the HI20009 Coral Reef Ecosystem Management Study	7.4.1		*	*	*	*	X		X	
HI20009 Inventory/Improve Management of Marine T&E/Invasive Species in MCBH Waters.	7.4.1		*	*		*	X	X	X	Carryover project, new phase of HI20009 FY03 Survey
HI0920017M Invasive Mangrove Remove-K-Bay Shoreline	7.4.1	*		*			X		X	New action in 2006 INRMP
Inventory available maps/databases about coastal and marine resources/ spill risks in MCBH coastal areas, and integrate into MCBH EGIS.	7.4.2					*			X	
Formally assign NRDA responsibilities to approprate personnel.	7.4.2	*	*	*	*	*	X	X	X	
Ensure assigned personnel obtain focused training on NRDA responsibilities.	7.4.2	*	*	*	*	*	X	X	X	
Review and update existing MOUs about NRDA actions with Sikes Act partners and other agencies, as appropriate.	7.4.2		*		*		X		X	
Identify and assist appropriate personnel (e.g., planners, operators) to detect and address threats to coastal and marine resources.	7.4.2	*	*	*	*	*	X		X	
Review and update established MCBH policies and practices regarding ERA for potential expansion to coastal and marine resource management.	7.4.3					*			X	
Ensure assigned personnel obtain focused training on ERA methodologies.	7.4.3					*			X	
Develop and apply performance measures for the application of appropriate ERA methods to coastal and marine projects.	7.4.3					*			X	
Incorporate updated coastal and marine resource management policies into Base Plans, Projects and Protocols.	7.4.4	*	*	*	*	*	X	X	X	
Develop a Sustainable Marine Access Policy and disseminate to stakeholders.	7.4.4		*		*		X		X	

Table E3-2: MCBH INRMP Update - COA Five Year Implementation Plan (CY07-CY11)

Active and Programmed Management Actions	Obj	CY 07	08	09	10	11	Alternatives OperS	ComS	OptiS	Remarks
Monitor recreational use of MCBH's marine coastal zone (systematically), evaluate results, and improve management.	7.4.4	*		*		*			X	
Formally assign coastal and marine resource management responsibilities to appropriate MCBH personnel.	7.4.5	*	*	*	*	*	X	X	X	
Ensure assigned personnel receive appropriate training in marine resource management, enforcement, and related subjects.	7.4.5	*	*	*	*	*	X	X	X	
Display/distribute *available* presentation materials on coastal and marine resources.	7.4.5	*	*	*	*	*	X		X	
Develop/distribute *additional* presentation materials on coastal and marine resources.	7.4.5	*	*	*	*	*			X	
Explore interagency cooperative projects to manage threats to MCBH's coastal and marine resources.	7.4.6	*	*	*	*	*	X		X	
Explore interagency cooperative projects to implement regional coastal and marine conservation opportunities.	7.4.6	*	*	*	*	*	X		X	
Course of Action 7.5 Grounds Maintenance and Landscape Management										
Continue established approach (opportunistic) to improve existing grounds maintenance and landscape management.	7.5.1	*	*	*	*	*	X	X	X	
Evaluate and implement appropriate recommendations from the HI21002 Master Landscape Study.	7.5.1		*	*	*	*			X	
Update relevant Base Orders, Plans, SOPs, and Contract Specifications to reference the latest Headquarters Marine Corps guidance and other pertinent directives on following sustainable landscape practices.	7.5.1	*	*	*	*	*	X	X	X	Reworded to reflect consolidation with another management action.
Ensure incorporation of not less than 50% native plants into new or renovated tree, shrub, and understory landscaping.	7.5.1	*	*	*	*	*	X	X	X	
Ensure a phased approach to inventory and eliminate/replace invasive, nuisance, high maintenance vegetation.	7.5.1	*	*		*		X		X	
Initiate a Master Grounds Maintenance and Landscaping Study for MCTAB and evaluate/implement appropriate recommendations.	7.5.1			*	*		X		X	

Table E3-2: MCBH INRMP Update - COA Five Year Implementation Plan (CY07-CY11)

Active and Programmed Management Actions	Obj	CY 07	08	09	10	11	Alternatives OperS	ComS	OptiS	Remarks
Update Facilities grounds maintenance zone maps to better reflect natural resource criteria and incorporate into Base Order 11014.20A.	7.5.2		*				X	X	X	
Implement vegetation mapping and ecological field analysis studies, where needed.	7.5.2	*	*	*	*	*			X	Reworded to better reflect activity
Evaluate and implement appropriate recommendations from vegetation mapping and ecological field analysis studies completed.	7.5.2	*	*	*	*	*			X	Reworded to better reflect activity
HI0820012M Replace Invasive Vegetation-Reduce Fire Risk-MCTAB	7.5.2	*	*				X	X	X	New action in 2006 INRMP, grew from HI20012 earlier phases
Continue established vegetation and grounds maintenance management practices for Ulupaʻu Head WMA and Range Facility.	7.5.3	*	*	*	*	*	X	X	X	
Evaluate and implement appropriate recommendations from the HI21005 Ulupa'u Crater Fire Management Study.	7.5.3	*	*	*	*	*	X	X	X	
HI21008 Improve Water Delivery with Water Cannons/Reduce Fire Risk	7.5.3	*	*	*	*	*	X	X	X	Carryover project
HI21005 Ulupaʻu Crater Fire Management Study - Update/Revise	7.5.3					*	X	X	X	New action in 2006 INRMP
Formally assign grounds maintenance and landscape management oversight duties to responsible personnel.	7.5.4	*	*	*	*	*	X	X	X	
Ensure assigned personnel obtain focused training on sustainable landscaping BMPs and monitoring protocols.	7.5.4	*	*	*	*	*	X	X	X	
Evaluate and implement appropriate recommendations from the HI20012 Invasive Species Management Study.	7.5.4	*	*	*	*	*	X		X	
Develop and apply performance measures to monitor landscape improvement projects, and make appropriate adjustments.	7.5.4	*	*	*	*	*			X	
Sustain and improve the demonstration native plant landscape around the Environmental Department building complex at MCBH-KB.	7.5.5	*	*	*	*	*	X		X	
Sustain and improve demonstration native plant riparian gardens (on MCBH-KB and at MCTAB).	7.5.5	*	*	*	*	*	X		X	
Sustain and improve the Front Gate Static Display project (HI20011) native landscaping component.	7.5.5	*	*	*	*	*			X	
Evaluate placement of a volunteer coordinator billet in LE and implement appropriate recommendations.	7.5.5					*			X	

Table E3-2: MCBH INRMP Update - COA Five Year Implementation Plan (CY07-CY11)

Active and Programmed Management Actions	Obj	CY 07	08	09	10	11	Alternatives OperS	ComS	OptiS	Remarks
Course of Action 7.6 Quality of Life/Outdoor Recreation Management										
Complete HI41786 Outdoor Recreation/Outreach Study for MCBH-KB.	7.6.1		*				X	X	X	Carryover project
Evaluate and implement appropriate recommendations from the completed HI41786 Outdoor Recreation/Outreach Study for MCBH-KB.	7.6.1			*			X		X	
Initiate a study of Outdoor Recreation improvements needed on MCBH parcels other than MCBH-KB.	7.6.1				*		X		X	
Continuously assess and improve user awareness of environmental constraints associated with Nu‘upia Ponds Recreational Run Trail.	7.6.2	*	*	*	*	*	X	X	X	New action in 2006 INRMP
Display/distribute *available* presentation materials on outdoor recreation opportunities and constraints.	7.6.2	*	*	*	*	*	X	X	X	
Develop/distribute *additional* presentation materials on outdoor recreation opportunities and constraints.	7.6.2	*	*	*	*	*			X	
Review and update Base SOPs covering outdoor recreation activities that impact sensitive natural resources.	7.6.2		*		*		X	X	X	
Review and update fishing policies, practices, and access protocols to reflect latest laws, best science, and use constraints.	7.6.2	*	*	*	*	*	X	X	X	
Improve programs by which on- and off-base stakeholders participate in natural resource improvement projects as a recreational activity.	7.6.2	*	*	*	*	*			X	
Explore interagency cooperative projects to reduce regional ORV impacts.	7.6.3		*		*				X	Objective changed from 7.6.4 to 7.6.3
Review the State and local government outdoor recreation plans for INRMP compatability and collaborative project opportunities.	7.6.3		*		*				X	Objective changed from 7.6.4 to 7.6.3
Develop a program at MCTAB’s beach campground that incorporates natural resource sensitivity criteria.	7.6.3		*		*				X	Objective changed from 7.6.4 to 7.6.3
Review Bellows AFS outdoor recreation program for INRMP compatibility and collaborative project opportunities.	7.6.3		*		*				X	Objective changed from 7.6.4 to 7.6.3

Table E3-2: MCBH INRMP Update - COA Five Year Implementation Plan (CY07-CY11)

Active and Programmed Management Actions	Obj	CY 07	08	09	10	11	Alternatives OperS	ComS	OptiS	Remarks
Course of Action 7.7 Resource Information Management										
Update inventory of available natural resource data and bibliographic database, and determine archival priorities.	7.7.1	*	*	*	*	*	X		X	
Implement archival action priorities, as appropriate.	7.7.1		*		*				X	
Inventory available natural resources data amenable for integration with MCBH's EGIS and determine conversion priorities.	7.7.1	*	*	*	*	*	X		X	
Implement data conversion priorities for the MCBH EGIS, as appropriate.	7.7.1		*		*		X		X	
Review and update established MCBH's EGIS natural resource data files and associated metadata for compliance with DoD standards and data accuracy.	7.7.2	*	*	*	*	*	X	X	X	
Continue to update EGIS layers (opportunistically) obtained from MCBH contracts, activities or outside agencies.	7.7.2	*	*	*	*	*	X	X	X	
Update EGIS layers (systematically) obtained from MCBH contracts, activities or outside agencies.	7.7.2		*		*		X		X	
Inventory new natural resource data, add to bibliographic database; and incorporate into MCBH EGIS, as appropriate.	7.7.2	*	*	*	*	*	X		X	
Maintain generic contract specifications to ensure delivery of data sets that are compliant with current EGIS and DoD standards.	7.7.2	*	*	*	*	*	X	X	X	
Develop and implement a standardized SOP for tracking significant natural resource observations.	7.7.2	*	*	*	*	*			X	
Inventory available natural resource data for MCBH properties other than MCBH-KB and integrate into the MCBH EGIS.	7.7.3	*	*	*	*	*	X		X	
Incorporate database requirements into relevant natural resource projects conducted on MCBH properties other than MCBH-KB.	7.7.3	*	*	*	*	*	X		X	New action in 2006 INRMP
Update EGIS strategic plan to leverage limited EGIS and AutoCAD mapping capabilities of the Environmental and Facilities Departments regarding natural resource data.	7.7.4	*					X		X	

Table E3-2: MCBH INRMP Update - COA Five Year Implementation Plan (CY07-CY11)

Active and Programmed Management Actions	Obj	CY 07	08	09	10	11	Alternatives OperS	ComS	OptiS	Remarks
Evaluate and implement appropriate recommendations from the updated EGIS Strategic Plan.	7.7.4		*						X	
Develop and implement coordination protocols between the Environmental and Facilities Departments to ensure use of current and standard natural resources data sets.	7.7.4	*	*	*	*	*	X		X	
Inventory GIS and other databases developed by other agencies with similar natural resource mandates.	7.7.5					*			X	
Explore development of cooperative data sharing agreements with other agencies.	7.7.5					*			X	
Evaluate and update existing natural resources databases and administrative and technical support systems, as appropriate.	7.7.6	*	*	*	*	*	X		X	
Develop, annually update, and implement an EGIS-specific training plan for relevant staff.	7.7.6	*	*	*	*	*	X	X	X	
Develop and implement an SOP for clarifying roles and responsibilities for users of the MCBH EGIS system.	7.7.6					*	X		X	
Provide in-house personnel easier access to commonly used GIS maps and other natural resources data.	7.7.6	*	*	*	*	*	X		X	
Maintain a readily accessible standard set of electronic natural resource management data.	7.7.6	*	*	*	*	*	X	X	X	
Resolve issues related to GPS data collection and NMCI.	7.7.7	*	*				X	X	X	Carryover project
Develop and implement standards for collection of GPS data and its incorporation into MCBH's EGIS.	7.7.7			*	*	*	X	X	X	
Develop an SOP for using GPS in the field and for data translation, with a software interface that is user friendly for Environmental Department personnel.	7.7.7					*			X	

Notes:

Carryover projects are those that were also active during the 2002-2006 implementation time frame of the original INRMP/EA and are continuing at a later phase of development in this next five year INRMP update period. Some small changes in project names were made.

E4. FUNDING DESCRIPTION

This appendix reviews and summarizes the funding sources used to implement the COA Component Plans described in the 2001 INRMP/EA and the updated INRMP. It also includes updated guidance on funding.

INRMP FUNDING

Executive Order 12088 of October 13, 1978, requires the Marine Corps: 1) to ensure that adequate funds are planned, programmed, and budgeted to meet Marine Corps environmental responsibilities; and 2) to ensure that, once budgeted, these funds are not reprogrammed to cover other non-environmentally-related shortfalls in the year of execution.

MCBH has a long history of increasing support for its natural resource projects through building conservation staff and securing project funding from a range of sources (see Sections 9.3.2 and 9.3.3, 2001 INRMP/EA). During the 2002-2006 timeframe of the 2001 INRMP/EA implementation, the program was funded at the $8M level. About the same level of funding will continue in the implementation period of the 2006 INRMP update. (See Table 2-2 and Table E3-1, Appendix E3 for further details). A sustained level of funding and staffing support illustrates the adequacy of funding to support implementation of this INRMP.

INRMP FUNDING OBLIGATIONS AND LIMITATIONS

The HQ USMC INRMP Handbook (p. 27-28) states: *"Since the Sikes Act requires implementation of the INRMP, there is a clear fiscal connection between INRMP preparation and budgeting. Implementation of the INRMP is subject to availability of funds. Funding to implement natural resources management will largely come from the installation. Accordingly, it is vital the installation comptroller actively participate in INRMP preparation and/or revision. HQMC funding sources should be requested only for emergent, unforeseen or emergency funding situations." AND "Formal adoption of an INRMP by the installation commander constitutes a commitment to seek funding and execute, subject to the availability of funding, all "must fund" projects and activities in accordance with specific timeframes identified in the INRMP. Under the Sikes Act, any natural resources management activity that is specifically addressed in the plan must be implemented (subject to availability of funds). Failure to implement the INRMP is a violation of the Sikes Act and may be source of litigation"* (HQ USMC 2006).

MCBH's INRMP funding tables display projects that have been programmed to occur as part of the long-term POM-2008 funding commitment planning process (see Table E3-1, Appendix E3), and HQ USMC reviewers have validated that the programmed projects meet valid needs of the program. At time of this writing, that means that MCBH has every intention of funding these projects, based on current trends and projections of available resources to do so. However, as per the INRMP Handbook, "All actions contemplated in this INRMP are subject to the availability of funds properly authorized and appropriated

under federal law. Nothing in this INRMP is intended to be nor shall be construed to be a violation of the Anti-Deficiency Act, 31 USC § 1341."

FUNDING SOURCES

Most of the natural resources project funds for implementation of the INRMP program come from Operation and Maintenance Marine Corps dollars (O&MMC). These are financed from one of two sources: 1) Installation operating funds (OPBUD) and 2) Headquarters Marine Corps (CMEP). Both installation OPBUD and HQMC CMEP O&MMC funds are appropriated for one year. Installations must obligate these funds in the same fiscal year they are received, but implementation of any project using these funds can extend up to five years. The Environmental Projects program provides another source of funds to perform projects in the M2/R2 program. These are maintenance and construction projects of a design/build nature and are funded by CMEP dollars.

There are other potential funding sources for natural resources projects, some of which have been used by MCBH. They include several reimbursable accounts (e.g., Agricultural Outlease) that are centrally managed by Headquarters Marine Corps; various DoD special fund accounts, such as the Legacy Resources Management Program; and various cost sharing grants. For additional details, see Sections 9.3.1 and 9.3.2, 2001 MCBH INRMP/EA.

FUNDING CLASS DEFINITIONS AND FUNDING PRIORITIES

Due to inherent budgetary limitations and a host of environmental compliance responsibilities, DoD has devised an implementation priority and funding priority-rating system to determine how to ration environmental dollars in any given fiscal year. When programming INRMP actions, these rating systems apply and are applied to the management actions listed in pertinent Tables in Appendix E3. Management actions in this INRMP fall into Class II except for annually recurring, baseline budget items such as staff salaries, materials, and training that fall under Class 0 for funding. The funding plan for the Proposed Action Alternative, Operational Stewardship, is highly likely to be funded as depicted, since it is based on historical funding trends and is a projection of the existing, ongoing level of funding and staff support. Barring any unforeseen national military mobilization emergency or other Congressionally-driven dictates at time of this INRMP publication, the Proposed Funding plan is expected to be implemented.

Enclosure 4 of DoD Instruction 4715.3 of May 3, 1996, *Programming and Budgeting Priorities for Conservation Priorities*, explains the definition of Classes 0, I, II, and III in further detail, is reprinted at the end of Appendix E. Guidance is also included in the *Handbook for Preparing, Revising, and Implementing INRMPs on Marine Corps Installations* (HQ USMC 2006). In summary:

Compliance Class 0 (Recurring Natural and Cultural Resources Conservation Management Requirements): Funding for recurring actions associated with the personnel and daily administrative costs associated with developing, implementing, reviewing, and updating the INRMP; [*From INRMP Handbook: Class 0 shall contain any INRMP actions necessary to rehabilitate or prevent resource degradation that may affect military readiness.*]

Example: Salaries of environmental staff executing INRMP actions.

Compliance Class I (Current Compliance): Funding for management actions needed due to an installation being currently out of compliance and/or in need of funds that are immediate and essential to maintain operational integrity or sustain military readiness; [*From INRMP Handbook: Class 1 shall contain requirements to manage federally listed threatened or endangered species, proposed federally listed threatened or endangered species, candidates species, proposed critical habitat on the installation or court ordered actions to prevent listing of species or habitat that could affect military readiness.*]

Example: Funding to develop this INRMP by the congressional deadline imposed by the Sikes Act Improvement Act of 1997,

Compliance Class II (Maintenance Requirements): Funding for management actions needed that are for an installation that is not currently out of compliance in that area, but shall be if the actions are not implemented in time to meet an established deadline beyond the year for which they are being programmed;

Example: Funding for a study and associated actions to better protect stream or coastal waters from sedimentation due to nearby erosion of ground features that, if not addressed soon, will degrade quality of these stream or coastal waters for wildlife inhabitants.

Compliance Class III (Enhancement Actions Beyond Compliance): Funding for management actions that enhance conservation resources, the integrity of the installation mission, or are needed to address certain goals and objectives in the INRMP that cannot be linked to a specific law or compliance deadline.

Example: Funding to develop and erect interpretive exhibits or publish brochures to educate the public about natural resources conservation actions and concerns.

INRMP preparation is considered a Class 1 action. INRMP revisions (after initial preparation) are considered to be Class 2 in the years prior to the year it is due, and Class 1 the year the revision is due.

In general, at MCBH, Class 0 Fund actions (e.g., civilian INRMP staff salaries) are programmed through OPBUD dollars as annually recurring costs. Class I, II, and III INRMP management actions are either performed in-house using OPBUD source dollars or are funded through special one time projects using CMEP source dollars. Funding supplements to these programs can come through Other Sources as described above. The funding Table E3-1 (Appendix E3) indicates whether MCBH INRMP project actions listed fall under the OPBUD or CMEP source dollars at time of this writing.

Funding priorities among Classes are generally as follows. Class 0 actions are the essential salary and administrative support actions to sustain the INRMP program. Class I actions are those that take priority over Class II actions, while Class III actions are likely to be implemented when staffing and funding is available after Class I and II needs are addressed. Within each funding class, additional prioritization takes place based in general on how well that action conforms to the ecosystem management principles which drive the content of this INRMP.

E4. ENCLOSURE 4

PROGRAMMING AND BUDGETING PRIORITIES FOR CONSERVATION PROGRAMS

E4.1. CLASS 0: RECURRING NATURAL AND CULTURAL RESOURCES CONSERVATION MANAGEMENT REQUIREMENTS.

Includes activities needed to cover the recurring administrative, personnel, and other costs associated with managing DoD's conservation program that are necessary to meet applicable compliance requirements (Federal and State laws, regulations, Presidential Executive orders, and DoD policies) or that are in direct support of the military mission. Also included are environmental management activities associated with the operation of facilities, installations, and deployed weapons systems. Recurring costs consist of manpower, training, supplies, hazardous waste disposal, operating recycling activities, permits, fees, testing and monitoring and/or sampling and analysis, reporting and recordkeeping, maintenance of environmental conservation equipment, and compliance self-assessments.

E4.2. CLASS I: CURRENT COMPLIANCE.

Includes projects and activities needed because an installation is currently out of compliance (has received an enforcement action from a duly authorized Federal or State agency, or local authority); has a signed compliance agreement or has received a consent order; has not met requirements based on applicable Federal or State laws, regulations, standards, Presidential Executive orders, or DoD policies, including those listed in enclosure 2; and/or are immediate and essential to maintain operational integrity or sustain readiness of the military mission. "Class I" also includes projects and activities needed that are not currently out of compliance (deadlines or requirements have been established by applicable laws, regulations, standards, DoD policies, or Presidential Executive orders, but deadlines have not passed or requirements are not in force) but shall be if projects or activities are not implemented in the current program year. Those activities include the following:

E4.2.1. Environmental analyses for natural and cultural resource conservation projects, and monitoring and studies required to assess and mitigate potential impacts of the military mission on conservation resources.

E4.2.2. Planning (e.g., 42 U.S.C. 4341 (reference (d)) documentation, master

plans, and integrated natural and cultural resource management plans, etc.).

E4.2.3. Baseline inventories of natural and cultural resources.

E4.2.4. Biological assessments, surveys, or habitat protection for a specific listed species, critical for the protection of the species so that proposed or continuing actions can be modified in consultation with the U.S. Fish and Wildlife Service or the U.S. National Marine and Fisheries Service to prevent "taking" of the species.

E4.2.5. Inventories and surveys of historical and archeological sites critical for the protection of cultural resources so that continuing actions can be modified in consultation with the Advisory Council for Historic Preservation.

E4.2.6. Mitigation to meet existing regulatory permit conditions or written agreements, such as those required under Section 4341 of 42 U.S.C., Sections 1361-1407, 703, and 470 et seq. of 16 U.S.C., and Section 1251 et seq. of 32 U.S.C., and (references (d), (h), and (p)), and included in documents required by Section 4341 of 42 U.S.C. (reference (d)).

E4.2.7. Nonpoint source pollution or watershed management studies or actions needed to meet compliance dates cited in approved State coastal nonpoint source pollution control plans, as required to meet consistency determinations under Sections 1451 et seq. and 703 et seq. of 16 U.S.C. (reference (h)).

E4.2.8. Wetlands delineation, following existing statutory requirements, critical for the prevention of adverse impacts to wetlands without a permit so that continuing actions can be modified to ensure mission continuity, as required by 32 U.S.C. 1251 et seq. (reference (p)).

E4.2.9. Efforts to achieve compliance with requirements that have deadlines that have already passed, as cited in DoD executed agreements, such as support for the Chesapeake Bay Agreement Action Plan and the DoD Mojave Desert Ecosystem Management Initiative.

E4.2.10. Initial curation of archeological materials, as required under 32 CFR 22 and 229, Section 470 aa-ll of 16 U.S.C, and 36 CFR 78 and 79, and (references (w), (h), and (e)).

E4.2.11. Consultations with Native American groups, if reinterment of Native American remains under 25 U.S.C. 3001 (reference (u)) is part of their wishes.

E4.3. CLASS II: MAINTENANCE REQUIREMENTS.

Includes those projects and activities needed that are not currently out of compliance (deadlines or requirements have been established by applicable laws, regulations, standards, Presidential Executive orders, or DoD policies) but deadlines have not passed or requirements are not in force), but shall be out of compliance if projects or activities are not implemented in time to meet an established deadline beyond the current program year. Examples include the following:

E4.3.1. Compliance with future requirements that have deadlines.

E4.3.2. Conservation and Geographic Information System mapping in order to be in compliance with Federal, State and local regulations, Presidential Executive orders, and DoD policy.

E4.3.3. Efforts undertaken in accordance with non-deadline specific compliance requirements of leadership initiatives, such as Coastal America, the "Chesapeake Bay Agreement Action Plan," and "Mojave Desert Ecosystem Management Initiative."

E4.3.4. Wetlands enhancement, in order to achieve the President's order for "no net loss" or to achieve enhancement of existing degraded wetlands, as required under E.O. 11990 (reference (l)) and 32 U.S.C. 1251 et seq. (reference (p)).

E4.3.5. Public education programs that educate the public on the importance of protecting archeological resources as required by Section 470 aa-ll of 16 U.S.C. (reference (h)).

E4.4. CLASS III: ENHANCEMENT ACTIONS, BEYOND COMPLIANCE

Includes those projects and activities that enhance conservation resources or the integrity of the installation mission, or are needed to address overall environmental goals and objectives, but are not specifically required under regulation or Executive order and are not of an immediate nature. Examples include the following:

E4.4.1. Community outreach activities, such as "Earth Day" and "Historic Preservation Week" activities.

E4.4.2. Educational and public awareness projects, such as interpretive displays, oral histories, "watchable wildlife" areas, nature trails, wildlife checklists, and

conservation teaching materials.

E4.4.3. Biological assessments, surveys, or habitat protection for a candidate species for listing as "endangered or threatened."

E4.4.4. Restoration or enhancement or cultural or natural resources when no specific compliance requirement dictates a course or timing of action.

E4.4.5. Reinterment of Native American remains on land managed or controlled by the Department of Defense.

E4.4.6. Management and execution of volunteer and partnership programs.

APPENDIX F
SUMMARY OF DATA MANAGEMENT IMPROVEMENTS

This appendix includes the information on data management improvements that have been made during the previous INRMP implementation period under COA Component Plan 7.7 Resource Information Management.

F1. MCBH Natural Resources Bibliography

F2. Spatial Data Management

F3. Natural Resources Databases

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F1. MCBH NATURAL RESOURCES BIBLIOGRAPHY

Significant progress has been made in establishing an extensive natural resources bibliography of natural resources information records since implementation of the 2001 MCBH INRMP/EA. This helps address INRMP Objective 7.7.1 to automate available natural resources data for ease of reporting, trend analysis, and eventual integration with MCBH's EGIS. For other details related to this on-going INRMP project (HI20015 Natural Resources Data Archive/Electronic Retrieval System), refer to COA Component Plan 7.7 Resource Information Management.

The bibliographic portion of this project was initiated in FY03 to inventory, organize, and—where appropriate—prioritize natural resources records needing conversion to more modern and stable electronic or magnetic formats and/or better storage in more sustainable archives (e.g., acid free containers). This project is being carried out with in-house natural resources staff and the technical assistance of a Navy document management specialist, a contracted librarian-type assistant, and the services of the DoD's Automated Printing Services.

The bibliographic compilation includes all natural resources data accumulated in various documents and media formats (paper, magnetic, electronic, photographic, etc.); an assessment of their current condition; conversion of critical documents to archival formats for long-term storage and retrieval purposes; and the initiation of research on Electronic Document Management (EDM) technology available to ease archiving, data sharing, reporting, trend analysis, and EGIS integration purposes.

As of November 2006, over 700 natural resources documents have been inventoried, and an assessment of their current condition has been made. A critical sub-set of these documents has been scanned into more modern, stable electronic or magnetic formats. An excerpt of the systematic electronic bibliography of resources that was developed and continues to grow is included as an example. A very important component of the process (not shown in the example) is the conversion of valuable oral history information, television coverage, and special media productions of natural resources projects and events over the last 25 years, originally preserved on cassette and videotape formats, into more stable formats (e.g., CD, mpegs). Over time, this component of the bibliography will have to be periodically converted to keep pace with ever-changing formats in the communications industry. Selective copies are being shared with appropriate outside institutions (e.g., State archives, University of Hawaii Library system), to ensure their preservation for future generations so that the public has access to historical information on how the US Marine Corps has been managing public trust resources on their installations in Hawai‘i.

Table F1-1. MCBH Environmental Department: Natural Resources Bibliography (Excerpt)

Title	Date	Author	Details	Comptrak #	INRMP Category	Media	File Size	Unit of Measure	Reference #s[1]
Specifications for Restore Watershed/Repair Mokapu Central Drainage Channel, Marine Corps Base Hawai'i, Kane'ohe Bay, Final Submittal.	2005	Hawai'i Pacific Engineers	Specifications for Restore Watershed/Repair Mokapu Central Drainage Channel project at MCBH. Restoration of the MCDC would provide for ecological, aesthetic and recreational functions of the basin while reducing the adverse impacts of flood inundation in a cost effective manner. Prepared for Naval Facilities Engineering Command Pacific, Pearl Harbor Hawai'i. 21 July 2005.	HI20010	Wtrshd	paper	166	pages	Contract N62742-00-D-0006, Task Order No. 0010, HPE 2001036
Submittals and Critical Items List for Restore Watershed/Repair Mokapu Central Drainage Channel, Marine Corps Base Hawai'i, Final Submittal.	2005	Hawai'i Pacific Engineers	List of submittals and critical items for Prepared for Restore Watershed/Repair Mokapu Central Drainage Channel project at MCBH. Restoration of the MCDC would provide for ecological, aesthetic and recreational functions of the basin while reducing the adverse impacts of flood inundation in a cost effective manner. Naval Facilities Engineering Command Pacific, Pearl Harbor Hawai'i. 21 July 2005.	HI20010	Wtrshd	paper	11	pages	Contract N62742-00-D-0006, Task Order No. 0010, HPE 2001036
Testing of the Expeditionary Fighting Vehicle Prototypes at Marine Corps Base Hawai'i, California, Finding of No Significant Impact.	2005	Department of the Navy	Finding of No Significant Impact to test the Expeditionary Fighting Vehicle (EFV) prototype in waters off Pyramid Rock Beach and Ft. Hase Beach, MCBH-KB, O'ahu. The in-water tests would assess the durability and reliability of EFV systems at repetitive high sea states in multiple modes of operation. June 2005.	N/A	N/A	paper	3	pages	
Testing of the Expeditionary Fighting Vehicle Prototypes at Marine Corps Base Hawai'i, California, Final Environmental Assessment.	2005	Department of the Navy	Final Environmental Assessment to test the Expeditionary Fighting Vehicle (EFV) prototype in waters off Pyramid Rock Beach and Ft. Hase Beach, MCBH-KB, O'ahu. The in-water tests would assess the durability and reliability of EFV systems at repetitive high sea states in multiple modes of operation. June 2005.	N/A	N/A	paper	100	pages	
Testing of the Expeditionary Fighting Vehicle Prototypes at Marine Corps Base Hawai'i, California, Finding of No Significant Impact and Final Environmental Assessment.	2005	Department of the Navy	Finding of No Significant Impact and Final Environmental Assessment to test the Expeditionary Fighting Vehicle (EFV) prototype in waters off Pyramid Rock Beach and Ft. Hase Beach, MCBH-KB, O'ahu. The in-water tests would assess	N/A	N/A	electronic (CD)	5	MB	

[1] In addition, columns containing current location and quantity exist in the database, but are not shown in this example.

Excerpt

Table F1-1. MCBH Environmental Department: Natural Resources Bibliography (Excerpt)

Title	Date	Author	Details	Comptrak #	INRMP Category	Media	File Size	Unit of Measure	Reference #s[1]
			the durability and reliability of EFV systems at repetitive high sea states in multiple modes of operation. CD contains FONSI and EA in PDF format. June 2005.						
Under Siege: Invasive Species on Military Bases	2005	Westbrook, C., and K. Ramos	Through 12 case studies from Army, Navy, Air Force, and Marine Corps installations, this report focuses on the impacts of invasive species on the military. October 2005.	N/A	N/A	paper	50	pages	
Under Siege: Invasive Species on Military Bases	2005	Westbrook, C., and K. Ramos	Through 12 case studies from Army, Navy, Air Force, and Marine Corps installations, this report focuses on the impacts of invasive species on the military. October 2005.	N/A	N/A	electronic (CD)			
Department of Defense Conservation Conference 2004: Presentations & Other Materials	2004	U.S. Department of Defense	DoD Conservation Conference 2004, "Integrating Natural and Cultural Resources with Readiness, Conference Guide and Information Package". Contains presentations from federal employees and their contractors. August 22-27, Savannah, Georgia.	N/A	INRMP	electronic (CD)	592	MB	
GIS Mapping and Control of Invasive Species/Erosion/Brushfire Control on MCBH Training Lands ("Vegetation Survey of Marine Corps Training Area Bellows 2003")	2004	Geo Insight International, Inc.	Report designed to provide an analysis of the Marine Corps Training Area-Bellows landscape, to assess the problems based on its vegetation and land use, and to suggest ways of managing the land in a sustainable manner. Prepared for: Environmental Dept., Marine Corps Base Hawai'i, prepared through Naval Facilities Engineering Services Center (NFESC). April 2004.	HI20012	G & L	paper	47	pages	
GIS Mapping and Control of Invasive Species/Erosion/Brushfire Control on MCBH Training Lands ("Vegetation Survey of Marine Corps Training Area Bellows 2003")	2004	Geo Insight International, Inc.	Electronic copy of report designed to provide an analysis of the Marine Corps Training Area-Bellows landscape, to assess the problems based on its vegetation and land use, and to suggest ways of managing the land in a sustainable manner. April 2004.	HI20012	G & L	electronic (CD)	649	MB	

Excerpt

Table F1-1. MCBH Environmental Department: Natural Resources Bibliography (Excerpt)

Title	Date	Author	Details	Comptrak #	INRMP Category	Media	File Size	Unit of Measure	Reference #s[1]
GIS Mapping and Control of Invasive Species/Erosion/Brushfire Control on MCBH Training Lands ("Vegetation Survey of Marine Corps Training Area Bellows 2003")	2004	Geo Insight International, Inc.	Electronic copy of documents and GIS maps for report designed to provide an analysis of the Marine Corps Training Area-Bellows landscape, to assess the problems based on its vegetation and land use, and to suggest ways of managing the land in a sustainable manner. Includes: 2 copies of the DVD. April 2004.	HI20012	G & L	electronic (CD)	1.34	GB	
GIS Mapping and Control of Invasive Species/Erosion/Brushfire Control on MCBH Training Lands ("Vegetation Survey of Marine Corps Training Area Bellows 2003")	2004	Geo Insight International, Inc.	Electronic copy of documents and GIS maps for report designed to provide an analysis of the Marine Corps Training Area-Bellows landscape, to assess the problems based on its vegetation and land use, and to suggest ways of managing the land in a sustainable manner. Includes: 1 copy of the 3-part CD set. April 2004.	HI20012	G & L	electronic (CD)	1.37	GB	
Interpretive Sign for MCBH Klipper Golf Course Ponds Environmental Enhancement (Interpretive signage and images), Marine Corps Base Hawai'i, Kane'ohe Bay	2004	Design Ng Company for Hawai'i Design Associates, Inc.	Sign posted at golf course, constructed of an exterior rated Scotch Cal vinyl print (24"x36") laminated to a 3mm Sintra backing and framed in oak. See figure 3-1 in the project report. Project implements an earlier-prepared concept design to enhance waterbird habitat conditions at the constructed ponds/wetlands on the Klipper Golf Course. Prepared by Hawai'i Design Assoc., through Naval Facilities Engineering Service Center, for the Environmental Dept., MCBH.	HI80726	QL/EE/OR	sign, vinyl print	1	page	
Landfill and Northeast Crater Catchment Erosion Assessment Report With Recommendations, Final Report	2004	Sustainable Resources Group Int'l Inc.	Electronic version of a report summarizing a project to delineate erosion hotspots on Ulupa'u Crater at Marine Corps Base Hawai'i-Kane'ohe Bay, and develop cost effective design solutions to reduce and arrest erosion at specific sites. Prepared for Environmental Department, Marine Corps Base Hawai'i, prepared through Naval Facilities Engineering Services Center. June 2004.	HI20013	Wtrshd	electronic (CD)	122	MB	N47408-02-P-6639 P0001

Excerpt

Table F1-1. MCBH Environmental Department: Natural Resources Bibliography (Excerpt)

Title	Date	Author	Details	Comptrak #	INRMP Category	Media	File Size	Unit of Measure	Reference #s[1]
Landfill and Northeast Crater Catchment Erosion Assessment Report With Recommendations, Final Report	2004	Sustainable Resources Group Int'l, Inc.	Report summarizing a project to delineate erosion hotspots on Ulupa'u Crater at Marine Corps Base Hawai'i-Kane'ohe Bay, and develop cost effective design solutions to reduce and arrest erosion at specific sites. Prepared for: Environmental Dept., Marine Corps Base Hawai'i. Prepared through: Naval Facilities Engineering Services Center. June 2004.	HI20013	Wtrshd	paper	178	pages	N47408-02-P-6639 P0001
Landfill and Northeast Crater Catchment Erosion Assessment Report With Recommendations, GIS Files	2004	Sustainable Resources Group Int'l, Inc.	GIS data and map files for report summarizing a project to delineate erosion hotspots on Ulupa'u Crater at Marine Corps Base Hawai'i-Kane'ohe Bay, and develop cost effective design solutions to reduce and arrest erosion at specific sites. Prepared for: Environmental Dept., Marine Corps Base Hawai'i. Prepared through: Naval Facilities Engineering Services Center. June 2004.	HI20013	Wtrshd	electronic (CD)	649	MB	N47408-02-P-6639 P0001
Maintenance Manual with Species Identification Guide, Klipper Golf Course Ponds, Marine Corps Base Hawai'i, Kane'ohe Bay	2004	Hawai'i Design Associates, Inc. and Sustainable Resources Group Int'l, Inc.	Document prepared under contract N47408-00-P-6205. It is an update of a manual by the same name prepared by the Institute for Sustainable Development with AECOS, Inc, under contract to Geo InSight Int'l, Inc. for the MCBH Environ. Dept. Apr 1998	HI80726	Wetlnd	paper	35	pages	Contract N4708-94-D-7404, DO 20, Mod 4.
Marine Debris and Derelict Fishing Gear	2004	Hawai'i Audubon Society	Color poster by the Hawai'i Audubon Society, Pacific Fisheries Coalition Project. Describes the consequences of illegal dumping and loss of marine debris and derelict fishing gear. Dimensions 17" x 22"	N/A	QL/EE/OR	paper	1	page	
Masters of Amphibious Assault	2004	USMC and USFWS	Color poster produced as part of "Saving a Few Good Species" partnership series between USMC and USFWS. Poster "unveiled" during ceremony at Nu'upia Ponds WMA, January 2004. Dimensions 18" x 24"	N/A	QL/EE/OR	paper	1	page	

Excerpt

Table F1-1. MCBH Environmental Department: Natural Resources Bibliography (Excerpt)

Title	Date	Author	Details	Comptrak #	INRMP Category	Media	File Size	Unit of Measure	Reference #s[1]
MCBH Klipper Golf Course Ponds Environmental Enhancement (Final report, maintenance manual, report photos, Autocad drawings). Marine Corps Base Hawai'i, Kane'ohe Bay	2004	Hawai'i Design Associates, Inc.	Project implements an earlier-prepared concept design to enhance waterbird habitat conditions at the constructed ponds/wetlands on the Klipper Golf Course. Prepared by Hawai'i Design Assoc., through Naval Facilities Engineering Service Center, for the Environmental Dept., MCBH. February 2004. Contents: Final report, maintenance manual, report photos, Autocad drawings	HI80726	Wetlnd	electronic (CD)	83	MB	Contract No. N47408-00-P-6205, HDA# 100031
MCBH Klipper Golf Course Ponds Environmental Enhancement (Interpretive signage and images), Marine Corps Base Hawai'i, Kane'ohe Bay	2004	Hawai'i Design Associates, Inc.	Project implements an earlier-prepared concept design to enhance waterbird habitat conditions at the constructed ponds/wetlands on the Klipper Golf Course. Prepared by Hawai'i Design Assoc., through Naval Facilities Engineering Service Center, for the Environmental Dept., MCBH. February 2004. Contents: Interpretive signage and images	HI80726	Wetlnd	electronic (CD)	271	MB	Contract No. N47408-00-P-6205, HDA# 100031
MCBH Klipper Golf Course Ponds Environmental Enhancement, Final Report. Marine Corps Base Hawai'i, Kane'ohe Bay	2004	Hawai'i Design Associates, Inc.	Project implements an earlier-prepared concept design to enhance waterbird habitat conditions at the constructed ponds/wetlands on the Klipper Golf Course. Prepared by Hawai'i Design Assoc., through Naval Facilities Engineering Service Center, for the Environmental Dept., MCBH. February 2004.	HI80726	Wetlnd	paper	71	pages	Contract No. N47408-00-P-6205, HDA# 100031
MCBH Marine Inventory Map for Marine Resources Survey, Draft	2004	USFWS	Preliminary printout showing bathymetry in 500-yard buffer zone around Mokapu Peninsula. Bathymetry source: SHOALS LIDAR, collected in Nov. 2000. Prepared by USFWS for MCBH, 18 Feb 2004. 36" x 60"	HI20009	C & MR	paper	1	page	
MCBH Inventory Study Areas for Marine Resources Survey, Draft	2004	USFWS	Preliminary printout showing 11 study areas in 500-yard buffer zone around Mokapu Peninsula and GPS points where rapid ecological data was collected. Prepared by USFWS for MCBH, 15 June 2004. 36" x 38"	HI20009	C & MR	paper	1	page	

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Excerpt

F2. SPATIAL DATA MANAGEMENT

Continuous data standardization has benefits for natural resource management purposes, including land use planning and encroachment management. As described in the 2001 INRMP/EA (Section 7.7 and Appendix B), significant progress in standardizing the data contained in the MCBH EGIS was made in association with publication of that document. Available spatial information from MCBH properties (MCBH-KB, MCTAB, MCBH-CS and Puuloa Training Facility) was consolidated from various isolated, base-centric sources (e.g. AutoCAD, Arc/INFO compatible files) and standardized to a real-world coordinate system used by the State of Hawaii, which facilitated potential data exchange with outside agencies such as the State of Hawaii, USFWS, and NOAA. This was an important consideration in helping MCBH comply with the federal requirement to follow an ecosystem approach to resource management (i.e., considering natural resource information and impacts both within and beyond its property boundaries). This was an interim solution, completed prior to the recommended integration of data between the Facilities Department and the Environmental Department. One significant accomplishment of this process was the development of a figure, and accompanying GIS data, that shows all of the MCBH O'ahu properties on a single map – a map that previously did not exist in the EGIS. However, not all spatial data maintained by the Environmental Department was converted under that effort.[1]

More recently, a HQ USMC funded Marine Corps-wide program called "GEOFidelis" begun in CY04 conducted a needs assessment and layer standardization update process. The primary goal of this effort is to create a Central GIS Repository to support DoD, DoN, and USMC-wide requirements and applications. A standardized database will facilitate integration of essential installation information into a common format to enhance decision making and maximize mission effectiveness (USMC 2004). In the first phase of program development, through contractor support, a data repository was developed containing a set of base map layers standardized throughout the USMC.[2] In addition, the MCBH Environmental and Facilities Departments were given the opportunity to request standardization of additional layers (e.g. those pertaining to natural resources management).

At the HQ USMC level, a follow-on contract for GEOFidelis program support was awarded in July 2006. The contract covers GEOFidelis program management, analysis and planning support, data management, technical analysis and support, and management of the GEOFidelis Central Repository and Portal, including support for Pacific installations (e.g. MCBH). MCBH will be supported by the GEOFidelis West Regional Center, which will provide data and application hosting. The installation data will be stored in a central database environment and only accessible by authorized staff. The system will disseminate GIS to MCBH users through web mapping capability. MCBH retains data ownership and can

[1] For the outlying properties, data available from the AutoCAD files generally included some combination of property boundaries, roads, and existing infrastructure (buildings, fences, etc.). For MCBH-KB, the available SDS-compliant data were transformed, along with a set of layers that had not yet gone through the data standardization process.

[2] These layers included (if applicable): Boundary (Base Boundary and Easements); Noise (Air and Range Installation Compatible Use Zones Noise Contours); APZ (Clear Zone (CZ) and Accident Potential Zones (APZ) 1&2; EQQD (Explosive Safety Quantity Distance); Flood Plain (100 year); Range Boundaries (Outer Boundary of Range Activities); Wetlands (ACOE and/or NWI); and Imagery (1 m resolution for Developed Areas, > 1 m resolution for Ranges).

focus on GIS analysis and data management. As part of this contract, a contractor has been assigned to MCBH (located in the Facilities Department) to provide support to both Facilities and Environmental Departments as the GEOFidelis Program continues and expands. One recent effort was to initiate a "MCBH GIS Working Group" to begin dialogue and resolution of GIS-related issues at MCBH.

The initial standardization process achieved several key outcomes. The data in the geodatabase conforms to federal Spatial Data Standards (SDS) and provides a framework (geodatabase) for additional data layers.[3] In addition, the data projection has been standardized to the North American 1983 HARN geographic coordinate system, and a single repository contains data on all MCBH properties.[4] This facilitates both in-house use of the data by MCBH staff and data-sharing with others, including federal, state and local agencies, contractors, and where appropriate, the general public. Effective data sharing supports decision-making in all areas of land, facilities, and natural resources management. By developing a standard geodatabase repository to distribute to contractors, and standard contract language containing specifications for data delivery (see this Appendix), MCBH is taking steps to ensure that future updates to the geodatabase will be compatible with existing data.

The geodatabase includes data layers from the Environmental Department and the Facilities Department. Preliminary analysis of the geodatabase completed as part of the INRMP update (by the contractor developing the figures in Appendix B) highlighted some major problems with the integrity of the geodatabase.[5] These problems included: (1) incorrect data provided; (2) absence of relevant data; (3) data gaps for particular properties; and (4) instances where Facilities-specific data was sourced from reports provided by Environmental contractors. The initial meeting of the MCBH GIS Working Group (September 2006) attempted to address some of these issues prior to the INRMP deadline. The process of conducting a thorough review of the MCBH EGIS geodatabase will be undertaken by specialists in the Facilities and Environmental Departments, with oversight by subject matter specialists and the on-site GEOFidelis contractor. Only when then layers have been verified as correct, and standardized with the appropriate data and metadata, should they be distributed as part of the geodatabase and uploaded to the GEOFidelis site.

Gaps in the data repository include complete metadata information for the various layers detailing projection, datum, source, history, and definitions of attributes and classification systems. MCBH Environmental is still in the process of quality-controlling the natural resource-specific data standardized by the contractor. Metadata needs to be developed and provided to contractors using the data repository so they have a reference as to what information is contained in the data layers. Procedures for updating the data repository also need to be developed so that the central database maintains the most current information. Access to the data repository continues to be problematic, as the software to support use of the database is only available on one individual's computer.

[3] SDS is the standard for GIS implementation throughout the DoD, as well as the de facto standard for GIS implementation in other Federal, State, and local government organizations. The pursuit of a standard is in part, a response to Executive Order 12906: Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure (NSDI).

[4] This geodatabase does not yet include all available data for all MCBH properties.

[5] This geodatabase should be considered 'draft and incomplete' and should not, at this point, be distributed to contractors or partner agencies as a dataset that represents accurate geospatial data for MCBH properties.

Future improvements to the natural resources data contained in the geodatabase involve building a more robust data repository with data layers that contain supporting information in associated databases. Currently, most of the EGIS data layers are geographic and graphic in nature and do not have associated non-graphic databases. Recent efforts to collect geographic data and associated parameters (e.g. stilt nest locations), represent steps that have been taken in this direction. In addition, there is information, data sets, and metadata associated with various graphic layers in the MCBH EGIS system that are maintained largely in hard-copy files or within individual staff memories. Future efforts can concentrate on making this information available within the geodatabase. The Environmental Department needs to be able to create, retrieve, maintain, update, manage and analyze all GIS data layers pertinent to this INRMP from both graphic and non-graphic sources, hard-copy and memory, and from both internal and external agency sources.

In addition, MCBH needs to expand the geodatabase to include additional natural resource layers on Mokapu as well as for other MCBH properties (e.g., MCTAB, Camp H.M. Smith, Waikane Valley Impact Area, and Puuloa Training Facility). Along with natural resource information specific to each property, MCBH needs to be able to display and analyze information about multiple properties or regional ecosystem issues on various customized decision-support maps for a variety of uses (e.g., plans, military exercises, public education and outreach, environmental assessment preparation). Some of these data were readily available from partner agencies (e.g. soil data from NRCS). Although the recently completed data standardization will allow for easier compatibility with other agencies data, more site specific data for MCBH properties will be beneficial for planning purposes.

HQ USMC will not fund updates to the EGIS per se, only those that are built into specific projects. Updates and special decision-support maps occur based on Command priority and availability of funds on a project-specific basis. Much of the future of the MCBH EGIS thus depends on relevant Environmental and Facilities Department staff members understanding the basics of how the EGIS functions, the types of products possible, and ensuring that agencies through which contracts are awarded (e.g., Army COE; PACNAVFACENGCOM; NFESC; GSA) help enforce uniform map- and data-base standards. It also depends upon having appropriately skilled and trained EGIS technical staff available to clearly communicate how the system performs to non-technical management users of the system products. Likewise, it requires management with vision and by leaders who understand the importance of organizing resource information for GIS input and to support EGIS staff, equipment, training, and user needs. Finally, it requires development and enforcement of contract specifications to help realize this vision for maps/databases developed within the context of funded projects, vice stand-alone GIS projects.

MARINE CORPS BASE HAWAII: SPECIFICATIONS FOR DIGITAL DATA.

Any maps, drawings, figures, sketches, databases, spreadsheets, or text files prepared for this contract shall be provided in both hard copy and digital form. The hard copy deliverables are defined in a previous section of this statement of work.

Text, Spreadsheet, and Database Files:
The Marine Corps standard computing software is Microsoft Office. Final Reports and other text documents shall be provided in Microsoft Word format **AND** Adobe Portable Document Format (PDF). Spreadsheet files shall be provided in Microsoft Excel format. Databases shall be provided in Microsoft Access format, unless specified otherwise, as approved by the Government. **Prior to database development, the contractor shall provide the Government with a Technical Approach Document** for approval, which describes the contractor's technical approach to designing and developing the database. All text, spreadsheet, and database files shall be delivered on a compact disk read-only memory (CD-ROM) with ISO-9660 format.

Maps, Drawings, and Sketches (Digital Geospatial Data):

1. **Geospatial Data Software Format**:
Geographic data must be provided in a form that does not require translation, preprocessing, or post processing. Digital geographic maps and the related data sets shall be delivered in one of the following software formats:

a. PREFERRED: In a personal geodatabase format (Access database file) using ArcGIS 8.3. The personal geodatabase must be importable to a multi-user geodatabase using ArcSDE 8.3 or higher.
b. ALTERNATIVE 1: In double precision, standard ESRI shapefile format.
c. ALTERNATIVE 2: In double precision, uncompressed ARC/INFO export file format (.e00) using ARC/INFO Release 7.2 or higher
d. ALTERNATIVE 3: CADD - The Contractor shall consult with the Government (specifically the Project Manager and GIS Manager) concerning the use of alternative delivery formats such as AutoCAD Release 14 or higher to provide design drawings, sketches, or figures. The Government may approve the use of AutoCAD when it is determined that the format will not compromise the spatial accuracy or structure of the delivered data and that the data will easily integrate with the GIS. All digital data provided in AutoCAD shall be georeferenced in the same projection and use the same coordinate system, datum, and units as stated below.

(NOTE: ARC/INFO, ArcGIS, and ArcSDE are geographic information system software produced by the Environmental Systems Research Institute (ESRI) of Redlands, California, and comprise the software suite used by the USMC.)

2. Geospatial Data Structure:
a. **GIS Data Sets** - The Contractor shall develop all geographic information in a structure consistent with the most current version of the Spatial Data Standards for Facilities, Infrastructure and Environment (SDSFIE), also known as the National Committee for Information Technology Standards 353. The SDSFIE shall be followed for geospatial database table structure, nomenclature, attributes and symbology. The Contractor shall consult with the Government concerning modifications or additions to the SDSFIE. The Government (GIS Manager) may approve modifications to the Standard if it is determined that SDS does not adequately address subject datasets. Copies of the SDSFIE may be obtained from the CADD/GIS Technology Center's Internet homepage at http://tsc.wes.army.mil or by contacting:

Director, U.S. Army Engineer Waterways Experiment Station
CADD/GIS Technology Center
Attn: CEWES-IM-DA/Smith
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

b. CADD Drawings/Data – If the Government approves the use of CADD format for geospatial data, then the Contractor shall develop all CADD data in conformance with the latest version of the following government standards and policies:

U. S. National CADD Standards (NCS)
CADD/GIS Technology Center's AEC CADD Standards (same address above)
NAVFACINST 4250.1, Electronic Bid Solicitation

3. **Geospatial Data Projection**:
Geographic data (regardless of format) shall be provided in Stateplane Zone 3, NAD83 adjusted to the HPGN/HARN, *and units shall be meters.* Each new data file shall have the same projection and units as above insuring that they overlay existing layers without further adjustments. Each data set shall have a projection file if appropriate based on format.

New Para Map or drawing **scales** shall be determined by the Contracting Officer's Technical Representative based on size of format, if applicable. Mapping **accuracy** for the agreed scales shall conform to the American Society for Photogrammetry and Remote Sensing (ASPRS), "Accuracy Standards for Large-Scale Maps" and "Interim Accuracy Standards for Large-Scale Maps" (ASPRS, 1991). Copies of the ASPRS Accuracy Standards can be obtained on the Internet at http://www.asprs.org or by contacting:

American Society for Photogrammetry and Remote Sensing
5410 Grosvenor Lane, Suite 210
Bethesda, MD 20814-2160

4. **Geospatial Data Collection:**
a. **Mapping grade Global Positioning System** (GPS) data collection (+ 1-5 meters horizontal accuracy) shall be performed when specified in the statement of work and shall be completed in accordance with the National Geodetic Survey's Hawaii Stateplane Zone 3, NAD83 adjusted to the HPGN/HARN. Note: NGS no longer adjusts projections to the OLD HI datum.

b. **Survey grade GPS** data collection shall be performed in lieu of mapping grade when specified in the statement of work. The Geoid99 CONUS epoch shall be used for survey grade data collection, or a more current epoch if available at the time of this project. Horizontal accuracy for survey grade GPS data collection shall be + 1 centimeter at 1 sigma unless otherwise specified in the statement of work. Every effort shall be made to capture feature locations without using offsets unless obstructions are present. Data sets derived from GPS data collection efforts (mapping or survey grade) shall include metadata to record descriptions of the receiver and other equipment used during collection and processing, base stations used for differential corrections, software used for performing differential corrections, estimated horizontal and vertical accuracies obtained, and conversion routines used to translate the data into final geographic data delivery format. All metadata shall comply with the metadata format requirements as described in this document. Final geographic data delivery format shall comply with the specifications described in this document.

5. **Media for Geospatial Data Deliverables**: Geographic data shall be delivered on a separate compact disk read-only memory (CD-ROM) with ISO-9660 format –or- digital versatile disk read only memory (DVD-ROM). This media shall **contain only the value-added data sets** as designated in the Task sections of the statement of work. Do not include the Contractor's working files or original data sets that may have been used by the Contractor to develop the deliverables. "READ ME" files may be included on the geographic data media if such files provide explanation of the delivered data sets.

6. **Geographic Data Documentation**: For each digital file delivered containing geographic information (regardless of format), **the Contractor shall provide documentation** consistent with the Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata (CSDGM). Both

‘Mandatory’ and ‘Mandatory as Applicable’ fields shall be completed for each geographic data set. The documentation shall include, but not be limited to, the following:

-The name and description of the data set/data layer
-The source of the data and any related data quality information such as accuracy and time period of content
-Description of equipment or instruments used in the data collection
-Type of data coverage (point, line, polygon, etc.),
-Field names of all attribute data and a description of each field name
-Definition of all codes used in the data fields
-Ranges of numeric fields and the meaning of these numeric ranges
-The creation date of the map layer and the name of the person who created it
-A point of contact shall be provided to answer technical questions.

Metadata generation tools included in the ArcGIS suite of software shall be used in the production of the required metadata in XML format. Alternately, another metadata generation tool called document.aml is available from ESRI for use with ARC/INFO to produce the required metadata. If neither of these tools are used, the Contractor must insure that the metadata is delivered in a format that can be easily translated to the XML format.
Copies of the FGDC metadata standard can be obtained on the Internet at http://www.fgdc.gov or by contacting:

FGDC Secretariat
c/o U.S. Geological Survey
590 National Center
Reston, Virginia 22092
(703) 648-5514

7. **Geographic Data Review**: The digital geographic maps, related data, and text documents shall be included for review in the draft and final contract submittals. For each review of digital geospatial data deliverables, the Contractor shall provide a technical consultant to meet on-site at *Marine Corps Base Hawaii* with the GIS Manager and functional area subject matter experts to visually review the data deliverables on a Windows 2000 compatible system. The data will be analyzed for discrepancies in subject content, correct format in accordance with these specifications, and compatibility with the existing system. The Contractor shall incorporate review comments to data and text prior to approval of the final submittal.

Ownership:
All digital files, final hard-copy products, source data acquired for this project, and related materials, including that furnished by the Government, shall become the property of *Marine Corps Base Hawaii* and will not be issued, distributed, or published by the Contractor.

F3. NATURAL RESOURCES DATABASES

This appendix contains examples of data collected in support of the MCBH Environmental Department's ongoing natural resource management program. Recent efforts have improved electronic capture of natural resources monitoring information, building on initial efforts documented in Appendix G of the 2001 INRMP/EA. Several protocols have been put in place to more systematically document a range of natural resources data, including information on BASH, predator control, bird handling, waterbird counts, and other noteworthy natural resources observations. Over time, the automation of these and other databases will provide MCBH staff tools by which to "benchmark" progress and rely on the "best science and data available" in using "adaptive management" to improve INRMP implementation and related compliance reporting. In addition, MCBH opportunistically captures other natural resources data (via Environmental Department staff, other departments, consultants, and public/volunteers) that may or may not be associated with a particular project. These data may be in the form of field reports, photos, email observations, etc. Samples of data forms and some summaries of data collected in each of the subject areas described below have been included in this section.

While a Microsoft Access-based Waterbird Database has been developed and is being used beginning in 2006 to record detailed information collected during bird surveys, the other data described above are being housed by the Environmental Department in a Microsoft Excel *Natural Resources Observations Database*. This database includes tables originally included in Appendix G of the 2001 MCBH INRMP/EA (Table G1: Counts of Hawaiian Stilt at Nu'upia Ponds and other MCBH Sites (1947-present); Table G2: Bird Handling Records for MCBH-KB (1984-present); and Table G3: Bird Handling Records for MCBH-KB (1984-present): Shearwater Count) and a new table that was created to record noteworthy single event observations.

Bird Handling

Permits such as a Special Purpose Permit and a Depredation Permit are requested and renewed each year from USFWS that allow MCBH to take, handle or remove birds when necessary. Responsibilities are shared between the Environmental Department Natural Resources Staff and the Military Police Department Animal Control Officers in the area of bird handling. (Lethal control under the BASH program is discussed in a subsequent section.) One of the permit conditions is that data be kept on the numbers and types of birds handled under the permits and reported to USFWS as part of the annual reporting and permit renewal processes. Maintaining these data is also a best management practice for natural resources managers. The process of data collection and exchange is coordinated in order to update and maintain the bird handling database maintained by the Environmental Department. Although not a perfect system, the methodology has recently improved, facilitating easier information exchange. The current database builds on Table G2 that was compiled for the 2001 INRMP/EA and is useful for reporting purposes (e.g., annually required reports to USFWS and State DLNR). It is maintained as part of the *Natural Resources Observations Database*.

The bird handling database documents the status of any bird that is found temporarily disoriented, injured or dead on MCBH. It details the type of bird, date and time found, location found, disposition and current status. In addition to maintaining a log of handled birds, the Animal Control Officers always file an in-house Incident Report, which can be reviewed upon request. When injured, ill or dead birds are handled and collected for recuperation or necropsies by a member of the Environmental Department; a formal report is written to explain when, where, how, and the disposition of the bird before and after it was found. An Injury Illness Mortality and Salvage (IIMS) Report is a detailed reporting on situations when the incident involves an injured, ill, or dead and salvaged bird brought to staff attention. It is accompanied, when possible, with photos and maps detailing circumstances of the incident (see sample IIMS Report in this appendix). These reports are maintained by the Environmental Department.

A subset of the bird handling data of particular interest is that of the annual shearwater "fallout" on MCBH-KB. Wedge-tailed Shearwaters (Hawaiian name: 'Ua'u Kani) (*Puffinus pacificus*) are one of the most common of the nesting seabirds found on O'ahu, as well as on O'ahu's offshore islets, and at the other main Hawaiian Islands (Hebshi 2004). They nest underground in colonies at locations such as natural crevices or burrows dug in sand dunes along the coastline. The adults arrive about March and lay a single egg by June. Once hatched, the chicks develop in their burrows and are fed by the adults, who leave the burrows before dawn and return at dusk to forage on a daily basis (Hawaii Audubon Society 1989). The frequency of wedge-tailed shearwaters on O'ahu has declined due to urban encroachment and introduced mammalian predators—cats, dogs, rats, and mongooses—which have easy access to burrows, especially on the main Hawaiian islands. Another threat to their survival is due to the fact that when young birds fledge and depart their colonies in the late fall, they are often stranded on beaches and are more vulnerable to predation and/or disoriented by urban lights and fly inland toward the light rather than out to sea. Such birds collide with light poles, and fall out onto roads where they are often killed or injured by cars or predators. State-organized recovery efforts on O'ahu and elsewhere save hundreds of immature birds annually and the fall season in Hawai'i is known among birders and resource managers as the "shearwater fallout season."

As noted in Table F3-1, MCBH staff have been keeping records since 1984 on the number of reported fallen shearwaters that were rescued from various locations on MCBH-KB by MCBH staff and transferred to appropriate authorities for rest/re-release. Over time, these records reveal trends useful to natural resources managers such as the fact that the "fallout" season at this installation appears to be between September and December, and to peak in November. Also, while wedge-tailed shearwaters likely have been nesting on MCBH-KB in various locations over time, it was only recently that the development of a shearwater colony was noted in a World War II-era earthen berm feature and the adjacent natural sand dunes area besides Pa'akai Pond and Kailua Bay in the Nu'upia Ponds WMA. In 1994, during a waterbird monitoring study for MCBH by Mark Rauzon and Lance Tanino, approximately 25 burrows were first discovered in this location (Tanino and Rauzon 1994). Since then, predator control activities have been stepped up in that location during shearwater nesting and "fallout" season. This effort, in combination with the fact that this colony is located in the restricted access Nu'upia Ponds WMA has likely contributed to the increased size of the colony over the last 12 years. A one-time census of burrows taken in August 2006 by MCBH and contractor staff noted the existence of over 400 "fresh" burrows, about half of which were occupied with healthy chicks at the time of the survey (C. Volinski and D. Drigot 2006) (see Figure 10c, Appendix B).

Table F3-1. Total Reported Fallout of Shearwaters by Month (1984-2005)

Month	Number of Shearwaters
January	7
February	3
March	0
April	1
May	4
June	8
July	5
August	7
September	13
October	22
November	316
December	32
Total	418

INJURY, ILLNESS, MORTALITY, AND SALVAGE REPORT
(IIMS Report)

IIMS Report No.: 2006-MCBH-8
Map: Included
Photos: Included
Diagnostic Case Report No.: None

Incident: Injured Great Frigatebird or 'Iwa (*Fregata minor palmerstoni*)
Date of Incident: June 14, 2006
Author of Report: Christine I. Volinski, Environmental Technician, Marine Corps Base Hawaii (MCBH) Environmental Department
Date Report Completed: June 14, 2006
Location: Mokapu Peninsula, MCBH
Species: Great Frigatebird (*Frigata minor palmerstoni*)
Observation Site: Klipper Golf Course – 2nd Tee
Observers: Sgt. William Kreps, Desk Sgt, MCBH Game Warden
Item Collected: 1 Injured Great Frigatebird or 'Iwa
Collector: Sgt. Kreps

Incident: On June 14, 2006 at approximately 1230 a call was placed by Trent Belston, Klipper Golf Course Staff Member, to MCBH Game Wardens to collect an injured 'Iwa from the golf course. Sgt. Kreps responded to the call immediately and placed the injured bird into a large kennel for safe transport back to the Game Warden Shack. The 'Iwa was apparently hit by a golf ball and suffered a severely broken wing. Gordon Olayvar, MCBH Conservation Law Enforcement Officer called C. Volinski to take the bird to Sea Life Park (SLP). At 1315, C. Volinski retrieved the bird from the Game Warden shack and headed out to SLP. C. Volinski released the bird to SLP staff and veterinarians Bonnie Call and Bethany Doesher (808-259-7835) at 1412 alive and still able to move.

Location Description: MCBH Kaneohe Klipper Golf Course near the 2nd Tee Off area.

Background: 'Iwa birds are frequently seen flying overhead and diving down toward 'Iwa Pond located South West of Koloa Pond for a drink of fresh water. It is not uncommon for golfers to stop and enjoy the sight of these majestic birds flying above and diving down in great numbers for a drink of water.

Figure 1. Injured Great Frigatebird in kennel for transport to SLP, June 14, 2006.

Figure 2. Injured Great Frigatebird in kennel for transport to SLP, June 14, 2006.

Figure 3. Klipper Golf Course MCBH Women's 2nd Tee: Site where bird was struck by flying golf ball.

Figure 4. Klipper Golf Course 2nd Tee: Site where bird was picked up by MCBH Game Warden.

Figure 5. Klipper Golf Course Route Map at 2nd Tee

Wetland Areas Kbay
2nd tee
6/14/06: Area where injured 'Iwa was found
after being hit out of the air by a golf ball
from the 2nd tee.

Bird Air Strike Hazard (BASH)

The BASH program is required to minimize accidental collisions between aircraft and birds in and around the MCBH flightline (see COA Component Plan 7.1.5). Data collection is required as a part of the program implementation to document relevant data with the goal of improving effectiveness. The BASH program has been executed by cooperative agreement with and under contract to USDA Wildlife Services, with the MCBH Environmental Department providing quality control assistance as well as maintaining current the depredation permit obtained from USFWS that authorizes the harassing and/or "taking" of nuisance birds that pose flightline hazards (although lethal control is avoided wherever possible). The Environmental Department is notified of and attends BASH Quarterly Meetings, which include updates, progress reports and future recommendations to enhance the success of the program. Data collected from USDA Wildlife Services consists of lethal and non-lethal "take" data, which are input into an Excel database, as well as data on the transfer of occasional albatrosses and their eggs to other off-base locations outside of harm's way, and the records of any band data associated with these birds. This database is maintained by the Environmental Department.

Predator Control (*Wildlife Services Trapper and Bait Data Management*)

As described in COA Component Plan 7.1.1, USDA Wildlife Services conducts predator trapping on MCBH properties under terms of a cooperative agreement and annually-renewed contract with MCBH, administered through the MCBH Environmental Department. They communicate regularly with MCBH Environmental Department to determine which sites are high risks for predation and where new traps or bait stations are required. On MCBH-KB, predator control activities are focused at the Wildlife Management Areas (WMA) and surrounding MCBH property. With contractor assistance (February 2006 – January 2007) providing improved monitoring of Hawaiian stilts (systematically once a week), feedback on potential areas of concern has been regularly provided to USDA Wildlife Services. As a result, new trapping routes have been added to better protect these species of concern during their nesting seasons, and to reduce predator presence within MCBH WMA's. To monitor the effectiveness of MCBH's existing trapping route and bait station locations, the MCBH natural resources staff use GPS to record permanent bait station locations and the radius in which traps are moved around bait stations. These data are maintained into the Environmental Department's EGIS. Monitoring bait and trap locations helps to validate their effectiveness in a given area and alerts managers to needed changes. This facilitates a more efficient predator control program.

Waterbird Counts

MCBH has continued and expanded its bird counting activities in support of COA Component Plan 7.1.1 and 7.1.4. Systematic base-wide bird counts at MCBH-KB are currently (2006) conducted weekly, (as a result of available contractor staff in 2006), but may revert to opportunistic counts starting February 2007, when the term of the contract expires. The waterbird surveys collect data using the same Waterbird Survey Field Form as the State (see sample in this appendix). All data collected are maintained in a recently created Microsoft Access, Waterbird Database that was modeled after the State's field form for ease of data entry. In addition, MCBH continues to collect waterbird count data at MCBH-KB by participating in the Christmas Counts (conducted by Hawai'i Audubon Society volunteers in coordination with MCBH environmental staff) and the semi-annual waterbird counts (conducted by the State Department of Land and Natural Resources (DLNR) in coordination with MCBH environmental staff). Data are also collected in conjunction with consultant studies (see Table F3-2, also maintained in the *Natural Resources Observations Database*).

Waterbird Survey Field Form

Wetland Condition Codes		Weather Codes	
Water Level (WL): 0 = dry 1 = lower than normal 2 = normal 3 = higher than normal	Human Impact (HI): 0 = indirect (little garbage, few people present) 1 = moderate 2 = heavy (many people present) (e.g. on boat, wading, fishing, etc.)	Rain Fall (RF): 0 = no rain 1 = mist or fog 2 = drizzle 3 = light rain 4 = heavy rain 5 = snow or hail	Wind: 0 = no wind, <1 mph 1 = smoke drifts, 1-3 mph 2 = wind felt on face, 4-7 mph 3 = leaves and twigs rustle, 8-10 mph 4 = dust raises, branches stir, 13-18 mph 5 = small trees sway, >19 mph
Vegetation Cover (VC): 0 = open water (<25%) 1 = 26-50% cover 2 = 51-75% cover 3 = >75% cover	Shoreline Condition of Tidal Wetlands (SC): 0 = water at high tide mark (leave blank if NA) 1 = 25 feet from high tide mark 2 = 50 feet from high tide mark 3 = >50 feet from high tide mark	Cloud Cover (CC): estimate to nearest 10%	

Date: _____ Observers: _____

Island: _____ _____

_____

Wetland Name																				
Condition	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC
Weather	CC	RF	Wind		CC	RF	Wind		CC	RF	Wind		CC	RF	Wind		CC	RF	Wind	
Time	Start	Stop			Start	Stop			Start	Stop			Start	Stop			Start	Stop		
COOT - adult																				
- juvenile																				
MOORHEN - adult																				
- juvenile																				
STILT - adult																				
- juvenile																				
KOLOA - adult																				
- juvenile																				
Koloa/Mallard hybrid																				
Mallard (domestic)																				
Muscovy																				
Other Dom. Waterfowl																				
Black-cr. Night-Heron																				
Cattle Egret																				
Pacific Golden Plover																				
Ruddy Turnstone																				
Sanderling																				
Wandering Tattler																				

COMMENTS: Note all chicks, stilts or other birds with bands, and anything interesting or unusual.

Retain a copy of this form for your records

version June 2005

Maintaining a Waterbird Database supports management efforts and assists the MCBH Environmental Department in improving management by focusing attention on areas of most concern. The Waterbird Database clearly illustrates the positive effects of management through the abundance of birds present in the Nu‘upia Ponds WMA and the quantity of chicks fledged in the WMA each breeding season. The focus of the systematic counts conducted in 2006 is to observe the total number of Hawaiian stilts present, number of nests laid, hatching rate, and fledgling success for the 2006 breeding season. The Waterbird Database simplifies and expedites the process of reporting on various parameters (e.g. time periods, location of observations, numbers of birds). It can provide the manager with population and distribution trends for a given timeframe. An example of the type of data that can be generated from the database is included (see Table F3-3).

Analysis of the Waterbird Database, combined with field observations, have resulted in the compilation of a map showing primary nesting and foraging locations of Hawaiian stilt for 2006 (see Figures 10d and 10e, Appendix B). The locations are approximate and were screen digitized based on field observations marked on a high resolution aerial photo. This map was entered into the MCBH EGIS geodatabase (feature class = fauna_species_site) and contains supporting information including the year the data was collected and the type of activity conducted in the area. Historical data (e.g. from maps developed in the 1980’s and 1990’s) showing general nesting and feeding locations were also entered into this data layer. This will allow temporal comparison of the primary areas used by the Hawaiian stilts.

Table F3-2: Hawaiian Stilt Counts for Marine Corps Base Hawaii: (December 1947-September 2006)

Reference:
CC: Christmas Count; Hawaii Audubon Society
DLNR: Department of Land and Natural Resources; Semi-annual waterbird count
Rauzon et al.: Observations made by M. Rauzon, L. Tanino, and/or L. O'Neil
Volinski: Observations made by C.I. Volinski
* Count conducted only in Nu'upia Ponds WMA

Month	Day	Year	Stilt Count	Reference
12	27	1947	127	CC
12	26	1948	128	CC
12	26	1949	41	CC
12	31	1950	11	CC
12	31	1951	66	CC
12	28	1952	31	CC
12	27	1953	28	CC
12	26	1954	9	CC
12	26	1955	24	CC
12	23	1956	42	CC
12	22	1957	0	CC
1	14	1958	0	DLNR
12	21	1958	27	CC
12	27	1959	13	CC
12	26	1960	21	CC

Month	Day	Year	Stilt Count	Reference
1	10	1961	34	DLNR
12	31	1961	94	CC
1	15	1962	19	DLNR
12	23	1962	37	CC
1	14	1963	32	DLNR
12	29	1963	45	CC
12	27	1964	18	CC
1	14	1965	73	DLNR
1	2	1966	39	CC
1	13	1966	72	DLNR
12	26	1966	103	CC
1	14	1967	33	DLNR
12	31	1967	52	CC
1	8	1968	74	DLNR
12	29	1968	24	CC

Month	Day	Year	Stilt Count	Reference
1	13	1969	51	DLNR
12	28	1969	39	CC
1	13	1970	10	DLNR
12	27	1970	36	CC
Summer		1970	51	DLNR
Winter		1971	33	DLNR
Summer		1971	27	DLNR
12	26	1971	72	CC
Winter		1972	36	DLNR
Summer		1972	48	DLNR
12	17	1972	54	CC
Summer		1973	52	DLNR
Winter		1973	80	DLNR
12	23	1973	58	CC
Summer		1974	65	DLNR
12	24	1974	81	CC
Winter		1975	39	DLNR
Summer		1975	56	DLNR
12	21	1975	91	CC
Winter		1976	62	DLNR
Summer		1976	89	DLNR
12	19	1976	122	CC
Summer		1977	67	DLNR
Winter		1977	81	DLNR
12	18	1977	58	CC
Winter		1978	64	DLNR
Summer		1978	93	DLNR
12	17	1978	90	CC
Summer		1979	115	DLNR
Winter		1979	99	DLNR
12	16	1979	124	CC
Summer		1980	50	DLNR
Winter		1980	116	DLNR
12	21	1980	94	CC
Summer		1981	70	DLNR
Winter		1981	56	DLNR
12	20	1981	76	CC
Summer		1982	38	DLNR
Winter		1982	62	DLNR
11	14	1982	76	G. V. Byrd.
12	19	1982	68	CC
1	19	1983	68	DLNR
7	27	1983	9	DLNR
12	18	1983	79	CC
8	1	1984	51	DLNR
12	16	1984	69	CC
1		1985	39	DLNR
1	17	1985	66	DLNR
12	22	1985	109	CC
7	29	1986	110	DLNR
12	21	1986	97	CC
1	14	1987	92	DLNR
Summer		1987	110	DLNR
12	27	1987	143	CC
1	25	1988	154	DLNR
12	18	1988	121	CC

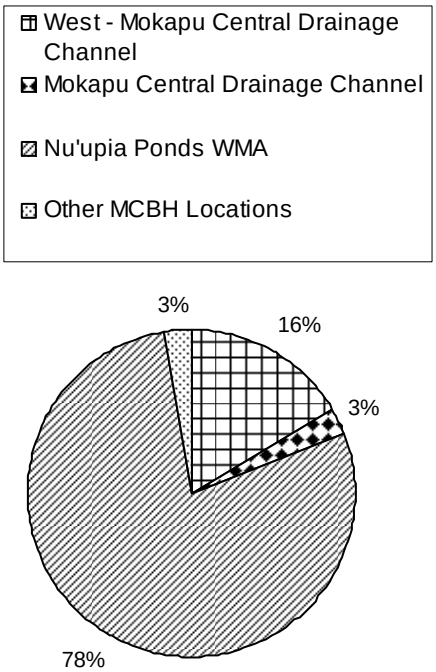
Month	Day	Year	Stilt Count	Reference
1	27	1989	50	DLNR
7		1989	162	DLNR
12	17	1989	116	CC
1	17	1990	135	DLNR
12	16	1990	116	CC
1	10	1991	122	DLNR
4	12	1991	114	Rauzon et al.
4	30	1991	105	Rauzon et al.
5	4	1991	119	Rauzon et al.
5	16	1991	97	Rauzon et al.
12	21	1991	99	CC
12	20	1992	76	CC
1	29	1992	137	DLNR
12	6	1993	93	Rauzon et al.
12	19	1993	121	CC
1	19	1994	143	DLNR
2	4	1994	131	Rauzon et al.
2	23	1994	89	Rauzon et al.
3	2	1994	105	Rauzon et al.
3	4	1994	108	Rauzon et al.
3	9	1994	113	Rauzon et al.
3	10	1994	121	Rauzon et al.
3	13	1994	128	Rauzon et al.
3	21	1994	106	Rauzon et al.
3	25	1994	119	Rauzon et al.
3	29	1994	122	Rauzon et al.
4	1	1994	119	Rauzon et al.
4	5	1994	116	Rauzon et al.
4	8	1994	111	Rauzon et al.
4	12	1994	138	Rauzon et al.
4	19	1994	155	Rauzon et al.
4	24	1994	135	Rauzon et al.
4	27	1994	132	Rauzon et al.
5	1	1994	135	Rauzon et al.
5	8	1994	132	Rauzon et al.
5	15	1994	149	Rauzon et al.
5	23	1994	122	Rauzon et al.
5	30	1994	140	Rauzon et al.
6	6	1994	147	Rauzon et al.
6	13	1994	149	Rauzon et al.
6	20	1994	165	Rauzon et al.
6	27	1994	149	Rauzon et al.
7	6	1994	137	Rauzon et al.
7	11	1994	130	Rauzon et al.
7	19	1994	117	Rauzon et al.
7	25	1994	117	Rauzon et al.
8	8	1994	122	Rauzon et al.
8	15	1994	131	DLNR
8	28	1994	119	Rauzon et al.
9	11	1994	126	Rauzon et al.
9	25	1994	141	Rauzon et al.
10	9	1994	117	Rauzon et al.
10	23	1994	135	Rauzon et al.
11	6	1994	134	Rauzon et al.
11	20	1994	143	Rauzon et al.
12	4	1994	133	Rauzon et al.

Month	Day	Year	Stilt Count	Reference
1	7	1995	157	Rauzon et al.
1	22	1995	132	DLNR
2	5	1995	141	Rauzon et al.
2	19	1995	158	Rauzon et al.
1	8	1996	141	Rauzon et al.
1	23	1996	131	DLNR
2	14	1996	151	Rauzon et al.
2	25	1996	146	Rauzon et al.
3	17	1996	141	Rauzon et al.
3	31	1996	153	Rauzon et al.
4	17	1996	123	Rauzon et al.
4	29	1996	121	Rauzon et al.
6	5	1996	118	Rauzon et al.
7	21	1996	120	Rauzon et al.
7	28	1996	129	Rauzon et al.
8	13	1996	132	Rauzon et al.
8	27	1996	167	Rauzon et al.
9	2	1996	128	Rauzon et al.
9	4	1996	132	DLNR
9	15	1996	161	Rauzon et al.
9	25	1996	124	Rauzon et al.
10	26	1996	133	Rauzon et al.
11	10	1996	109	Rauzon et al.
12	12	1996	123	Rauzon et al.
12	21	1996	143	CC
1	5	1997	114	Rauzon et al.
1	20	1997	134	Rauzon et al.
1	28	1997	147	DLNR
2	17	1997	161	Rauzon et al.
7	28	1997	107	Rauzon et al.
7	29	1997	110	Rauzon et al.
12	15	1997	127	CC
8	13	1998	119	DLNR
12	19?	1998	139	CC
1	20	1999	116	DLNR
8	18	1999	127	Rauzon et al.
12	19	1999	127	CC
1	19	2000	75	DLNR
8	16	2000	120	DLNR
12	17	2000	113	CC
1	17	2001	135	DLNR
7	9	2001	112	Rauzon et al.
8	15	2001	146	DLNR
12	22	2001	113	CC
1	16	2002	115	DLNR
8	21	2002	137	DLNR
12	21	2002	136	CC
1	16	2003	124	DLNR

Month	Day	Year	Stilt Count	Reference
8	20	2003	148	DLNR
12	21	2003	122	CC
1	21	2004	116	DLNR
8	18	2004	158	DLNR
12	18	2004	146	CC
1	18	2005	152	DLNR
8	17	2005	125	DLNR
12	18	2005	126	CC
1	19	2006	140	DLNR
2	9	2006	112	Volinski
2	17	2006	110	Volinski
2	24	2006	140	Volinski
2	28	2006	131	Volinski
3	8	2006	130	Volinski
3	15	2006	135	Volinski
3	17	2006	107	Volinski
3	21	2006	159	Volinski
3	24	2006	86*	Volinski
3	25	2006	67*	Volinski
3	30	2006	110	Volinski
4	3	2006	105	Volinski
4	10	2006	86	Volinski
4	18	2006	74	Volinski
4	24	2006	91	Volinski
5	2	2006	105	Volinski
5	9	2006	112	Volinski
5	13	2006	81	Volinski
5	19	2006	77	Volinski
5	26	2006	80	Volinski
6	2	2006	73	Volinski
6	9	2006	78	Volinski
6	13	2006	80	Volinski
6	20	2006	69	Volinski
7	13	2006	81	Volinski
7	19	2006	87	Volinski
7	25	2006	76	Volinski
8	2	2006	78	Volinski
8	10	2006	79	Volinski
8	16	2006	113	DLNR
8	25	2006	94	Volinski
9	1	2006	123	Volinski
9	8	2006	96	Volinski
9	15	2006	113	Volinski
9	22	2006	107	Volinski

Table F3-3. Location Frequency of Hawaiian Stilt Observations on MCBH - Mokapu Peninsula (February 9, 2006 - September 22, 2006)

Pond Locations (Visited once a week)	Month	Total Stilts Observed
West - Mokapu Central Drainage Channel	February	97
('Alae Pond, Hale Koa Recreation Area Wetland, 'Iwa Pond, Koloa Pond, Sag Harbor Wetland, Salvage Yard Wetland, Temporary Lodging Facility Wetland and Water Reclamation Facility)	March	66
	April	55
	May	64
	June	57
	July	54
	August	61
	September	93
	Site Total	**547**
Mokapu Central Drainage Channel	February	11
(Mokapu Central Drainage Channel and Mokapu Wetland Basin)	March	17
	April	13
	May	7
	June	11
	July	16
	August	11
	September	3
	Site Total	**89**
Nu'upia Ponds WMA	February	365
(Wai Puna, Halekou, Heleloa, Kaluapuhi, Nu'upia 'Eha, Nu'upia 'Ekahi, Nu'upia 'Ekolu, Nu'upia 'Elua, Pa'akai and Percolation Ditch Wetland)	March	682
	April	259
	May	384
	June	232
	July	172
	August	176
	September	330
	Site Total	**2600**
Other MCBH Locations	February	20
(Road shoulders, lawns, fields, etc…)	March	29
	April	29
	May	0
	June	0
	July	2
	August	3
	September	9
	Site Total	**92**
Hawaiian Stilt Totals:		**3328**



Opportunistic Data Collection

MCBH natural resources personnel, their volunteers, and contractors have opportunities to make 'noteworthy single event observations' (e.g., rare to the area bird sightings, predators, mass fish die-offs) that, if systematically recorded, can become increasingly valuable over the years to help benchmark natural resource conditions and changes. A new database has been developed to more systematically record these observations. Historical information will be added from the files as time and resources allow. An example of how important such single event observations can be is illustrated in the above wedge-tailed shearwater data discussion. Two single-event observations on MCBH Kaneohe Bay, by Rauzon and Tanino in 1994 and by Volinski and Drigot in 2006, helped "book-end" the noteworthy increase in wedge-tailed shearwater numbers at this colony from at least 25 to over 400 burrows in twelve years time. This is indeed a noteworthy observation, a valuable way of measuring progress in predator control and natural resources management and protection efforts, and an indicator that seabird monitoring could be intensified in future years in order to increase understanding of this phenomenon. See Table F3-4 for selected excerpts from this growing noteworthy observations data base).

Table F3-4. MCBH MOKAPU-PENINSULA: NATURAL RESOURCES NOTEWORTHY EVENTS/ OBSERVATIONS RECORD (1992 – 2006)

(*The following selective excerpts provide examples of types of data entered*)

DATE	OBSERVER/REFERENCE	SPECIES	EVENT	LOCATION	COMMENTS/REMARKS
3/21/2006	C. Volinski	Hawaiian Moorhen	Flushed bird	Nu‘upia ‘Ekolu	Bird in puddle in the middle of the bait station route leading into the wetland and flushed toward the NE corner.
3/17/2006	C. Volinski	Long-billed Dowitcher	Sighting	Nu‘upia ‘Ekolu	Foraging along shoreline
3/17/2006	C. Volinski	Common Tern	Sighting	Pa‘akai Pond	Standing along east shoreline
3/15/2006	C. Volinski	Pueo	Flushed bird	Wai Puna	Flushed out of tree during visit.
2/24/2006	C. Volinski	Black Brant	Sighting	Pa‘akai Pond	Sitting out in the middle of the pond toward the east side.
2/24/2006	C. Volinski	2 American Wigeons	Sighting	Wai Puna	Sitting in tall grass at waters edge together.
2/9/2006	C. Volinski	Northern Shoveler	Sighting	Water Reclamation Facility	Swimming among Koloa/Mallard Hybrids
2/9/2006	C. Volinski	Caspian Tern	Sighting	Pa‘akai Pond	Flew over pond.
2/9/2006	C. Volinski	Bristle-thighed Curlew	Sighting	Nu‘upia ‘Ekolu & Kaluapuhi	Same bird just flew over to the east side

DATE	OBSERVER/REFERENCE	SPECIES	EVENT	LOCATION	COMMENTS/REMARKS
6/26/2002 Dr. Diane Drigot, Senior Natural Resources Mgt. Specialist (Email Correspondence)		**Stilt Nesting at MCBH Klipper Golf Course!** A pair of Hawaiian Stilt are on a nest at one of the three ponds undergoing environmental restoration: what we call Koloa Pond (the pond nearest the Sand Dunes and North Beach side of the Golf Course, History: This pond was created in 1988 (input from FWS Steve Berendzen at the time) to be attractive to waterbirds. It used to be a California-choked drainage swale area. (I have been working here since 1982 and was personally involved in that pond construction event). Anyhow, the current project over the past few months included maintenance dredging to restore water quality health and revegetation of the shoreline areas with native vegetation attractive to waterbirds. All the plants have been installed and the project is now in the vegetation maintenance period. The subcontractor landscapers (Hui Ku Maoli Ola – Mat Shirman and Rick Barboza) noticed the nest and reported it to our prime contractor, Joel Kurokawa, Hawaii Design Associates, who reported it to me this date. <u>Reference:</u> Hawaii Design Associates, Inc. 2004. Final Report: MCBH Klipper Golf Course Ponds Environmental Enhancement Marine Corps Base Hawaii, Kaneohe Bay. Prepared by Hawaii Design Associates, Inc. with contributions by Sustainable Resources Group Int'l, Inc. Prepared for Environmental Department, Marine Corps Base Hawaii. February.			
4/18/1995 & 4/19/1995 Scott Henderson, Natural Resource Specialist		**Nu'upia Observations:** On way home from work for last 2 days stopped by ponds to check out conditions under high tide conditions. Tide of +2.0 ft occurred at about 1630 and 1730 on those days. In spite of Mark's concern, these tides don't seem to cause the big time flooding of the ponds the mid-May tides cause (tides over 13 to 16 May are in 2.3-2.4 ft. range). That additional 5 inches in height is apparently enuf to broach some important "berms"…especially the "bridge makaha" that connects Halekou and 'Elua. Water was not flowing thru that passage at 1630 on Monday when tide height should have been 2.0 ft. Additionally, some of the catastrophic type flooding may be attenuated by the fact that recent mangrove removal has increased flow through the culvert that connects 'Ekahi with 'Elua…producing at lest a "quasi-normal" tidal response. Fish action at the main Bay/'Ekahi culvert was awesome on both days. Strong incoming tide produced a current plume with estimated velocity of 3-4 mph. Estimated weights and numbers of fish swimming in and near this plume were: Papio (primarily white jack with lesser numbers of striped jack and star jack) 4# 100, O'io (bonefish) 3# 300, La'I (leatherskin) 1 #20, Kaku (barracuda) to about 35# /acre…likely about 1/3 the total mass of fish present in that pond if we assume that about 100#/acre is typical for "open" ponds. Fish that don't seem to commonly aggregate in these incoming tidal plumes include a'ua a'ua (ladyfish), awa (milkfish), 'ama'ama (mullet) and tilapia. All 4 are generally very common in the ponds.			

DATE	OBSERVER/REFERENCE	SPECIES	EVENT	LOCATION	COMMENTS/REMARKS
2/6/1992	PMO Game Warden	Endangered Monk Seal	Sightings	ADJ Beach Cottage 1601-1602	Departed 2/6/1992
1/31/1992	PMO Game Warden	Endangered Monk Seal	Sightings	Pyramid Rock Beach	Departed 1/31/1992
1/12/1992	PMO Game Warden	Endangered Monk Seal	Sightings	FT Hase Beach Adj Trees	Departed 1/12/1992
1/10/1992	PMO Game Warden	Endangered Monk Seal	Sightings	Rifle Range below R-6	Departed 1/10/1992

APPENDIX G
DOCUMENTATION OF STAKEHOLDER INVOLVEMENT

This appendix documents stakeholder involvement in the development and implementation of MCBH's INRMP.

G1. MCBH Environmental Access/Outreach History (On and Off Site) CY1999-CY2005

G2. Examples of Public Outreach

- MCBH Winning Record in DoD Environmental Awards Competition
- USFWS 2005 Award Documentation
- Example Publications/Presentations/Posters/Videos by MCBH Staff, Others
- MCBH-Sierra Club Partnership (various articles)
- *Under Siege: Invasive Species on Military Bases* (excerpt, NWF, 2005)
- SECNAV Currents Calendar (2005)
- *Masters of Amphibious* Assault – DOD/USFWS 'Saving a Few Good Species' (poster, 2004)
- Ko'olaupoko Watershed: Watershed Success Stories (USEPA 2000)
- White House Conference on Cooperative Conservation Case Study (2005)
- Hawaii-Pacific Cooperative Ecosystem Studies Unit (CESU)
- *Ho'ola I Ka 'Aina* (Koolau.net website: http://www.pixi.com/~isd/MCBH_1.html)

G3. MCBH Review and Concurrence

- FONSI from 2001 MCBH INRMP/EA
- Copies of public notices for 2001 MCBH INRMP/EA
- MCBH EIRB Concurrence letter

G4. Agency Correspondence and Concurrence with MCBH INRMP Update (2006)

G5. External Agency Review Comments on MCBH INRMP Update (2006)

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G1. MCBH ENVIRONMENTAL ACCESS/OUTREACH HISTORY (ON AND OFF SITE) CY1999-CY2005

Summary and Detailed Tables

This summary table shows the total number of participants in both on and off base MCBH Environmental Access and Outreach activities for CY1999-CY2005. It supports information about stakeholder involvement in INRMP preparation and implementation contained in Section 9. The table that follows contains detailed information about these activities including: date; whether activity was on or off base; source of audience/participants; project orientation (general, natural, cultural, academic, or service interest); number of attendees; description of activity/subject; and Environmental Department staff point of contact.

	Number of Participants		
Year	**On-Site**	**Off-Site**	**Total**
1999	901	60	961
2000	1649	390	2039
2001	136	450	586
2002	504	1074	1578
2003	520	80	600
2004	469	257	726
2005	244	80	324

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
2005						
12/18/2005	On	Hawaii Audubon Society	Natural	9	Annual Christmas bird count	Diane
12/10/2005	On	Sierra Club Volunteers	Natural, Service	10	Mangrove removal at Nu'upia Ponds	Diane
10/8/2005	On	Sierra Club Volunteers	Natural, Service	5	Mangrove removal at Nu'upia Ponds	Diane
9/28/2005	Off	Kaneohe Yacht Club Members	Natural	75	Diane gave power point presentation at Kaneohe Yacht Club meeting re rich nat. res. heritage of Mokapu peninsula as seen through former residents & early history of caretaking on peninsula.	Diane
8/29/2005 - 8/31/2005	Off	White House Conference on Cooperative Conservation Participants	Natural	5	Diane + Capt Kleinpaste from 3d MAR (AAVs) + 3 MCBH partners (reps from Sierra Club, HI Audubon Society, & State DLNR) participated at St. Louis Conference; MCBH exhibit also displayed; over 1,000 participants at national invite-only conference	Diane
8/17/2005	On	State, Federal waterbird managers	Natural, Service	3	DD + 2 others performed semi-annual state-sponsored waterbird count at MCBH wetlands.	Diane
8/13/2005	On	Sierra Club/Navy Corpsmen Volunteers	Natural, Service	16	Sierra Club volunteers + 2 Navy Corpsmen just back from Afghanistan helped remove mangrove at Nu'upia Ponds	Diane
6/30/2005	On	Elementary School Teachers	Natural	25	Nu'upia Ponds tour as part of 3rd grade teachers' workshop in relation to grant-assisted wetland curriculum they developed.	Diane
6/11/2005	On	Sierra Club/Navy legal staff Volunteers	Natural, Service	9	Mangrove removal at Nu'upia Ponds	Diane
4/27/2005	On	VIPs - Wives of Base CG and Ms Fallon	Natural	5	Tour of red-footed booby colony & briefing about our community environmental involvement program	Diane
4/23/2005	On	Hawaiian Electric Co. Legal Dept. Volunteers	Natural, Service	28	Weed pull at MCTAB native plant garden	Diane
4/22/2005	On	Marines/Sailors/Sierra Club volunteers	Natural, Service	20	Earth Day/Take Pride Day-divided into two locations: Mokapu Wetland Basin and Nu'upia Ponds to remove weeds.	Diane
4/9/2005	On	Sierra Club Volunteers, Marine and friend	Natural, Service	15	Mangrove pull at Nu'upia Ponds	Diane
3/7/2005	On	Volunteer retired Marine couple (Heinrichs)	Service	2	Completed 40 hrs of volunteer weed work at native plant garden at MCTAB	Diane

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
2/17/2005	On	Sr. Exec. Service staffer + MCBH Staff from LE, PAO, & LF	Natural, Cultural	6	VIP Tour to SES1 new Assist Counsel to Command of USMC	Diane / June
2/12/2005	On	Sierra Club Volunteers	Natural, Service	5	Mangrove removal at Nu'upia Ponds	Diane
1/18/2005	On	State, Federal waterbird managers	Natural, Service	6	Diane, Lance + 4 others performed semi-annual state-sponsored waterbird count at MCBH wetlands.	Diane
1/12/2005	On	Honolulu Garden Club	Natural, Service	80	Diane gave invited talk & tour focusing on native landscaping initiatives on Mokapu Peninsula; Club hosted annual meeting at Garden Club	Diane
2004						
12/18/2004	On	Hawaii Audubon Society	Natural	9	Annual Christmas bird count	Diane
12/11/2004	On	Volunteer mangrove pull event at Salvage Yard wetland	Service	3	Diane and 2 military volunteers from MCBH pulled weeds--more were expected but no-shows.	Diane
12/4/2004	On	Volunteer weed pull service project at MCTAB native plant garden	Service	5	Diane and 4 military volunteers from MCBH pulled weeds at garden	Diane
12/1/2004	Off	Univ. of HI-Manoa Interdisc "Hui Konohiki" Class--Botany, Hawn studies, Marine Science Students	Academic	30	Diane gave invited talk to interdisciplinary class re INRMP programs	Diane
11/18/2004	On / Off	Students in Navy CECOS Environ. Protect. Course	Natural	15	Diane giving invited talk at CECOS course followed by bus tour of MCBH natural resource sites.	Diane
11/16/2004	Off	Kailua Historical Society	Natural	120	Diane gave invited talk at Kailua Recreation Center on natural and human landscape history of Mokapu Peninsula ("Many Faces of Mokapu")	Diane
10/18/2004	On	Deputy Administrator EPA (Env Protection Agency) Mr. Stephen L. Johnson & wife Debbie & Admin Asst Patrice Kortuem; EPA Region 9 Administrator Wayne Nastri & Chief of Staff Jennifer Chicconi	General Interest	5	Command Brief at KT, HAZMIN/BHWAS, Nu'upia Ponds, Ft. Hase Arch site, Booby Bird colony, UH Marine Mammal Center, O' Club lunch	Kent Murata, Col. Lottie, Lt. Col. Dean Levi, Diane, June
10/9/2004	On	Sierra Club, Navy, & Marine volunteers	Service	22	Remove mangrove from Salvage Yard wetland	Diane
8/17/2004	On	Sierra Club & Navy Squadron Volunteers	Service	6	Spread mulch to deter weeds in native plant garden at MCTAB	Diane

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
8/14/2004	On	Sierra Club-& Navy Squadron Volunteers from Patrol Special Projects Squadron Two	Service	16	Remove mangrove from Salvage Yard wetland	Diane
8/5/2004	Off	Citizens, govt agencies, private cos. interested in mangrove removal	Natural	15	2nd interagency/public mtg co-hosted by MCBH/USMC to explore regional approach to mangrove removal- (hosted off-site at He'eia State Park)	Diane
7/15/2004	On	Army COE Coastal Engineers from various regions in US--hosted by HI-based Pacific Ocean Engineers office	Natural	30	Tour of Ulupa'u Crater & Ft. Hase shoreline erosion & Bellows coastal erosion in connection with Army COE Regional meeting hosted in Hawai'i	Diane
7/1/2004	Off	Citizens, govt agencies, private cos. interested in mangrove removal	Natural	15	USMC & MCBH hosted 1st mtg of "mangrove busters"--to explore development of "coalition of willing" to join forces to most effectively approach regional eradication of mangroves from Kane'ohe Bay (hosted off-site at He'eia State Park)	Diane
6/23/2004	On	MCBH Comptroller Dept.	Natural	25	Natural, Cultural Tour of MCBH K-Bay for CR staff (Diane & Nalani Olds standing in for June)	Diane
6/12/2004	On	Sierra Club-O'ahu Chapter	Service	10	Remove mangrove from Salvage Yard wetland	Diane
6/9/2004	On	HI Pollution Prevention Mtg	Natural	30	Red-footed booby colony tour for Carolyn Irvin's P2 interagency group	Diane
6/5/2004	On	Hawn Electric Co (HECO) Legal Dept.	Service	30	Remove weeds from native plant garden at MCTAB & perform beach cleanup prior to co. picnic at Bellows	Diane
5/27/2004	On	MCBH individuals interested in Coral Reefs of K-Bay and aliens impact on them (attendees at Workshop-Alien on the Reef at K-Bay)	Natural	20	Outside sponsored class hosted on MCBH re impact of alien seaweeds on MCBH reefs	Michele, Diane, etc.
5/14/2004	On	Puohala Elem. School-Kaneohe	Natural	60	Ponds tour by Hawaiian language immersion elementary students	Diane
4/29/2004	Off	UH CTAHR Prof & Students	Academic	12	Diane reviewed class presentations of Grad students from Community-Based Natural Resources Mgt. class re Bellows Trip/Experience	Diane
4/27/2004	On	DoD Environ. Forum	General Interest	77	Diane presented on Invasive Species; others in LE also presented at DoD forum hosted at K-Bay O'Club	Diane, Other LE

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
4/18/2004	On	UH-Manoa Marine Options Program Director/Staff/Students	Natural, Cultural	22	Wetland/Marine nat. resources mgt. interests	Diane
4/14/2004	Off	Mokapu School Science Fair Judging	Academic	20	Diane judged science fair at request of School Vice Principal-about 20 projects judged	Diane
4/12/2004	Off	UH-CTAHR Grad Students in Nat. Res. & Environ. Mgt. (NREM) Program	Academic	15	Diane gave invited presentation in class/prep for field trip to Bellows--course on Community-Based Nat. Res. Mgt.	Diane
4/10/2004	On	Sierra Club-O'ahu Chapter	Service	6	Removal mangrove from Salvage Yard wetland	Diane
3/27/2004	On	Kailua Bay Advisory Council	Natural, Cultural	10	Walk the Watershed Tour-Mokapu	Diane
3/19/2004	On	UH Professor & Students in CTAHR class; Tetra Tech S. Finkel	Academic, Service	5	Remove weeds from native plant garden at MCTAB, while orienting UH prof. to site for upcoming field trip by class.	Diane
3/12/2004	On	USAF contractor / TetraTech (S. Finkel)	Service	2	Remove weeds from native plant garden at MCTAB, while orienting USAF contractor to the site	Diane
3/5/2004	On	Volunteer Retired Marine Couple (Heinrichs) & UH grad students (CTHAR) rce Contractor (S. Finkel-Tetratech)	Service	5	Remove weeds from native plant garden at MCTAB	Diane
3/4/2004	Off	Natl. Inv. Species Advisory Council	Natural	30	D. Drigot-provided State-invited presentation on MCBH mangrove removal story at NISAC field mtg. at Coconut Island, Kane'ohe Bay	Diane
2/24/2004	On	Volunteer retired Marine couple (Heinrichs)	Service	3	Remove weeds from native plant garden at MCTAB	Diane
2/14/2004	On	K-Bay Girl Scout Troop 41 & Sierra Club-Oahu Chapter	Service	21	Repair tire-nest islands for Stilts at Pa'akai Pond in Nu'upia Ponds WMA	Diane
1/28/2004	On	Invited Community Guests	Natural	20	Nu'upia Ponds AAV MudOps poster unveiling at ponds	Diane
1/23/2004	On	Univ of Hawaii students & Audubon volunteers	Service	12	Booby nest platform repair-Ulupa'u Crater Wildlife Mgt. Area	Diane
2003						
12/21/2003	On	Audubon Society Volunteers	Service	8	Annual Christmas bird count on Mokapu	Diane
11/29/2003	On	Sierra Club Outing Group & Marine Volunteers	Service	7	Mangrove weed removal at Salvage Yard wetland	Diane
11/1/2003	On	Sierra Club Outing Group & Marine Volunteers	Service	25	Mangrove weed removal at Salvage Yard wetland	Diane

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
10/8/2003	On	Deputy Asst. Secretary of the Navy (Environment) Mr. Donald Schregardus	General Interest	2	Command Brief at KT included update on all Env Programs at MCBH	Major Rouse
9/23/2003	On	Windward Mall Senior Citizen Chinese Exercise Group	General Interest	104	Recycle Center, Nuupia Ponds, Mokapu Plant Garden, Fort Hase Arch Site, Anderson Hall	Jim, George, Diane, June, Michele, Shari
9/13/2003	On	Sierra Club Members	Academic	17	Tour of WMAs, native plant gardens, natural resource mgt. projects	Diane
8/22/2003	Off	Sierra Club Member Mtg	Academic	50	Diane gave invited talk to general mtg of Sierra Club Members re Base INRMP (off-base location)	Diane
8/20/2003	On	State & Fed agency personnel, LE Staff	Service	6	Semi-Annual (Summer) waterbird count-Mokapu wetlands	Diane / Gordon
8/16/2003	On	Participants at 1st Annual Nu'upia Ponds Triathlon Race	General Interest	100	LE staff-attended booth with static display and handouts at finish line/refreshments tent	Diane
8/15/2003	On	Legal Staff of Hawaiian Electric Co. (POC Leon Roose)	Service	27	Mtnce at MCTAB native plant garden & cleanup along Bellows beach	Diane
8/15/2003	On	UH researchers marine invasive invertebrate study	Academic	2	Conditional access for in-water survey of invasive invertebrate (snowflake coral) at T-pier, Sag Harbor	Diane / Shari
6/24/2003	On	Ms Sheila M. McNeill, President of the Navy League	General Interest	3	Booby bird colony	Gordon
6/20/2003	On	UH Volunteer C. Gencarelli	Service	1	Native Plant Garden Mtnce at MCTAB site	Diane
6/13/2003	On	UH Volunteer C. Gencarelli	Service	1	Native Plant Garden Mtnce at MCTAB site	Diane
6/12/2003	On	UH Volunteer C.Gencarelli	Service	1	Native Plant Garden Mtnce at Mokapu sites	Diane
6/6/2003	On	UH Volunteer C.Gencarelli	Service	1	Native Plant Garden Mtnce at MCTAB site	Diane
6/5/2003	On	UH Volunteer C. Gencarelli	Service	1	Native Plant Garden Mtnce at Mokapu YAC site	Diane
5/23/2003	On	UH Volunteer C. Gencarelli	Service	1	Native Plant Gaden Mtnce-Mokapu & MCTAB sites	Diane
5/22/2003	Off	Students in Navy's CECOS Environ. Protect. Course	Academic	30	Diane gave invited talk on MCBH's INRMP per instructor's request (off base)	Diane
5/16/2003	On	UH Volunteer C. Gencarelli	Service	1	Native Plant Garden Mtnce-MCTAB site	Diane
5/9/2003	On	UH Volunteer C. Gencarelli	Service	1	Native Plant Garden Mtnce-YAC Mokapu Site	Diane
5/5/2003	On	Mokapu Girl Scout Troop 41	Academic	12	Diane gave invited talk on outdoor environ. work to help Scouts earn badge requirement.	Diane

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
5/4/2003	On	Participants at "Day at the Docks" event at Mokapu Peninsula Marina	General Interest	5	LE staff-attended booth with static display and handouts	Gordon
4/28/2003	On	Staff Delegates from House Energy & Resource Committee "StaffDel Babauta"	General Interest	7	Kansas Tower Command & Env Brief, Nu'upia Ponds/Watershed, Coconut Island UH Research Fac, Ulupa'u Crater Booby Bird Colony, O' Club	Kent, Major Rouse, Gordon, June, Diane
4/25/2003	On	UH Volunteer C. Gencarelli	Service	1	Native Plant Garden Mtnce-Mokapu Sites	Diane
4/18/2003	On	UH Volunteer C. Gencarelli	Service	1	Native Plant Garden Mtnce-MCTAB	Diane
4/11/2003	On	UH Volunteer C. Gencarelli	Service	1	Native Plant Garden Mtnce-Mokapu & MCTAB native plant garden sites	Diane
3/22/2003	On	Mokapu Boy Scout Pack 225 (30 scouts; 12 adults; 2 volunteer coordinators--C. Gencarelli & B. McBride	Service	44	Native Plant Garden Mtnce-MCTAB	Diane
3/21/2003	On	UH Volunteer C. Gencarelli	Service	1	Native Plant Garden Mtnce-MCTAB	Diane
3/14/2003	On	UH Volunteer C. Gencarelli	Service	1	Native Plant Garden Mtnce-Mokapu Sites	Diane
3/7/2003	On	UH Volunteer C. Gencarelli	Service	1	Native Plant Garden Mtnce-Mokapu Sites	Diane
2/28/2003	On	Volunteers UH Student C. Gencarelli; Navy Spouse B. McBride	Service	2	Native Plant Garden Mtnce-MCTAB	Diane
2/21/2003	On	Volunteers UH Student C.Gencarelli; M/M Heinrich	Service	3	Native Plant Garden Mtnce-MCTAB	Diane
2/14/2003	On	Volunteers UH Student C.Gencarelli; M/M Heinrich	Service	3	Native Plant Garden Mtnce-MCTAB	Diane
2/7/2003	On	Volunteers: C. Gencarelli; Retired Marine couple M/M Heinrich (Bellows cabin users); & B. McBride (Navy Spouse)	Service	4	Native Plant Garden Mtnce-MCTAB	Diane
1/31/2003	On	UH Volunteer C.Gencarelli	Service	1	Native Plant Garden Mtnce-YAC & MCTAB	Diane
1/28/2003	On	Mokapu Elem. Students, Teachers, & volunteer coordinators from Healthy Hawaii Coalition	Academic	105	Hands-On Watershed Studies at Nu'upia Ponds for 90 students, 6 teachers & 9 other coordinators	Diane
1/24/2003	On	UH Volunteer C. Gencarelli	Service	1	Native Plant Garden Mtnce-Muli Wai (Ponds) site	Diane

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
1/24/2003	On	Mainland-based Fed FWS Biologists	Academic	4	Biologists visiting HI to teach Nat. Res. Damage Assmt Crse; interested in seabird colony's use to track spills through oiled seabird monitoring	Diane
1/17/2003	On	UH Volunteer C. Gencarelli	Service	1	Native Plant Garden Mtnce-YAC & MCTAB	Diane
1/16/2003	On	State & Fed agency personnel, LE Staff	Service	6	Semi-Annual (Winter) waterbird count/Mokapu	Diane/ Gordon
1/10/2003	On	UH Student Volunteer Chris Gencarelli	Service	1	Weeded at Youth Activities Center (YAC) Native Plant Garden	Diane
1/2/2003	On	Volunteers-Bird enthusiasts	Service	6	Annual repair booby nest platforms at Ulupa'u WMA	Diane
2002						
12/21/2002	On	Audubon Society Volunteers	Annual Christmas Bird Count	7	Volunteers count birds--all over Mokapu	Diane
12/18/2002	On	U.S. Senate Environment & Public Works Committee	General	8	Kansas Tower view of MCBH & Rifle Range Booby Colony	BGen McAbee, Major Rouse, Gordon
12/6/2002	On	Volunteer Service Project	native plant interest	1	Light weeding at riparian native plant gardens	Diane
12/5/2002	On	Sailors' Barracks--Hela Kela Moku site	Mokapu Wetland Basin	12	Planned	Diane
11/22/2002	On	US Bot 350 Class on BioConsveration+APCSS+Coast Guard attendees	Ponds/Watershed and Booby Colony	20	Ponds/Watershed/Booby tour	Diane
11/19/2002 - 11/21/2002	Off	Internatl. Attendees--Off-Site Asia-Pacific Cntr for Security Studies Conf	civilian/military cooperation in environ.	20	Paper presented on coll. public involvement in MCBH environ/watershed projects	Diane
11/19/2002	Off	Off-Site UH Bot 350 Class on Bio Conservation	MCBH consv./watershed programs	30	Familiarization talk for follow up field trip visit	Diane
11/14/2002	Off	Off-Site to Natl. Aquatic Invasives Task Force Field Visit to Coconut Island	MCBH invasive mangrove/picklewe ed removal	50	Briefed natl. task force on MCBH initiatives to remove invasive aquatic sp	Diane
11/8/2002	On	USFWS biologists, HPU ecologist volunteer	Rapid Bio Inventory at barracks wetland	4	Help env staff perform RBI at created wetland	Diane

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
10/31/2002 -11/1/2002	Off	Off site Wetland Workshop Attendees (sponsors: DLNR, Wildlife Society, NRCS)	Invited presentation on wetland/watershed program	150	Wetland management initiatives & issues	Diane
10/29/2002	On	UH Windward Community College Sci for Non-Sci Majors Class	Environmental Awareness	13	Walk the Watershed Tour of ponds, watershed initiatives, and native plant gardens	Diane
10/18/2002	On	Volunteer Service Project	native plant interest	1	Light weeding at riparian native plant gardens	Diane
10/11/2002	On	Volunteer Service Project	native plant interest	1	Light weeding at riparian native plant gardens	Diane
10/4/2002	On	Volunteer Service Project	native plant interest	1	Light weeding at riparian native plant gardens	Diane
9/27/2002	On	Volunteers	native plant interest	2	Light weeding/sign replacement at Muli Wai ponds garden	Diane
9/20/2002	On	Volunteers	native plant interest	2	Light weeding/MCTAB garden	Diane
9/16/2002	On	CG III MEF (LtGen. Gregson) & MCBH CG BGen. McAbee) Wives	General (Mrs. Gregson & Mrs. McAbee)	2	Kansas Tower view of natural & cultural sites & rifle range booby colony	Major Rouse, Gordon
9/13/2002	On	Volunteers	native plant interest	3	Light weeding/sign installation at riparian native plant gardens	Diane
8/27/2002	On	Windward (Mall) Community Senior Citizens group	General	73	Anderson Hall, Kansas Tower view of natural & cultural sites	Gordon, June, Michele
8/23/2002	On	Volunteers	native plant interest	2	Weeding/irrigation system repair/MCTAB garden	
8/21/2002	On	Fed & State wildlife biologists & Volunteers	Semi-Annual Waterbird Count	7	Waterbird survey at ponds & other wetlands	Diane / Gordon
8/14/2002	On	Environ. Awareness Class (Evening Program at Environ. Dept.)	General Interest	8	Overview of environmental setting of base & programs	Diane w/other environ. staff
8/14/2002	On	General Public	General	6	Resource Awareness Presentation Class (Env. Overview, Mokapu Natural & Cultural History, Wildlife)	Major Rouse, Diane, June, Gordon
7/12/2002	Off	Off-site Conference attendees to "Native Plants in Public Places" Conference (Sponsored by UH College of Trop. Agric. et. al.)	MCBH native landscaping initiatives	100	All tv stations & print media at Klipper Ponds to document stilt nest hatching MCBH watershed/public involvement initiatives	Diane

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
7/3/2002	On	Northwestern Hawaiian Islands Teacher's Workshop sponsored by Bishop Museum / U.S. Fish & Wildlife Service	Academic (Elementary through High School Ed. Teachers)	43	Booby Bird Colony, Anderson Hall, Classroom Brief on Seabirds by Fish & Wildlife Services	Gordon
7/2/2002	On	Media	Native Stilt Hatching at Golf Course Ponds	6	All tv stations & print media at Klipper Ponds to document stilt nest hatching	
6/17/2002 - 6/21/2002	Off	Off-Site DoD Conservation Conference in Tuscon	Invited paper on preventing end. species listings/watershed initiatives	500	Preventing species at risk from listing/ watershed initiatives	Diane
6/19/2002	On	Kaneohe Bay Regional Council (Joe Gilman & Peter Knottage)	Academic	2	Nuupia Ponds (Hydrology)	Gordon
6/11/2002	On	USMC Retired - PMO (Colonel Wintersteen)	General	2	Nat/Cult Resource Areas, Training Range	Gordon
6/6/2002	On	Kapahulu Bible Church Seniors	General	19	Iwo Jima Memorial, Stilt Birds, Booby Birds, Cultural Resources, Anderson Hall	Michele
6/5/2002	Off	All Federal Agencies - Federal Executive Board Luncheon	General	80	General Environmental Dept Display (Compliance/ Conservation/ Pollution Prevention Programs)	Gordon, June, Michele
5/18/2002	On	Office of Hawaiian Affairs (OHA)	Cultural	30	Pyramid Rock	June
5/15/2002	On	HI Water Quality Conference Attendees (sponsored by HI Assn. of Consv. Districts)	Watershed initiatives	50	Ponds/Watershed/native plant riparian garden sites	Diane
4/18/2002	On	Windward Community College A.G.E. Seniors	General	60	Iwo Jima Memorial, Stilt Birds, Booby Birds, Cultural Resources, Anderson Hall	Michele
3/28/2002	On	UH Education Grad School Teachers Class Tour	Watershed Initiatives	12	Walk the Watershed tour see how to teach about watershed issues	Diane
3/19/2002	On	Field Trip for Mokapu School 6th graders	Watershed/Ponds brief	25	Walk the Watershed tour to help tie up loose ends in school prep of cyberfaire website competition	Diane
3/14/2002	On	Native Hawn, Makahiki Ceremony	Cultural (Kapono Souza, family, friends, Eric Poohina, Toni Yardley)	20	Mokapu Rd. gate on foot, via Klipper Golf course No. 15 fairway, to Pyramid Rock (end of road)	June

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
3/5/2002	Off	UH Geology Dept.	Academic / Research (2 UH Geology professors; 2 Geology professors from Japan)	4	Pu'u Hawaiiloa; Pali Kilo; Pyramid Rock	June
3/3/2002	Off	DLNR	Academic	1	Resource Areas	Gordon
1/31/2002	On	Field Trip for combined Mokapu & Kainalu School classes	Watershed Garden Sites/Ponds--follow up to classroom visits	60	Follow up field visit re watershed & ponds for cyberfaire website competition	Diane
1/24/2002	Off	Invited Off-site Talk at Kailua Rotary Club Mtg	Invited Watershed/Ponds brief	40	Base watershed/public involvement program	
1/24/2002	On	Native Hawaiian	Cultural	2	Pyramid Rock	June
1/23/2002	Off	Invited Off-site Classroom visit to Kainalu Elem School 5th graders	Watershed/Ponds brief	30	Orientation to Watershed & Ponds in prep. for field visit and website construction for School cyberfaire competition	Diane
1/23/2002	Off	U.S. Fish & Wildlife Service	Academic	4	Ponds	Gordon
1/22/2002	Off	Invited Off-site Classroom-visit to Mokapu School 3rd graders	Watershed/Ponds brief	30	Orientation to watershed & ponds in prep. for field visit and website construction for school cyberfaire competition	Diane
1/16/2002	Off	DLNR / U.S. Fish & Wildlife Service / Ducks Unlimited	Academic	9	Ponds	Gordon
	Off	Mililani YMCA, Allahn Diamond	Cultural - High School students	16	Ponds	June
	Off	Hakipu'u Learning Center, Windward DOE Charter School, Maunalei Love	Cultural - Jr. High students	10	Mokapu cultural sites	June
2001						
12/22/2001	On	Audubon Volunteers	Christmas bird count	6	Bird watching; survey	Diane
12/19/2001	Off	Off-Site--UH Student Class	Environ. Education	30	Monitored UH intern presentation (student worked for me)	Diane
12/7/2001	Off	Off-Site--UH Student Class	Environ. Education	30	Gave presentation on INRMP	Diane
11/17/2001	On	UH Bot/Nat Res. & Law Classes	Env. Education	30	Watershed & booby tours	Diane

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
11/8/2001	Off	Off-site CECOS Env. Protect. Crse. Students	Nat. Res. Program	30	Invited presentation on nat. res. program	Diane
10/23/2001	On	Volunteer	native plant gardens	1	Light weeding/site familiarization visit by UH grad student in Botany	Diane
10/12/2001	Off	Off-Site A&E Society of Hawaii	Interest in nat. res. mgt program	25	Invited presentation on nat. res. mgt. program	Diane
8/15/2001	On	State & Fed. Agency reps and volunteers	Semi-Annual Waterbird Count	6	Waterbird survey at ponds & other wetlands	Diane
7/2/2001	On / Off	VIP--Dr. Jim Wright, Dir of Env & Senior Exec. Offcr at NAVFAC Hdqtrs; Mel Waki at PACDIV, Env. Br.	Specific interest in Watershed Project Sites	3	Tour of watershed sites and projects at Mokapu and Bellows	Diane
5/24/2001	On	WREC Env Forum Attendees	General Env. Tour	25	Natural/cultural tour	Diane/June
5/18/2001	On	Pohai Nani and Audubon Society tours of Booby Colony	Education Tour--Booby Colony-Ulupa'u WMA	20	Bird colony tour	Diane/ Gordon
3/24/2001	Off	Off-Site--Invited Presentation to HI Chapter of Daughters of American Revolution (DAR)	General Interest	25	Natural resources program on base	Diane
3/10/2001	Off	Marine Boy Scout Troop	Service Project	30	Garden Maint-MCTAB	Diane
3/2/2001	On	EPA, NRCS, SLNR, C/C Honolulu Trng Class on Channel Restoration & Streambank Protection	Tour of watershed projects & plans	25	Class visit to watershed sites and projects	Diane
2/17/2002 - 2/19/2001	Off	Sierra Club High School Hikers & Chaperones; Resource Persons	Environmental Education and Service	180	Ecology Camp--Overnite Camp, Environ. Tours & Service Project	Diane
2/16/2001	On	US FWS biologists & Navy Contractors	Sea Bird Monitoring for Oil Damage	4	Monitoring of Ehime Maru sinking on booby colony	Diane
2/15/2001	On	US FWS biologists & Navy Contractors	Sea Bird Monitoring for Oil Damage	4	Monitoring of Ehime Maru sinking on booby colony	Diane
2/14/2001	On	US FWS biologists & Navy Contractors	Sea Bird Monitoring for Oil Damage	4	Monitoring of Ehime Maru sinking on booby colony	Diane

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
2/1/2001	Off	Off-Site Invited Presentation at Univ. of Hawaii Water Resources Research Center	Academic Interest	100	Invited presentation on Watershed Program & challenges	Diane
1/27/2001	On	Volunteers	Service project at Ulupa'u Crater	8	Booby nest platform repair by volunteer adults	Diane
2000						
12/17/2000	On	Audubon Volunteers	Ann Christmas Bird Count	6	Volunteer bird count	Diane
12/14/2000	Off	Off Site--Assist interagency field test of stream health assessment technique at Waiahole Stream (NRCS)	Educational/Service Project	10	Off-site interagency collaboration/assistance	Diane
12/7/2000	On	US Fish and Wildlife Service Staff & Family Members	Service and Education Project--Muli Wai Garden	9	Install signs	Diane
12/1/2000	Off	Off Site-Invited Presentation at HI H20 Quality Conference 2000 at UH-Manoa	Academic/ Education Project	100	Presentation: Volunteer H20 Quality Monitoring in Schools	Diane
11/17/2000	On	Senior Citizens-"Green Thumb" Club	Education Project--Native Plant Gardens Tour	60	Native plant garden appreciation tour	Diane
11/16/2000	On	Waimanalo Elem. School & UH grad student Laura Rodman (71 Youth;10 Adults)	Education Project--Native Plant Garden Maintenance	81	Native plant garden service project/educational tour	Diane
10/26/2000	On	US Fish & Wildlife Service Staff visit to YAC garden site	Service Project--planting and weeding at YAC garden site	10	Native plant garden maintenance	Diane
10/21/2000	On	Univ. of Hawaii Manoa-Botany 350 Class Tour	Academic: Watershed Tour-Muli Wai Site	25	Environ. sci. investigations	Diane
10/19/2000	On	Waimanalo Elem. School	Education Project--and light weeding at Puha Plant Garden MCTAB	30	Native plant garden tour and service project	Diane

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
10/16/2000	On	Haw. Pac. University Environ. Science Class	Academic: Watershed Tour-Muli Wai Site	10	Environmental sci. investigations	Diane
10/10/2000	Off	Off site presentation at UH Manoa Botany 350	Academic--Pre-field trip prep in classroom	30	Watershed orientation--ecological restoration program	Diane
9/8/2000	On	Boy Scout Troop (8 Adults; 25 Youth)	Service Project-Muli Wai Site	33	Weed removal	Diane
8/16/2000	On	State DLNR Semiannual (Summer) waterbird count	Education/Bird Survey at Mokapu	6	Bird count	Diane
8/1/2000	On	Waimanalo Elem School--Teachers, Staff, Parents	Overview--Puha Site-MCTAB	100	WQ, biosurveys, nature appreciation; picnic lunch	Diane
7/28/2000	On	Youth for Env. Services (YES)	Serivce Project at Muli Wai Site	45	Weed removal	Diane
7/26/2000	On	Base Chaplain Tour (Confirmation Students from Pearl Harbor/Maui)	Education Project--Muli Wai Native Plant Garden Tour	12	Native plant garden education tour	Diane
7/22/2000	On	Boy Scout Troop (21 Adults; 22 Youth) (Diane Miyamoto)	Service Project--Muli Wai site	43	Weed removal	Diane
7/22/2000	On	MCTAB-Waimanalo Nursery interns (teens)	Service-Planting	16	Native plant installation	Diane
7/14/2000	On	Hui Ku Maoli Ola-Landscapers & UH summer interns (2 Adults;15 Teens)	Servce Project--Native Plant Puha Garden	17	Native plant garden planting	Diane
7/7/2000	On	Hui Ku Maoli Ola-Landscapers & UH summer interns (2 Adults;15 Teens)	Service Project--Native Plant Puha Garden	17	Native plant garden planting	Diane
6/30/2000	On	Hui Ku Maoli Ola-Landscapers & UH summer interns (2 Adults;15 Teens)	Service Project--Puha Garden MCTAB	17	Native plant garden planting	Diane
6/28/2000	On	Hui Ku Maoli Ola-Landscapers & UH summer interns (2 Adults;15 Teens)	Service Project--Puha Garden MCTAB	17	Native plant garden planting	Diane
6/22/2000	On	Hui Ku Maoli Ola-Landscapers & UH summer interns (2 Adults;15 Teens)	Service Project: Puha Garden MCTAB	17	Native plant garden planting	Diane

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
6/17/2000	Off	Offsite Invited Presentation at Community Watershed Symposium at Le Jardin Academy by Kawai Nui Marsh	Academic/Education re MCBH Watershed Restoration Work	100	Watershed restoration project work update	Diane
5/22/2000 - 5/25/2000	On	Hosted CECOS Nat. Res. Compliance Course, including field trip tour	Academic/ Education Project--Natural Resources	30	Watershed/natural resources/wildlife	Diane
5/13/2000	On	US FWS-sponsored Internatl. Seabird Biologists' Conference Visit to Booby Colony	Education Project--Booby Colony tour	20	Bird colony visit	Diane
5/10/2000	On	MCTAB-Waimanalo Elem School-4th graders	Service-Planting	60	Native plant installation	Diane
5/9/2000	On	Watershed Information Display at Aloha Fair on Base	Education Project--Watershed program/volunteer options	100	Watershed program awareness	Diane
5/8/2000	On	YAC/Mokapu Elem Sch--4th graders	Service--Mulching	25	Mulch application	Diane
4/29/2000	On	Air Force Volunteers	Service: Mulching at Puha Garden MCTAB	11	Native plant garden service project	Diane
4/20/2000	On	Ulupa'u Booby Colony Girl Scout Visit (7 A; 7 Youth)	Education Project--Base Girl Scouts to Booby Colony	14	Bird colony visit	Diane
4/20/2000	On	Ulupa'u Booby Colony Visits--Pohai Nani Kupuna Home Group and Audubon Group)	Education Project--to booby colony	60	Bird colony visit	Diane
4/15/2000	On	MCBH Families/Cub Scouts(15 Adults; 15 Youth; Chatman)	Service: Mulching at Puha Garden MCTAB	30	Native plant garden service project	Diane
4/7/2000	On	VIPs-Pentagon & EPA	Watershed/gardens	7	Watershed awareness	Diane
4/4/2000	On	Aikahi Elem Sch 6th graders	Service Project: Muli Wai Site weeding	50	Weeding; nature appreciation at Muli Wai	Diane
4/4/2000	Off	Invited Presentation at Pacific Environ. Restoration Conference (PERC), organized by USAF-Hickam, etc.	Academic/ Education Conference Presentation	100	Community-based approach to ecological restoration	Diane

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
3/15/2000	On	Outdoor Circle Tour of Native Plant Landscaping Initiatives at Mokapu	Education Tour--Native Plant Gardens & Landscape Projects	17	Native plant garden and landscape project tour	Diane
3/14/2000	On	YAC/Mokapu Elem. School--3, 4, 6th graders	Service: Native Plant Garden establishment	200	Planting native plants	Diane
3/8/2000	Off	Invited Presentation at CECOS Environ. Protect. Course at Waipahu Trng. Facility	Academic Education Project--CECOS environ.course	50	Navy CECOS environ. protect. course presentation	Diane
3/7/2000	On	YAC/Mokapu Elem School--4th & 6th graders	Service Project: Prep. Day	100	Site prep--YAC garden	Diane
2/11/2000	On	Waimanalo Elem School, 4th & 7th graders	Education andService Project: Puha Stream Garden-MCTAB	100	WQ & Nature Appreciation; Nickelodeon taping for TV	Diane
2/10/2000	On	Mokapu Elem School outing to watch Annual AAV Mud Ops at Nu'upia Ponds (4th graders)	Education/Service Project--Watch AAV work while weeding at Muli Wai Garden/Ponds	100	Native plant garden service project/educational tour	Diane
1/25/2000	On	Waimanalo Elem. School teachers	Waimanalo Watershed Tour	20	Watershed orientation	Diane
1/22/2000	On	Volunteer Booby Nest Platform Repair Project	Service Project at Ulupa'u WMA	6	Nest platform repair by volunteer adults	Diane
1/21/2000	On	Audubon Society member tour of Booby Colony	Education Tour--Booby Colony-Ulupa'u WMA	30	Bird colony tour	Diane/PAO
1/20/2000	On	MCBH Youth Activities Center/YAC	Service Project at Muli Wai & YAC Gardens	23	Mulching; garden prep	Diane
1/13/2000	On	Aikahi Elem School-6th graders	Service project: Planting at Muli Wai garden site	50	Native plant installation	Diane

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
1/8/2000	On	Volunteers (4 Adults; 15 Youth)	Service Project: Weed removal at Muli Wai and YAC garden sites	19	Weed removal	Diane
1/3/2000	On	VIP Watershed Tour for Luna Leopold & associates	Education Tour--watershed projects on MCTAB	6	Watershed/fluvial geomorphology orientation	Diane
1999						
12/30/1999	On	VIP Watershed Tour for Luna Leopold & associates	Education Tour--watershed projects on Mokapu	6	Watershed/fluvial geomorphology orientation	Diane
12/19/1999	On	Audubon Volunteers	Ann Christmas Bird Count	6	Volunteer bird count	Diane
12/11/1999	On	MCBH Youth Activities Center/YAC Teens	Service Project at Muli Wai Garden	10	Mulching; garden prep	Diane
12/2/1999	On	Aikahi Elem 6th graders	Watershed/MCDC Familiarization Visit	50	WQ Survey & Land Use Impacts Familiarization	Diane
12/1/1999	On	Aikahi Elem. School-6th graders	Watershed Tour	50	Watershed Familiarization	Diane
11/18/1999	On	Aikahi Elem. School-6th graders	Watershed Tour	50	Watershed Familiarization	Diane
11/9/1999	On	Aikahi Elem Sch 6th grdrs	Meet the Marines General Tour	50	Visit Marine activities & environ. awareness	Diane
11/9/1999	On	Mokapu Elem School 3rd graders (S. Cupchoy)	Academic: Watershed Tour	35	Watershed/Native Plants	Diane
11/7/1999	On	MCBH Youth Center/YAC (6 adults; 19 youth)	Service Project at Muli Wai garden	25	Mulch application	Diane
11/2/1999	On	Mokapu Elem School 3rd graders (S. Cupchoy)	Academic: Watershed tour	30	Watershed/Native Plants	Diane
10/29/1999	On	Historic Hawaii Fdn.	Watershed Health	40	Watershed/Native Plants	Diane
10/27/1999	On	Hui Malama O Ke Kai--Waimanalo-Based after-school program for youth	Visit to Booby Colony & Pyramid Rock Beach	20	Ocean appreciation project	Diane
10/26/1999	On	Aikahi Elem School - 6th graders	Watershed Class: Geography/history	50	Part of teacher's watershed course activity	Diane
10/20/1999	On	Aikahi Elem. Schl-5th graders	Service Project: Muli Garden weeding	30	Part of teacher's watershed course activity	Diane
10/2/1999	On	Venture Group	Volunteer Service	13	Watershed/native plants	Diane

DATE	ON- or OFF-MCBH	AUDIENCE	ORIENTATION General, Natural, Cultural, Academic, or Service Interest	NUMBER OF ATTENDEES	GENERAL SUBJECTS	POINT OF CONTACT
9/12/1999	On	Elem Teachers' Workshop-Univ. of Hawaii Class	Education--Walk the Watershed Tour	20	Education; familiarization w/ watershed ecosystem	Diane (UH Prof and POC)
9/11/1999	On	Church Group (C. Bauske)	Volunteer Service	11	Weeding; nature appreciation at Muli Wai	Diane
8/12/1999	Off	Elem Sch Teachers	Academic: Watershed Health Course	20	Dr. Drigot's UH Watershed Health Class	Diane
5/14/1999	Off	Kupuna (Hawn Elders)	Watershed Health & Muli Wai native plant garden site	40	Update on Mokapu Projs.	Diane
5/1/1999	On	3 Windward Elem. Schools	Watershed Awareness	200	"Roots & Wings" Program - vision bldg. exercises	Diane
4/24/1999	On	On- & Off-Base Public	Watershed Health	150	Walk the Watershed Event: tours, planting, H20 investigations, displays, story-telling, native Hawaiian handicraft demonstrations	Diane
3/17/1999	On	UH Geology Class	Academic	30	Geology tour of east coast of Ulupa'u Crater	Lance
2/27/1999	On	UH Botany Class	Academic	25	Resource conservation; tour of watershed and crater booby sites.	Diane

G2. EXAMPLES OF PUBLIC OUTREACH

This appendix contains examples of public outreach relating to MCBH natural resources management program and accomplishments. Examples are provided of outreach within the Department of Defense (e.g., MCBH participation in military interservice environmental award competitions) and in achieving program visibility among external agencies and the public. Examples in the "external" category show how MCBH natural resources management programs and accomplishments are being made visible through presentations, publications and websites hosted by many and diverse outside agencies to a local, national and international audience. In addition, MCBH received a Certificate of Recognition in 2005 from USFWS for "outstanding efforts for natural resources conservation" within their Military Installation Conservation Partner Award program competition for 2004. As explained in the letter MCBH received from the USFWS in May 2005, their award program was created "to recognize installations that have made significant natural resources conservation achievements, while enhancing military training, through cooperative work with the Service and others." For further details, see a copy of the letter and certificate of recognition received in this Appendix.

MCBH RECORD OF WINNING PERFORMANCE IN THE DEPARTMENT OF DEFENSE ENVIRONMENTAL AWARDS COMPETITION

For 45 years, the Department of Defense has provided national recognition and publicity to military and civilian personnel for excellence and leadership in managing environmental resources through an annual interservice awards competition. Each Military Service (i.e., Air Force, Army, Navy, Marine Corps, National Guard) nominates an installation, individual and/or team to represent their service in this competition pertaining to various categories. Each Service's nominee is judged against the counterpart nominee in the other services, and a first place winner is chosen for each category in the Department of Defense competition.

Larger-sized (greater than 10,000 acres) industrial installations compete among each other and smaller-sized (less than 10,000) non-industrial installations compete against each other, in an alternating year sequence. The award categories represented in the competition have grown and diversified over the years as the environmental programs within the military have become more diverse and sophisticated. Marine Corps Base Hawaii (and under its preceding name as Marine Corps Air Station Kaneohe Bay) has a long and distinguished track record of performing well in these competitions. A summary of MCBH performance over the last 35 years is listed below, highlighting recognition received in the natural resources conservation category. Other categories in the competition where MCBH has placed over the years as either an overall winner or honorable mention/runner up at either the SECNAV or SECDEF levels are: pollution prevention, environmental quality/protection, environmental cleanup, and recycling programs, and for team efforts in pollution prevention and cultural resources management.

1970 – 2005

- **SECDEF Awards: 7**
- **SECNAV Awards: 20**
- **SECDEF Honorable Mentions: 15**
- **SECNAV Honorable Mentions: 11**

Detailed excerpts of the above summary, showing awards and honorable mentions award specifically in the natural resources conservation program or individual categories:.

SECDEF Natural Resources Conservation Award	SECNAV Natural Resources Conservation Award
2005 Winner – Program	2005 Winner – Program – Small Installation
2005 Citation for Meritorious Achievement (Dr. Drigot)	2005 Winner – Individual (Dr. Drigot)
1995 Winner – Program	2003 Winner – Small Installation
1995 Individual Citation for Meritorious Achievement (Dr. Drigot)	2001 Winner – Small Installation
1994 Citation for Meritorious Achievement – Program	1999 Runner-Up – Program
1992 Citation for Meritorious Achievement – Program	1998 Winner – Program
1984 Runner-Up – Program	1997 Winner – Program
1982 Runner-Up – Program	1996 Winner – Program
1976 Winner – Program	1995 Winner – Program
1973 Honorable Mention – Program	1995 Winner – ndividual (Dr. Drigot)
	1994 Winner – Program
	1993 Winner – Program
	1988 Special Recognition – Program
	1985 Winner – Program
	1984 Runner-Up – Program
	1982 Runner-Up – Program
	1976 Winner – Program

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington, D.C. 20240

MAY 12 2005

In Reply Refer to:
FWS/DHRC/BRMS

Brigadier General George J. Trautman, III
Commanding General
Box 63002
MCBH Kaneohe Bay, Hawaii 96863

Dear Brigadier General Trautman, III:

In 2004, the U.S. Fish and Wildlife Service (Service) established the Military Installation Conservation Partner Award. The award was created to recognize installations that have made significant natural resource conservation achievements, while enhancing military training, through cooperative work with the Service and others. As you may know, the Service selected Fort Carson, Colorado as the recipient of the award for 2004.

The Service's Pacific Islands Fish and Wildlife Office nominated the Marine Corps Base, Hawaii to receive the Military Installation Conservation Partner Award for 2004. While only one winner could be selected, it is a great honor to be nominated and we recognize your installation for its contributions to natural resource conservation with the enclosed Certificate of Appreciation.

We look forward to future cooperative conservation efforts with your installation. Specifically, we encourage you to continue working closely with your Service field office as you review your Integrated Natural Resources Management Plan (INRMP). Cooperative review efforts will benefit the quality of your INRMP and will ensure the INRMP review is completed prior to the 2006 deadline.

If you would like more information regarding the award program or the INRMP review process please contact us at 202-208-6394.

Sincerely,

Ma Parker

Assistant Director - Fisheries and Habitat Conservation

Enclosure

TAKE PRIDE® IN AMERICA

U.S. FISH AND WILDLIFE SERVICE

Certificate of Recognition

Marine Corps Base Hawaii

in recognition of your outstanding efforts for natural resource conservation

Ma Parker

Assistant Director - Fisheries and Habitat Conservation

5/12/05

Date

Below are examples of publications/presentations/posters/videos developed by MCBH staff and others and hosted in external agency/public forums covering MCBH's unique natural resources and/or natural resources management program accomplishments.

Title	Date	Author	Details
Under Siege: Invasive Species on Military Bases	2005	Westbrook, C., and K. Ramos	National Wildlife Federation Report funded by DoD and posted at NWF's website: Through 12 case studies from Army, Navy, Air Force, and Marine Corps installations, this report focuses on the impacts of invasive species on the military. October 2005. Marine Corps Base Hawaii's successful mangrove removal story is one of the case studies featured, with interview of Dr. Diane Drigot.
The Geological Context of Middle Pleistocene Crater Lake Deposits and Fossil Birds at Ulupau Head, Oahu, Hawaiian Islands.	2005	Hearty, P.J., H.F. James, and S.L. Olson.	Article in Alcover and Bover (eds.): Proceedings of the International Symposium "Insular Vertebrate Evolution: the Palaeontological Approach".Monografies de la Societat d'Història Natural de les Balears, 12: 113-128, recounting geology and palaeontology of Ulupa'u Crater and the oldest fossil bird bone deposit found there (over 400K years before present), by scientists provided access with permits to perform research at Ulupa'u Crater Head on MCBH Kaneohe Bay over the years. This Crater contains the oldest yet dated fossil bird bone deposit yet found in the Hawaiian islands.
Masters of Amphibious Assault	2004	USMC, USFWS	Color poster produced as part of "Saving a Few Good Species" partnership series between USMC and USFWS. Poster "unveiled" during ceremony at Nu'upia Ponds WMA, January 2004. Dimensions 18" x 24" Distributed to agencies and schools and posted for viewing/downloading at USFWS's national website.
Sierra Club and Marines Partner for Endangered Birds on Oahu	2004	Drigot, D. C. and A. Kaohelaulii	Article describing how Sierra Club and Marines have a long-term partnership by Sierra Club service trip volunteers coming to base to help Environmental staff and Marines pull mangrove out of wetlands to enhance endangered bird habitat, In the June 2004 edition of Malama I Ka Honua, newsletter of the Hawai'i Chapter of the Sierra Club.
History buffs meet Nov. 16	2004	Hernandez, S. Y.	Article related to Kailua Historical Society meeting on November 16, 2004, re Dr. Diane Drigot 's presentation, "Many Faces of Mokapu," about the history of the Mokapu Peninsula, November 2004 in Windward Sun Press.
The Military's Contribution: Marine Corps Base Hawaii Addresses Aquatic Invasive Species	2003	Drigot, Diane	Case Study #6 in a series of case studies published in State of Hawai'i Aquatic Invasive Species Management Plan, published in September 2003 and accessible at State of Hawaii DLNR website, prepared by State of Hawaii DLNR, Division of Aquatic Resources, through Andrea D. Shluker, The Nature Conservancy of Hawaii.
Government Recognizes Need for Sustainable Landscaping	2002	Drigot, D.	Article in Hawaii Landscape News, September/October 2002 issue, on federal government's growing commitment to an ecological approach to site development, landscaping, and natural resources management and how preference for use of native plants in landscaping projects is one manifestation. Examples of progress at MCBH provided. Based on presentation made by author at "Native Plants in Public Places" workshop in July 2002, sponsored by the Landscape Industry Council of Hawaii, publishers of this newsletter.

Title	Date	Author	Details
Preventing Listings and Managing Species at Risk through a Collaborative Approach to Fostering Ecosystem Health	2002	Drigot, D.	Presentation by Dr .Diane Drigot at 2002 Department of Defense Conservation Conference, “Proactive Planning for Mission Support,” and published in proceedings. Tucson, Arizona, June 17-21 2002.
Red Mangrove Eradication and Pickleweed Control in a Hawaiian Wetland, Waterbird Responses, and Lessons Learned	2002	Rauzon, M.J. and D. Drigot	Article in “Turning the Tide: The Eradication of Invasive Species,” Proceedings of the International Conference on Eradication of Island Invasives. Edited by C.R Veitch and M.N. Clout. Occasional paper of the IUCN Species Survival Commission No. 27.
Emergency Environmental Work Force	2002	Mo‘o Productions, Kula Maui	Emergency Environmental Workforce (EEWF) work crews were comprised of successful applicants suddenly laid off from jobs in various walks of life after “9-11”, and went to work for the EEWF to help get them back on their feet as the economy recovered. The State Legislature passed several million dollars to create the EEWF for this purpose with the condition that the workers be employed in projects to control invasive species on public lands around the Hawaiian Islands. MCBH was the first place to volunteer to host a crew and is one of the locations featured on this video, used as an educational tool and feedback to state legislature about value of the program.
An Ecosystem-based Management Approach to Enhancing Endangered Waterbird Habitat on a Military Base	2001	Drigot, D.	Article by Dr. Diane Drigot in Evolution, Ecology, Conservation and Management of Hawaiian Birds: A Vanishing Avifauna. Scott, J.M., S. Conant, and C. van Riper III, editors, 22: 329-337.
Restoring Watershed Health: Peacetime Military Contributions and Federalwide Agency Implications	2000	Drigot, D.	Article in Federal Facilities Environmental Journal, Autumn 2000: 71-86.
Ecosystem Health as a Strategic Objective for Managing Peacetime Military Presence in Coastal Catchments: The Case of Marine Corps Base Hawaii	2000	Drigot, D.	Presented at the International Symposium on Ecosystem Health, International Society for Ecosystem Health, Brisbane, Australia, July 2000.
Contributing to Environmental Quality: Reducing the Military's Impact on the Environment	2000	Drigot, D.	Presentation by Dr. Diane Drigot and published in proceedings, The Role of the Military in Protecting the World's Water Resources (3-5 November 1999), Butts, K.H., A.L. Bradshaw Jr. and B.D. Smith, editors , conducted by Deputy Under Secretary of Defense for Environmental Security and United Nations Intergovernmental Oceanographic Commission. Carlisle Barracks, PA, Center for Strategic Leadership, U.S. Army War College: 17-43.
Safeguarding Hawaii's Endangered Stilts	2000	Drigot, D.	Article in Endangered Species Bulletin Volume XXV No.6: 8-9. November/ December 2000, accessible at USFWS website.
Mangrove Removal and Related Studies at Marine Corps Base Hawaii	1999	Drigot, D.	Article in “Technical Notes, Conserving Natural and Cultural Resources on Department of Defense Lands: Case Studies” from the DoD Conservation Program. Tech Note M-3N, pp. 170-174.
Red-footed Booby Use of Artificial Nesting Platforms	1999	Rauzon, M. J. and D. Drigot.	Article in Colonial Waterbirds Journal. 22(3): 474-477.

Recent examples from the following websites/magazines are provided in the pages that follow:

MCBH-Sierra Club Partnership (various articles)
Drigot and Kauhelaulii (2004); Kinik 2005;
http://www.sierraclub.org/insider/insider2006-03-21.asp
http://www.sierraclub.org/wildlife/species/range_tour/

NWF: Under Siege: Invasive Species on Military Bases (excerpt) (Westbrook and Ramos 2005)

Navy Currents Calendar (2005)

DOD/USFWS 'Saving a Few Good Species'
http://endangered.fws.gov/pubs/marines.html

USEPA Clean Water Action Plan: Watershed Success Stories (USEPA 2000)
http://water.usgs.gov/owq/cleanwater/success/

White House Conference on Cooperative Conservation
http://cooperativeconservation.gov/conference805home.html

Hawaii-Pacific Cooperative Ecosystem Studies Unit (CESU)
http://www.botany.hawaii.edu/faculty/duffy/HICESU.htm
http://www.cesu.org/currentcesus/hawaii_pacific/introduction.html

Koolau.net (Hoʻola I Ka Aina), Examples of Marine Corps Environmental Stewardship program
posted on community-hosted website
http://www.pixi.com/~isd/MCBH_1.html

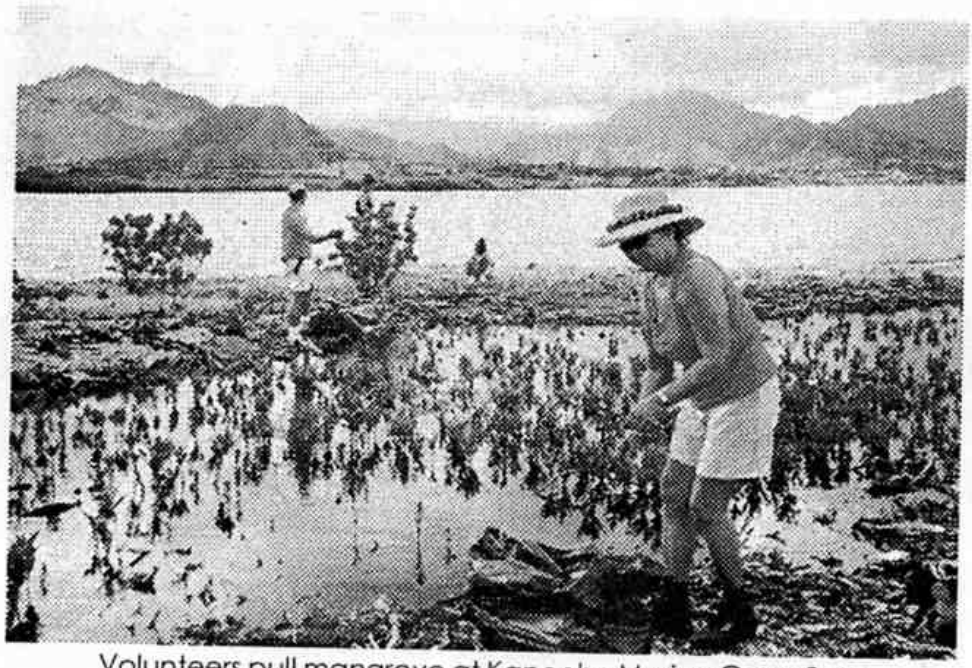
Sierra Club and Marines Partner for Endangered Birds on Oahu

by Diane Drigot and Annette Kaohelaulii

Sierra Club volunteers from the O'ahu Group look forward to service projects at Marine Corps Base Hawaii, Kaneohe Bay. Why? The service projects we do for the MCBH Environmental Office are interesting and we all have a great time sloshing around to remove mangrove shoots in base wetlands, refurbishing endangered Hawaiian Stilt or red-footed booby nesting platforms, doing bird counts or native plant garden maintenance. This is just a sampling of some of the service projects performed by Sierra Club members over the years.

Recently, under the guidance of Dr. Diane Drigot from the Base environmental staff, we have arranged to spend a Saturday morning every other month doing a variety of projects to restore and enhance wetlands on Mokapu peninsula near Kailua. You will not find a more scenic worksite. The panoramic view of the Koolau Pali across Kaneohe Bay on a beautiful day filled with sunshine and cool trade winds is breathtaking. It is probably quite similar to heaven.

The loosely organized Singles Section of Oahu Group has taken on wetlands as their environmental project. While these service projects are not limited to singles, and everyone may participate, there are some advantages to working with young male and female Marines, who also turn out for these events. They are looking for friends who enjoy being in the outdoors, they have a lot of energy and stamina and together we can make a difference in the various wetlands and native Hawaiian plant gardens on the base.



Volunteers pull mangrove at Kaneohe Marine Corps Base

Due to security on the base, you have to sign up for this service project ahead of time. A list of names and social security numbers has to be provided to the Environmental Office a couple of days before the project. Passes are issued to cars that have current registration, safety checks and no-fault insurance cards. (See Oahu Group Outings page for April 10) Call Coordinator Annette Kaohelaulii at 235-5431 for more information.

To quote Diane on the value of these service projects: "I have been working at Marine Corps Base Hawaii over the past 22 years. During that time, Sierra Club, Hawaii Chapter (Oahu outings and High School Hikers Program) members have become one of our regular volunteer service organizations on a variety of projects. The Base has received 25 national environmental stewardship awards over that time. Our supportive volunteers are just as much a winner as the Marine Base because the result of working together over the years has been a healthier environment and a stronger partnership between the Marines and the community.

Marines, acting as volunteer units, regularly perform community service projects off base as well. One such unit, for example, worked with Sierra Club members and others to help build the Na Ala Hele's Maunawili hiking trail from the Pali lookout to Waimanalo. On base, it took a phased effort with volunteers and contractor help over 20 years, but 25 acres of invasive mangrove forest have been virtually eliminated at MCBH wetlands to recover endangered species wetland habitat. Volunteers are still needed, however, to remove invasive mangrove that continues to encroach from outside areas around Kaneohe Bay. Everyone concerned must continue to partner where they can to control invasive species that are insensitive to political or administrative boundaries.

The Marines' mangrove removal project started with a small band of dedicated volunteers and environmental staff with a big vision of what could be done. Since that first mangrove removal project by a Sierra Club High School Hikers Ecology Camp hosted on base in 1993, repeated Sierra Club regular outings and three additional Sierra Club High School Hikers Ecology Camps have been hosted. Thus, Sierra Club has contributed a major contingent to the thousands of volunteers over 20 years to help accomplish what others thought was "mission impossible" back in the early 1980's. The State of Hawaii included MCBH's success story of mangrove removal in their CY03 Aquatic Invasive Species Management Plan."

Sierra Club, Hawaii Chapter Newsletter

the legislative process.

The remaining winners were **Charlie Fredrick** for organizing in the Midwest with the Sierra Student Coalition (Joseph Barbosa Earth Fund Award); **Kevin Frey** (Distinguished Service Award for longtime commitment to conservation); **Gerry Roach** (Francis P. Farquhar Mountaineering Award); **Deb Alper** for her St. Paul, Minnesota, "Tour de Sprawl" bike ride (One Club Award); **Timothy Logan** for building a coalition to help address New York City's solid-waste problem (Environmental Alliance Award); **Patrick Colgan** (Oliver Kehrlein Award for service to Sierra Club Outings); **Ruth Gravanis** and **Til Purnell** (Special Service Awards); **Clyde Hanson, Bettye Harris,** and **George Whitmore** (Susan E. Miller Award for exceptional contribution to chapters); **Michele Perrault** (William E. Colby Award for administration); the **Michigan Mackinac Chapter's** *Mackinac* (Newsletter Award); and the Minnesota **North Star Chapter** for its Web site, *northstar.sierraclub.org* (Electronic Communication Award).

▸ ON THE WEB *For more on the winners, go to* sierraclub.org/awards.

Every Day Matters

How did hundreds of environmentalists pay tribute to grassroots activism on August 6? By writing for "Every Day Matters: A Day in the Life of the Sierra Club," a Web project that offers a snapshot of their experiences. From marching in rallies to rafting the Colorado River to proposing marriage, Club members documented their adventures in essays and photos. Read these inspiring tales at *sierraclubstories.org.*

TAKE ACTION

Join the Sierra Club's Take Action Network at *sierraclub.org/takeaction,* where you can send faxes to elected officials.

For the inside story on the Club's campaigns, get a free subscription to the newsletter the *Planet* at *sierraclub.org/planet/subscribe.*

GRASSROOTS

BY KARINA KINIK

BILL COSTER/ARDEA

▸ HAWAII
A Few Good Species

The Sierra Club and the U.S. Marine Corps have joined forces to fend off a determined invader: the non-native mangrove. Every other month, volunteers from the Oahu Group and the Marines' base on Kaneohe Bay pull shoots that threaten access to training areas—and the habitat of the endangered Hawaiian stilt (above) and other native wildlife. "Us 60ish ladies think the Marines are great," says the Club's Annette Kaohelaulii. "They are in such good condition and just leap through the mud and yank those dastardly shoots." The groups' efforts have helped double the waterbird's population at the base by removing more than 25 acres of mangrove. With the right combination of cooperation and community involvement, says Diane Drigot, a natural-resources-management specialist at the base, "military readiness and conservation are totally compatible." Even the Bush administration acknowledged as much: In August, the team's 23-year effort was lauded at the White House Conference on Cooperative Conservation.

▸ WISCONSIN
Lungs' Defensive Line

Activists tackling air pollution in the Great Lakes area have a seasoned player on their team: former Green Bay Packer Jim Carter. In July, the Sierra Club's John Muir Chapter and Carter's group, Clean Wisconsin, filed a notice of intent to sue Wisconsin Public Service Corporation for federal air-quality violations. Since at least 1999, the utility's coal-fired power plant in Green Bay has emitted illegal amounts of soot and other particulate matter—which, once it enters the lungs, can lead to asthma, heart attacks, even premature death. The groups said that if improvements weren't made in 60 days, they'd sue. At press time, Club attorneys were preparing the court filings.

Earlier this year, the American Lung Association blasted Green Bay's Brown County for its asthma-triggering pollution. "Athletes like me are being put at risk by dirty power plants that pump soot and smog into the air we breathe," says ex-linebacker Carter, who's worked on environmental issues since the 1990s. Studies show that air pollution not only worsens asthma for children and adults but can also *cause* the disease in kids who exercise outside.

The utility admits it's exceeded permitted pollution levels—but only on occasion. "Their response amounts to 'Well, we do increase the number of people who die prematurely, but we don't do it very often,'" says Jennifer Feyerherm, a toxics specialist for the Club. If the plant used up-to-date technology, she says, it could lower its soot emissions by 90 percent. ■

▸ CONTACT US *Spotlight local Sierra Club activism by writing to Karina Kinik at* Sierra, *85 Second St., 2nd Floor, San Francisco, CA 94105; e-mail* karina.kinik@sierraclub.org.

Back to Insider Archive

In This Issue of the Sierra Club Insider:

Marines and the Endangered Species Act
The Bush Administration's Attack on the Endangered Species Act
Interactive Endangered Species Map: Find Out What's Near You!
Update: Grizzly Bear Petition Signatures Making an Impact
Poverty & the Environment in Washington, D.C. and Houston
EXPLORE: Video - Inner City Outings Goes Sledding
ENJOY: New Cartoon! Check out the Runner-Up Candidates for Interior Secretary
PROTECT: Keep the Endangered Species Act Strong

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Sierra Club Insider

March 21, 2006

Boots on the Ground, Birds in the Nest

When you think of the Endangered Species Act, the U.S. Marine Corps probably isn't the first group that comes to mind. But the Corps has proven to be an excellent caretaker for the native plants and animals on its bases. In Hawaii, it has helped raise the population of endangered Hawaiian stilts from 60 birds 22 years ago to 160 today. How'd that happen? Just before nesting season, the Corps conducts "mud ops" training exercises with amphibious assault vehicles on the Nu'upia Ponds wetlands. By churning up the ground, they kill invasive pickleweed and provide better nesting sites and feeding opportunities. The Corps has also helped on the mainland with the desert tortoise in California and the red cockaded woodpecker in North Carolina.

The Department of Defense sponsors range tours of its installations, promoting interaction between the environmental community and the armed services to protect native habitats and species while balancing the military's demands for on-site training. The tours began in 2000, and Maribeth Oakes, the Sierra Club's Lands Program Director, believes that the program is becoming increasingly productive. Read Maribeth's journal of her experience on last week's range tour to three facilities in Hawaii.

EXPLORE

A TV Salute to the Sierra Club's Inner City Outings

Nine-year old Leslie Valtierra took a sledding trip earlier this year, and touched snow for the very first time, courtesy of the Sierra Club's Inner City Outings program. (The snow felt harder than she expected.) In February, ABC7, a San Francisco Bay Area TV station, saluted the ICO program, which gives low-income kids -- who "wouldn't be here any other way" -- a chance to experience the great outdoors, and its volunteers, like insurance salesperson Ariak Larkin, Engineer Will Chi, videographer Jerry Roney, and biologist Allison Chin. The snow trip Valtierra went on took about 400 volunteer hours to put together, shared by seven volunteers. You can watch the video and find out more about the Inner City

Join the Sierra Club
Why become a member?

fish & wildlife

Department of Defense Range Tours

A Look at How Military Training Operations Impact Natural Resources and Endangered Species

by the Sierra Club's Senior Washington DC Lands Director, Maribeth Oakes

Range Tours allow the military and environmental communities to explore ideas for balancing the protection of wildlife and native plant habitat with the training demands of our nation's military.

The Sierra Club, along with representatives from eight national and seven local conservation organizations, joined Department of Defense personnel for a four-day Range Tour of three Hawaiian military facilities. Started several years ago, the tours are designed to facilitate dialogue between military services and environmental advocacy organizations.

Range Tour attendees at the Marine base's Waterfront Ops. The group is returning from an orientation of the Kane'ohe Bay ecosystem and a visit to the mammal stranding facility. Sierra Club's Maribeth Oakes is third from the left on the front row.

Day 1, U.S. Marine Corps:

O'ahu Island: U.S. Marine Corps Base

These 26-ton amphibious assault vehicles look like they might devastate the marine base's Nu'upia pond wetlands, but in actuality they kill invasive pickle weed plants and create a terrain enjoyed by the endangered Hawaiian stilts, who feed on the insects, worms, and crustacean uncovered by the AAVs.

Day 2, U.S. Army:

O'ahu's Waimea Valley: The Community and the Army Working to Protect the North Shore

A consortium of public and private groups raised $14 million to buy Waimea Valley and keep it undeveloped. The U.S. Army's contribution of $3.5 million helped secure the deal and prevent the construction of a planned housing development that would have marred the scenic natural areas and closed the lands to public access.

Day 3, U.S. Navy:
Kauai: The U.S. Navy Pacific Missile Range Facility

On the western shores of the Island of Kauai sits the Pacific Missile Range Facility, known as Barking Sands. It is open to public use, for such activities as swimming, surfing and sunning, on weekday nights and 24 hours on weekends and holidays, except during special operations.

background

Those spearheading the Range Tour concept recognized that previously the military and environmental communities often failed to communicate effectively because a common knowledge base and understanding did not exist. Range Tours allow the two communities to see the same ground through the lens of the other, engage in dialogue at the facility, and explore new visions for protecting wildlife and native plant habitat while balancing the training demands of our nation's military. The Range Tours facilitate a forum for talking to each other and working towards mutual goals.

This Range Tour began on the Island of O'ahu at the Marine Corps Base Hawaii, which sits on the Mokapu Peninsula and between the Kane'ohe and Kailua Bays. After a briefing by Corps personnel, tour participants were taken to locations on base to view the military's native plant landscaping, wetland creation, and watershed repair and wildlife habitat protection efforts. The next expedition was to the interior of O'ahu, to Schofield Army Base. First stop at Schofield was the Army's greenhouse, where staff from the Army's Natural Resources Program discussed how native plant species are cultivated for planting on the range and in the community.

After learning about engagement skill training operations, the group went to the North Shore to see firsthand the land protected through the Army Compatible Use Buffer Program. The Navy's Pacific Missile Range Facility, located on the Island of Kauai's western side, rounded out the tour with discussions about the Shearwater Colony restoration activities, and the recovery efforts of the shoreline and habitat at the Nohili dunes.

- Day 1, O'ahu Island: U.S. Marine Corps Base
- Day 2, O'ahu's Waimea Valley: The Community and the Army Working to Protect the North Shore
- Day 3, Kauai: The Navy's Pacific Missile Range Facility

- Hawaii Department of Defense Complex Map

Maribeth Oakes serves as director of Sierra Club's Lands Protection Team. With a background in grassroots organizing and advocacy, Maribeth has been with the Club since 2002.

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Up to Top

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Department of Defense Range Tours

A Look at How Military Training Operations Impact Natural Resources and Endangered Species

O'ahu Island: US Marine Corps Base

The Marine Corps Base Hawaii (MCBH) oversees 25 percent of O'ahu Island's protected wetlands. The Marines have worked to enhance native plant and bird species on even the smallest wetlands, such as three half-acre drainage ponds on the base's golf course. Along with local activists, MCBH dredged and reshaped ponds, added solar-powered water circulation devices, and replaced invasive plants with native ones.

Although at first sight these 26-ton amphibious assault vehicles (AAV) look devastating to the marine base's Nu'upia Ponds wetlands, in actuality the massive tracks kill invasive pickle weed plants and create a terrain enjoyed by the endangered Hawaiian stilts. The stilts nest on mud mounds and feed on the insects, worms and crustacean uncovered by the AAVs.

To protect the species, AAV training only occurs in the month of January. But the stilts are benefiting: the number of birds at the base has risen from 60 to 160 in 22 years, when the trainings first began.

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Why become a member?

Ulupa'u Crater sits within the MCBH on the Island of O'ahu. Just off Kane'ohe Bay and the eastern shoreline, Ulupa'u Crater is where, every year, more than 10,000 Marines, soldiers, sailors, federal law enforcement agents, and reservists use approximately 160 acres of the land to engage in weapons training. Within the heart of the range sits the 23 acre Ulupa'u Wildlife Management Area, a nesting site for about 2,500 Red-footed Boobies, a federally protected seabird.

The weapons range poses several challenges to the military. The greatest threat to the boobies is brush fires, easily triggered by ricochets in dry grass. An invasion of foreign grasses leaves the landscape with no natural control. In general, fires in impact areas are allowed to burn, but not at the Booby Colony where the birds are protected by federal laws. Management of the Booby Colony includes brushfire management, erosion control, and training protocols.

The intentional killing of wildlife is punishable by law and could lead to the permanent closure of the range. Therefore the military's rules of conduct prohibit weapons firing on the west face of the crater (known as Mololani) and surrounding beaches, vehicles going off graded roads, smoking, and the harming or harassment of wildlife.

Dr. Diane Drigot, Senior Natural Resources Management Specialist for the Marine Corp Base Hawaii details the progress of the wetland restoration and drainage improvement projects on the base. The completed project will relieve chronic flooding by replacing a weed-choked drainage ditch with a more naturally functioning wetland lined with native plants.

Read more:

- Back to Range Tour main page.
- Day 1, O'ahu Island: U.S. Marine Corps Base
- Day 2, O'ahu's Waimea Valley: The Community and the Army Working to Protect the North Shore
- Day 3, Kauai: The Navy's Pacific Missile Range Facility
- Hawaii Department of Defense Complex Map

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Up to Top

HOME | Email Signup | About Us | Contact Us | Terms of Use

Under Siege:
Invasive Species on Military Bases

October 2005

By Corry Westbrook and Kindra Ramos
with Monica La

Larry Schweiger, President and Chief Executive Officer
National Wildlife Federation

Acknowledgments

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Report design and layout by Sara E. Jackson, NWF

Cover Photos (L-R/T-B): Tropical soda apple- Charles T. Bryson, USDA ARS, www.forestryimages.org; Parachuter- Art Hazebrook; Spotted knapweed- Jim Story, Montana State University, www.forestimages.org; 3rd Marine Light Armored Regiment navigating a Light Armored Vehicle through yellow star- thistle – Ken Spencer; Brown tree snake – Gordon H. Rodda-USFWS; Marine removing pickelweed- Diane Drigot; Musk thistle- USDA APHIS Archives, www.forestryimages.org; Soldiers training – Corry Westbrook, NWF; Kudzu covered trees- James H. Miller, USDA Forest Service, www.forestryimages.org .

www.nwf.org

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Photo: Tim Sutterfield

Red-footed boobies

Marine Corps Base Hawaii: Leaders on Hawaii's Front Line

Hawaii is on the front line in the national war against invasive species. This remote island-state is among the most highly endemic and fragile habitats on earth with almost 10,000 species found here and nowhere else.[35] Hawaii is also the endangered species capital of the United States: home to 25 percent of the total 1,264 plant and animal species protected by the Endangered Species Act and 40 percent of the 286 candidate species nominated for the list. Hawaii's native species evolved in relative isolation, with few, if any, natural defense mechanisms, making them vulnerable to intruders. More than 5,000 invasive species have become established in Hawaii over the past 200 years, and more than 1,100 endemic species have become extinct during that time.[36]

The Aloha State has recently invested more than $8 million to control invasive species, staging interagency invasive species control committees on each island to enable rapid response to the problem.[37] A recognized leader in Hawaii's war on invasives is Marine Corps Base Hawaii. The base's natural resources program's persistence and ingenuity breed success and hope.

THE PROBLEM

Mangrove (*Rhizophora mangle*) is one of the "most wanted" invasive species in Hawaii's coastal areas, including Marine Corps Base Hawaii. Introduced in the early 1900s, these trees form dense stands and literally crowd out native plant and animal life. Left unchecked, mangroves infest streams and wetlands and replace native marsh habitats critical for endangered Hawaiian waterbirds. Mangrove-choked waterways stagnate and foster mosquito breeding, helping to spread mosquito-borne diseases such as dengue fever. Furthermore, mangroves limit access to training areas by flooding them.

Mangrove stand

With Hawaii serving as a major staging ground for troops sent to Iraq and other theaters throughout Asia and the Pacific, mangroves are a serious threat to military readiness, says Diane Drigot, Ph.D., Senior Natural Resources Specialist at the base. Mangroves also conceal people intent on criminal behavior. According to Drigot, dense mangrove thickets near the base's borders along the Kaneohe Bay shoreline recently provided cover for a poacher of hundreds of pounds of illegally caught fish. "I'll bet few people think of invasive species as a security threat, but if we don't control mangroves, 'line of sight' security is breached for Marines protecting base borders," she says.

Other invasives disrupt training on the Marine Corps' upland training ranges. When dry land invasive plants, such as Guinea grass (*Panicum maximum*) ignite in such areas, the fires rage so fiercely that firefighters cannot bear the heat to control them. Fire-heated soil can trigger detonation of buried ordnance from past range uses, compounding perilous conditions. The peril is present not just for firefighters but for nearby sensitive species, ecosystems and human communities. For example, the base hosts a colony of more than 2,000 tree-nesting red-footed boobies (*Sula sula rubripes*) at the top of a crater firing range.[38] "Every time a fire occurs, the base has to immediately shut down training, fight the fire and prevent it from spreading into the booby colony or across the ridge into housing areas. This compels the military to be excellent environmental stewards and devise state-of-the art firefighting systems," says Drigot.

ACTIONS TAKEN

Each invasive species requires different control methods. Notable at Marine Corps Base Hawaii are the integrated efforts to both support military training and combat invasive species, such as their "pickleweed patrols." Under a partnership between natural resources staff and the Third Marine Regiment's Combat Assault Company, Marines train in their 26-ton Amphibious Assault Vehicles over difficult terrain, while clearing mudflats of pickleweed (*Batis maritima*), an invasive ground cover from Argentina that unless removed would make wetland areas inaccessible to the endangered Hawaiian stilt (*Himantopus mexicanus knudseni*). Since this practice began, the number of stilt counted on the base's wetlands has nearly tripled, growing from 60 to 160 birds (10 percent of Hawaii's total stilt population).[39] The muddy terrain training is also valuable to the Marines, according to Marine Corps Captain Kleinpaste, who oversaw the assault vehicle "mud ops" with Drigot this year. The annual exercise is a definite boost to combat training. Recently in Iraq, he said there was a mechanized company that actually got mired down in mud

during an attack and had to extract themselves while under hostile fire. The training Marines get while combating pickleweed allows them to hone their skills to survive battle.

Mangrove infestation at Marine Corps Base Hawaii has been managed by an integrated team of natural resources staff, combat-ready Marines, contractors and community volunteers, who hacked, plowed, pulled and excavated their way to victory. "It took about $2.5 million over 20 years to finish the job of removing 20 acres of invasive mangroves from installation wetlands," says Drigot, "but it was worth it. Twenty acres of 'saved' native habitat offers a 'proving ground' of what can be done."

This is a notable accomplishment, yet mangroves are a continuing problem on the base due to reinvasion from the adjacent lands and waterways. In order for the Marine Corps base to have any sort of long-term success with mangrove removal, neighboring land owners, both public and private, must begin to manage the species on their property.

Hawaiian Stilt nest on a mudflat created by the tracks of an Amphibious Assault Vehicles used to remove pickleweed during their annual "mud-ops".

Military bases must engage in these kinds of integrated, interagency cooperative management efforts for controlling invasive species. "Marines are limited in funding and size," Drigot says, "but that leads to great motivation and creativity. We interact with neighbors and partners effectively. Through innovative teamwork, we will curb invasive species. We will do it because we have no other choice but to protect our military's ability to train, preserve Hawaii's ecosystems, and help sustain a healthy economy. We hope to inspire similar efforts elsewhere. Remember, however, it takes years of persistence to win this battle and the effort should be immune from partisan politics."

Installation Specifics

Service Branches:

U.S. Marine Corps

Locations:

Marine Corps Base Hawaii manages the installations and natural resources located on a total of 4,500 acres on the island of Oahu, including Camp Smith, Kaneohe Bay, Marine Corps Training Area Bellows, Manana Family Housing Area, Pearl City Warehouse Annex and Puuloa Range Complex.

Installation's Primary Mission(s):

Marine Corps Base Hawaii maintains key operations, training, and support facilities and provides services that are essential for the readiness and global projection of ground combat forces and aviation units, and the well-being, morale and safety of military personnel, their families and the civilian workforce. Marine Corps Base Hawaii Kaneohe Bay has a fuel pier and waterfront area, used for loading tank landing ships and small boats for transporting equipment off-island.

Ecosystem(s):

watersheds, wetlands, mountains, grasslands, forests, reefs and tidal pools

SECNAV NATURAL RESOURCES CONSERVATION•SMALL INSTALLATION

Marine Corps Base Hawaii (MCBH)

The SECNAV Natural Resources Conservation award recognized MCBH as a diligent steward of Hawaii's diminishing coastal wetlands. MCBH controls 25% of O'ahu Island's protected wetlands. Even the smallest of wetlands—such as three, half-acre drainage ponds on the Base's golf course—have been enhanced to benefit native species, quality of life and the environment.

Sediments and weeds were choking these ponds, causing stagnant conditions, foul odors, and flooding during heavy rains. MCBH teamed with small businesses to dredge and re-shape the ponds, add solar-powered water circulation devices, replace invasive plants with natives, and attract more native waterfowl. The project benefited golfers, native species, and the local economy. These healthier, more scenic ponds now host several species of native plants and of native birds that forage and/or nest there.

CONTACT

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Currents

Masters of Amphibious Assault

Diane Dwyer, MCB Hawaii

Rob Shallenberger/USFWS

Diane Dwyer, MCB Hawaii

Every January since 1982, Marines invade Nu'upia ponds wetlands with 26-ton amphibious assault vehicles. Their massive tracks kill invasive pickleweed plants and create a "moat and island" terrain that the endangered Hawaiian stilts love. Stilts nest on mud mounds, where water deters predators, and pierce their sword-like beaks through the mud to devour flies, worms, and crustaceans. Marines, teaming with U.S. Fish and Wildlife Service, demonstrate how an elite amphibious force can train while helping a fellow master of amphibious assault. Stilts counted at Marine Corps Base Hawaii have risen from 60 to 160 in 22 years. That's what happens when your best friends are Marines.

The Marines
We're Saving A Few Good Species

Background photo: Dean Sensui, The Honolulu Star Bulletin

The Ko'olaupoko Watershed

Working Together on Tropical Watershed Restoration

The Ko'olaupoko Region in Hawaii reaches from the Ko'olau mountains to the reefs of Kane'ohe, Kailua and Waimanalo Bays and includes eleven watersheds. Marine Corps Base Hawaii (MCBH) primary landholdings on O'ahu are within the region. They include the 187 acre Waikane Valley, 1,045 acre Marine Corps Training Area-Bellows (MCTAB) in Waimanalo and 2,951 acre Mokapu penisula, which includes a 482-acre Nu'upia Ponds wetland complex within the Mokapu Central Drainage Basin.

Population growth and development throughout the Ko'olaupoko Region has increased erosion and polluted stormwater runoff. Concern about these nonpoint source pollution issues led to the inclusion of regional waterbodies, such as the Waimanalo stream, in the State of Hawaii's List of Impaired Waters, which are subject to a Total Maximum Daily Load (TMDL) study. The Ko'olaupoko Region has also been designated as Priority 1 for watershed restoration in the state's Unified Watershed Assessment.

Nonpoint Source Pollution Mitigation on the Mokapu Peninsula

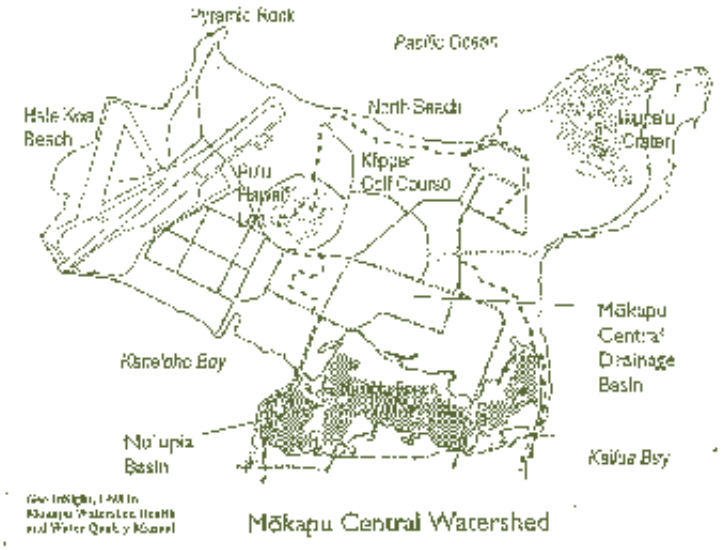
Until the mid-1990s, the focus of MCBH's collaborative community involvement and interagency partnership efforts was on projects to improve water quality, water circulation and endangered waterbird habitat within the confines of the Nu'upia Ponds wetland complex. Resource management plans developed for Nu'upia Ponds in 1997 and Mokapu Peninsula in 1998 expanded the resource management strategy to comprise the entire Ko'olaupoko Region. The 1998 MCBH Mokapu Manual for Watershed Health and Water Quality provided technical guidelines for such activities as riparian habitat restoration, community-based water quality monitoring and fluvial geomorphology.

Several projects along the Mokapu Central Drainage Channel are being implemented to alleviate nonpoint source pollution and habitat problems. For instance, a drainage spillway next to a maintenance compound has been redesigned to augment wetland creation while also mitigating nonpoint source pollution, low groundwater table, runoff and flooding problems. A 1999 streamside barracks complex project includes native landscaping and construction of a 3,200 square meter sediment retention basin designed to attract native waterbirds while implementing Best Management Practices (BMPs) for stormwater management. A Golf Course Pond Maintenance Manual addresses resident endangered waterbird needs in three half-acre ponds.

Community Involvement and Participation

Water quality and habitat restoration projects in the Ko'olaupoko Region benefit from cooperation and coordination among federal, state and local partners. In the past year alone, over 700 volunteers have participated in 15 watershed service projects sponsored by MCBH. As a result, counts of the resident population of endangered Hawaiian stilt in the ponds are more than double what they were 20 years ago. Also, more than 300 individuals from schools and community organizations have taken "watershed tours." The grass-roots participation process enhances stewardship and the sustainability of the watershed restoration projects.

One innovative project especially highlighted the positive effects of community-based watershed restoration. In this project, watershed partners installed several native plant plots and used fluvial geomorphology techniques to combat erosion of approximately 25,000 square feet of riparian streambank area on Mokapu and in MCTAB. The project sponsored a graduate-level University of Hawaii course on Watershed Education in which 16 Department of Education teachers at the Mokapu and Aikahi elementary schools received basic training in watershed management science. The teachers now satisfy core teaching requirements by involving their students in the implementation of special lesson plans assisting MCBH in the design, planting and maintenance of riparian native plant gardens. Such projects strengthen community awareness and participation in watershed restoration and lay the foundation for future restoration and protection actions in the entire Ko'olaupoko Region of watersheds.



In the past year alone, over 700 volunteers have participated in 15 watershed service projects sponsored by Marine Corps Base Hawaii

Photos courtesy of Diane Drigot

State and Federal Partners

The watershed restoration projects receive financial support from the federal government and the State of Hawaii. Partner organizations in state government include the Department of Education, Department of Land and Natural Resources and University of Hawaii. Federal partners include the USDA Natural Resources Conservation Service, EPA, US Marine Corps, US Air Force, US Army National Guard and US Army Corps of Engineers.

Endangered Species Conservation Partnership

Marine Training and "Sweat Equity" Overcome Foreign Plant Invasion

Location: Marine Corps Base, Hawaii

Project Summary: Marine Corps links training maneuvers to conservation by using amphibious assault vehicles to control invasive plant species, helping to restore the Hawaiian stilt.

PHOTO BY DR. DIANE DRIGOT

Nesting endangered Hawaiin Stilt (*Himantopus mexicanus knudseni*) at Nu'upia Ponds, Marine Corps Base Hawaii.

Resource Challenge

Pickleweed and mangroves are aggressive non-native plants that are spreading rapidly through coastal wetlands, where they displace, and sometimes eliminate, native vegetation and wildlife. One species of waterbird, the Hawaiian stilt, has been declining in numbers as these non-native plants invade the open mudflats it needs for foraging and nesting. The bird is federally listed as endangered.

Though the number of Hawaiian stilts counted in Marine Corps Base Hawaii's wetlands dropped to just 60 in the early 1980s, the base still hosted one of the State's largest concentrations of the birds. However, pickleweed and mangroves were creeping into traditional feeding and nesting areas, threatening to wipe out the remaining birds, ultimately contributing to their possible extinction.

Examples of Key Partners

Sierra Club, Hawaii Chapter; Hawaii Department of Land and Natural Resources; Marine Corps Base Hawaii, 3rd Marine Regiments Combat Assault Company, USDI Fish and Wildlife Service's Pacific Islands Office, schools, civic groups, and citizens.

Results and Accomplishments

In the early 1980s, Base natural resources staff and Marines began teaming with civilian volunteers such as the Sierra Club and other groups to host "ecology camps" to remove mangrove and pickleweed by hand. At the same time, Marines began what is now an annual "Mud Ops" tradition, where weed removal joins Marine training maneuvers. Using 26-ton amphibious assault vehicles, Marines plow through pickleweed in wetland mudflats, improving stilt habitat before the onset of nesting season while gaining valuable training experience.

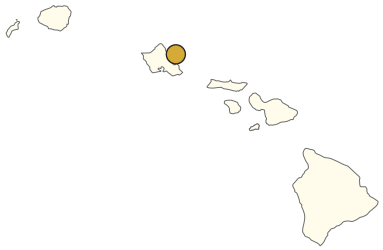
While using amphibious assault vehicles might seem heavy-handed, it controls the noxious weeds, allows stilts and native plants to re-establish themselves, and provides the Marines with essential training. Machines developed to operate in wartime are waging an ecological battle. In addition, the event accomplishes in two days what it would take contractors weeks to do. And it's successful: the number of stilt counted on the Base over twenty years has risen from 60 to 160. The Base is beginning to collaborate with State agencies and other organizations to remove mangroves in adjacent Kaneohe Bay, Oahu to prevent their spread.

"Mud Ops" is featured annually in the media and, in 2004, a nationally distributed poster featuring the event was produced as part of the Marines' *Saving a Few Good Species* awareness campaign.

After 23 years, the Marine Corps Base Hawaii has removed all mangroves from its wetlands, kept pickleweed in check, and has been recognized in the State's Aquatic Invasive Species Management Plan as a proactive conservation leader.

Innovation/Highlight

Part of the *Saving a Few Good Species* campaign, the project is combining Marine maneuvers with habitat restoration.



Project Contact

Mr. Jeff Mikulina
Director
Sierra Club, Hawaii Chapter
808-538-6616
mikulina@lava.net

Website: www.fws.gov/endangered/pubs/marines.html

COOPERATIVE CONSERVATION CASE STUDY

Seabird Protection Program

How Red-footed Boobies Co-exist with a Military Firing Range

Location: Marine Corps Base Hawaii Ulupa'u Weapons Range

Project Summary: The Marine Corps Ulupa'u weapons range is the site for a collaborative effort to protect red-footed boobies through state-of-the-art conservation practices.

PHOTO BY TIM SUTTERFIELD

Red-footed boobies (*Sula sula rubripes*) at protected nesting/roosting habitat at Ulupa'u Crater, Marine Corps Base, Hawaii.

Resource Challenge

Operating the Marine Corps Base Hawaii's Ulupa'u Weapons Range poses some unique problems: its 145 acres is sited in an extinct volcanic crater bordered by housing and oceanside cliffs. As an added challenge, the Base hosts an internationally renowned colony of more than 2,000 seabirds, the largest nesting population of red-footed boobies in the main Hawaiian Islands, atop the Crater.

The greatest threat to red-footed boobies is brush fires, easily triggered by ricochets in dry grass. Foreign grasses have invaded the Range landscape and lack natural controls. Traditional controls, such as mowing and controlled burns, are difficult because the area is likely to harbor unexploded ordnance.

As a matter of safety, the Marine Corps generally allows fires in impact areas to burn. In this instance, letting brushfires burn is unacceptable because of federal laws that protect the red-footed booby, potential adverse public reaction and lawsuits, and post-fire erosion runoff into pristine ocean waters.

Examples of Key Partners

Hawaii Department of Land and Natural Resources, Marine Corps Base Hawaii, USDI Fish and Wildlife Service (FWS) Pacific Islands Office, Hawaii Audubon Society, and Sierra Club, Hawaii Chapter.

Results and Accomplishments

For more than twenty years, base environmental staff, the FWS, and the Hawaii Department of Land and Natural Resources have teamed with Navy contractors, Marines, engineers, regulators, and fire and safety personnel, implementing more than $5 million in range improvements aimed at reducing brush fire risks. The base has installed firebreaks, water delivery systems, fire response equipment, and, with the help of Hawaii Audubon Society, has installed artificial nesting trees, maintained by volunteers, that lure birds to less fire-prone areas.

The latest innovations include a $350,000 geotextile groundcover, anchored by a gravel cover, to suppress grasses under nesting trees, as well as four solar-powered, remote-controlled water cannons to quickly extinguish grass fires. These innovations have lowered the frequency and intensity of brushfires and reduced the need for labor-intensive weed-control that interrupts training and jeopardizes safety.

Proactive measures have yielded multiple benefits: the Marines can continue training, the base and its partners helped protect the birds, and the base has built positive relationships with governments, environmental advocacy groups, and the public.

Innovation/Highlight

New technology, applied in cooperation with stakeholders, conserves bird habitat while allowing the military to continue using its firing range.

Project Contact

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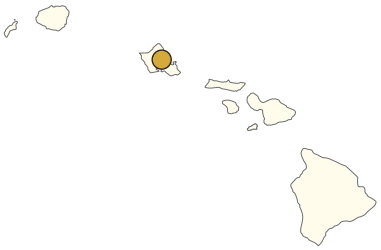
hiaudsoc@pixi.com

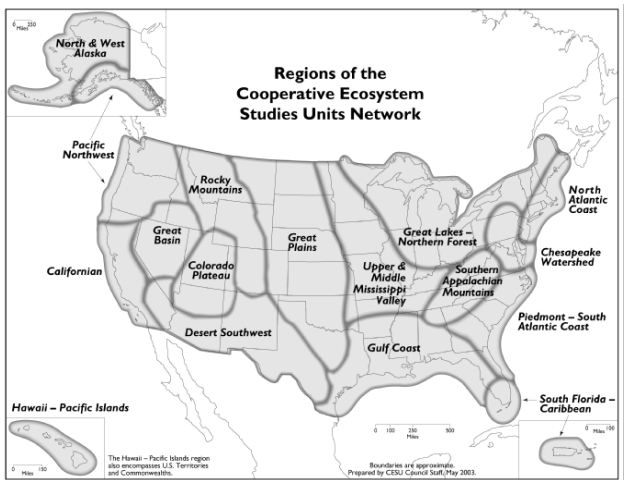


Cooperative Ecosystem Studies Units National Network

Cooperative Ecosystem Studies Units

In 1998, P.L. 105-391 (Sec. 203) authorized and directed the Secretary of the Interior "*to enter into cooperative agreements with colleges and universities, including but not limited to land grant schools, in partnership with other Federal and State agencies, to establish cooperative study units to conduct multi-disciplinary research…*". In response and under existing cooperative agreement authorities, a network of Cooperative Ecosystem Studies Units (CESU) was developed.

In 1999, the Cooperative Ecosystem Studies Units (CESU) Network was created with the signing of an interagency Memorandum of Understanding (MOU). The objective of the CESU network is to provide research, technical assistance, and education to federal land management, environmental and research agencies and their partners. CESUs' broad scope includes the biological, physical, social, and cultural sciences needed to address natural and cultural resource management issues at multiple scales and in an ecosystem context.



The CESU Network is organized through 17 Biogeographic Regions. DoD is a Federal member of the Desert Southwest, Gulf Coast, Chesapeake Watershed, Upper and Middle Mississippi Valley, Hawaii-Pacific Island, and the Southern Appalachian Mountain CESU.

The key elements comprising each CESU are federal agencies, a host university, and partner institutions (with a requirement of at least one minority institution), a defined role and mission statement, managers committee, a strategic plan and annual work plans. CESU agreements allow each of the participating federal agencies to efficiently transfer funds and duty station employees to university partners while maintaining responsibility for agency-sponsored activities within CESUs.

CESUs are organized into 17 biogeographic areas (a larger version of the CESU regional map shown to the left is available on the CESU website), and linked together to form the CESU Network. In the year 2000 the Department of Defense became a federal agency partner in the CESU network through an amendment to the MOU.

DoD's participation in the CESU Network

The CESU Network is led by the National CESU Council composed of representatives from each federal agency signatory of the CESU MOU. DoD has had a representative on the CESU Council since 2000.

As of 2005, DoD is a partner in the Chesapeake Watershed, Desert Southwest, Gulf Coast, Upper and Middle Mississippi Valley, Hawaii Pacific Island, Colorado Plateau, and the Southern Appalachian Mountain CESUs. Efforts by DoD are underway to join the Californian CESU by the end of FY 2006.

How to use CESU Agreements

DoD is a signatory to Cooperative Agreements set up with the host university and partner institutions at each of the following CESU's:

Biogeographic Region	Cooperative Agreement
Desert Southwest	DACA87-05-H-0018
Chesapeake Watershed	DACA87-01-H-0007
Gulf Coast	DACA87-02-H-0007
Upper and Middle Mississippi Valley	W9132T-04-2-0001
Hawaii Pacific Island	DACA87-04-H-0008
Southern Appalachian Mountain	W9132T-05-2-0021
Colorado Plateau	W9132T-05-2-0032

Each CESU is competitively established under a single cooperative agreement. Each CESU's Cooperative Agreement provides a detailed explanation of the conditions and provisions governing all CESU projects; each CESU agreement is the basis for initiating cooperative projects between the participating federal agencies and partner institutions. Each Cooperative Agreement is written so as to allow federal agencies to simply add a Scope of Work (SOW) as a modification to the Cooperative Agreement. The installation's natural resource or cultural resource manager is responsible for outlining the SOW for the project to be done and coordinating with the DoD CESU Regional Coordinator regarding the selection of a partner institution and the project's principal investigator.

After selection of the principal investigator and partner institution, a grants officer is responsible for creating the modification to the existing Cooperative Agreement. The overhead rate is set at 17.5%. All the terms and conditions of the agreement are already negotiated, thus reducing the amount of time for project implementation.

Objectives

- Provide resource managers with high-quality scientific research, technical assistance, and education.
- Deliver research and technical assistance that is timely, relevant to resource managers, and needed to develop and implement sound adaptive management approaches.
- Ensure the independence and objectivity of research.
- Create and maintain effective partnerships among the federal agencies and universities to share resources and expertise.
- Take full advantage of university resources while benefiting faculty and students.
- Encourage professional development of federal scientists.
- Manage federal resources effectively.

Benefits

DoD's participation in CESUs allows all DoD Services to benefit from:

- Fast access to, and implementation of, cooperative agreements with partner institutions.
- Access to high quality science and training of Federal employees at universities.
- Opportunities to reduce cost through partnerships and interagency collaboration.
- A reduced, Network-wide overhead rate of 17.5%.
- A broadened scope of scientific services.
- Multidisciplinary problem-solving at several ecological scales.
- Increased collaboration among federal agencies, universities and scientists.
- Increased research, technical assistance and education for resource managers.
- Increased diversity of scientists, disciplines and institutions.
- Professional development opportunities for agency scientists and employees.
- Improved collaboration between natural and cultural resource managers.
- An expanded constituency for federal science.

From 2001-2005 DoD has funded over 35 projects through CESU totaling nearly $4.5M. All of these projects have provided access to high quality scientists from a number of universities in the vast pool of over 180 member institutions in the CESU network, added to thousands of dollars in overhead rate savings, and have reduced the time for fund obligation.

DoD's expansion through CESU

As of November 2005, the Department of Defense is exploring the possibilities of expanding its presence in the CESU Network. Future plans for DoD include membership in the Californian, North Atlantic Coast, and Great Basin CESUs.

The US Army Corps of Engineers-Civil Works joined the CESU Network in June 2005 as a separate signatory to the MOU and is a separate entity from DoD in the Network. Prior to 2005, the Corps access to CESUs was permitted only for work on military installations through DoD participation. The Corps plans for CESU include joining the Upper and Middle Mississippi Valley, Gulf Coast and the South Florida-Caribbean CESUs in the near future.

For more information on how to contact your DoD Regional CESU Coordinator please contact

ODUSD(IE)-CO
Attn: DoD CESU National Coordinator
1225 South Clark Street, Suite 1500
Arlington, VA 22202

For a list of all Biogeographic regions and partner institutions visit: http://www.cesu.org/index.html

Fact sheet last updated November 2005

MEMORANDUM OF UNDERSTANDING[1]

Continuation of the

COOPERATIVE ECOSYSTEM STUDIES UNITS NETWORK

among the

Bureau of Land Management
Department of Defense
Forest Service
National Aeronautics and Space Administration
National Marine Fisheries Service
National Park Service
Natural Resources Conservation Service
U.S. Fish and Wildlife Service
U.S. Geological Survey

I. INTRODUCTION

Background
Management and stewardship of the nation's lands and waters requires skillful public service supported by sound science. To help meet these needs, a network of Cooperative Ecosystem Studies Units (CESUs) was established. CESUs provide research, technical assistance and education to federal land management, environmental and research agencies and their partners. CESUs are organized around biogeographic areas. Their broad scope includes the biological, physical, social, and cultural sciences needed to address critical natural and cultural resource management and stewardship issues. Each CESU includes several federal agencies, a host university, partner universities and other institutions. Participating agencies have mutual benefits and interests associated with CESUs, including (but not limited to) a broadened scope of scientific services, increased technical assistance and educational opportunities for resource and environmental managers, and increased diversity of research scientists and institutional partners.

Mission
The mission of the Cooperative Ecosystem Studies Units (CESU) Network is to promote, conduct, and provide research, technical assistance and education services nationwide in support of the missions of participating federal agencies and their partners concerning natural and cultural resource management on federal lands and waters. To achieve this mission, each CESU project is conducted cooperatively and with substantial involvement by and benefits to federal and non-federal partners.

II. OBJECTIVES

The objectives of the CESU Network are to:

1. link universities (including minority institutions) and other partners with federal resource management, environmental and research agencies in new and innovative ways that deliver high-quality research, provide usable knowledge, and support science-based decision-making,

2. create new and innovative opportunities for federal resource management, environmental and research agencies to collaborate and coordinate their research, technical assistance and education activities,

3. provide an efficient and effective mechanism to promote, conduct and provide research, technical assistance and education through collaborative projects of concern to federal resource managers, their partners, and decision-makers,

[1] 2005-2011 CESU MOU original document, with signatures, can be found at: http://www.cesu.org/network/mou.html.

4. accomplish the above objectives through an efficient, effective and evolving organization that includes federal agencies, universities, and other partners.

III. AUTHORITIES

This MOU is entered into by the following agencies consistent with the mission and any other authorities promoting science cooperation for each agency.

Bureau of Land Management (BLM)
The BLM administers public lands within a framework of numerous laws. The most comprehensive of these is the Federal Land Policy and Management Act of 1976 (FLPMA), 43 U.S.C. 1701 et seq. All Bureau policies, procedures and management actions must be consistent with FLPMA and the other laws that govern use of the public lands. It is the mission of the Bureau of Land Management to sustain the health, diversity and productivity of the public lands for the use and enjoyment of present and future generations. Specifically, 43 U.S.C. Sec. 1737(a) (FLPMA 307 (a)) authorizes the BLM to conduct investigations, studies, and experiments, on its own initiative or in cooperation with others, involving the management, protection, development, acquisition, and conveying of the public lands, and 43 U.S.C. Sec. 1737(b) (FLPMA 307 (b)) authorizes the BLM to enter into contracts and cooperative agreements involving the management, protection, development, and sale of public lands.

Department of Defense (DOD)
The Department of Defense manages nearly 29.1 million acres of land, and the natural and cultural resources found there. DOD's primary mission is national defense. DOD's conservation program supports this mission by ensuring realistic training areas, and managing its resources in ways that maximize available land, air, and water training opportunities. DOD environmental stewardship activities are authorized under the Sikes Act, as amended. In accordance with 16 U.S.C. 670, as amended, the DOD is authorized to cooperate with other agencies.

Forest Service (FS)
The FS mission is to achieve quality land management under the sustainable, multiple-use management concept to meet the diverse needs of the people (16 U.S.C. 1641-1646). In accordance with 7 U.S.C. 3318, the FS may enter into joint venture agreements with any entity or individual, provided the objectives of the agreement serve the mutual interests of both parties in research or teaching activities, including statistical reporting. In accordance with 7 U.S.C. 3319, the FS may enter into cost-reimbursable agreements with State cooperative institutions, or other colleges and universities, for the acquisition of goods and services, including personal services, to conduct research or teaching activities of mutual interest. Both of these authorities are available for use Service-wide.

National Aeronautics and Space Administration (NASA)
Among NASA's missions is the utilization of aeronautical and space activities for scientific purposes, encompassing research designed to expand knowledge of the Earth, its resources, and the effects of environmental change on the transformation of its ecological systems. In addition, NASA is responsible for the environmental stewardship of the land, water, and wildlife resources under its control. In accordance with Section 203(c) of the National Aeronautics and Space Act of 1958, as amended, 42 U.S.C. 2473(c), NASA is authorized to cooperate with other agencies.

National Marine Fisheries Service (NMFS)
The National Marine Fisheries Service is responsible for stewardship of living marine resources for the benefit of the nation through their science-based conservation and management and promotion of the health of their environment. Under 16 U.S.C. 661, National Marine Fisheries Service has the authority to provide assistance to, and cooperate with, Federal, State, and public or private agencies and organizations.

National Park Service (NPS)
The NPS is responsible for the management of areas in the National Park System to conserve the scenery, the natural and historic objects, and the wildlife therein and to provide for the enjoyment of the

same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations (16 U.S.C. 1 et seq.). In addition, 16 U.S.C. 5933 authorizes the NPS to enter into cooperative agreements with colleges and universities, including but not limited to land grant schools, in partnership with other federal and state agencies, to establish cooperative study units to conduct multi-disciplinary research and develop integrated information products on the resources of the National Park System, or the larger region of which parks are a part.

Natural Resources Conservation Service (NRCS)
The Natural Resources Conservation Service (NRCS) provides technical assistance to farmers, ranchers, and other private landowners in managing soil, water, animal, plant, air and human resources. NRCS scientists and technical specialists identify appropriate technologies in research and development and transfer them to field staff for implementation. Under the Soil Conservation and Domestic Allotment Act, 16 U.S.C. 590a – 590f, NRCS has the authority to cooperate or enter into agreements with other Federal agencies, private entities, or individuals, or an entity regarding the conservation, development, and productive use of the Nation's natural resources.

U.S. Fish and Wildlife Service (USFWS)
The USFWS, working with others, is responsible for conserving, protecting, and enhancing fish, wildlife, plants and their habitats for the continuing benefit of the American people through Federal programs related to migratory birds, endangered species, interjurisdictional fish and marine mammals, and inland sport fisheries. In accordance with 16 U.S.C. 661, 16 U.S.C. 742f, and 16 U.S.C. 753a, the USFWS is authorized to cooperate with other agencies.

U.S. Geological Survey (USGS)
The USGS's mission is to provide reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water; biological, energy, and mineral resources; and enhance and protect our quality of life. The USGS is authorized to cooperate with other agencies under 43 U.S.C. 36c and 36d.

IV. CESU COUNCIL
Membership
There is hereby established the CESU Council (Council) consisting of representatives from each of the following agencies: Bureau of Land Management, Department of Defense, Forest Service, National Aeronautics and Space Administration, National Marine Fisheries Service, National Park Service, Natural Resources Conservation Service, U.S. Fish and Wildlife Service, and U.S. Geological Survey.

Additional agencies joining the CESU Network will appoint an agency representative to become a member of the Council.

CESU Council Roles and Responsibilities
The CESU Council has the following roles and responsibilities:

1. serve as the official liaison between the CESU Network and the Council members' individual agencies,

2. establish, maintain, and revise CESU Network policies and procedures,

3. approve the addition of new federal agencies into the CESU Network,

4. select host universities for new CESUs, evaluate existing CESUs, and approve renewal of CESU agreements,

5. develop and support CESU Network initiatives,

6. appoint and evaluate the CESU national coordinator, and

7. form Working Groups to assist the CESU Council as described below,

8. additional activities appropriate to the Council.

Working Groups
Working Groups will be formed as needed to plan, coordinate, and facilitate the implementation of actions developed by the Council, within existing authority, policy review, and budgets. Working Groups may be formed or disbanded as needed, at the discretion of the Council. Working Groups will report regularly to the Council on their deliberations.

V. ADMISSION AND WITHDRAWAL FROM THE CESU NETWORK
Admission to the CESU Network
The CESU Council approves admission of new federal agencies to the CESU Network upon concurrence of its member agencies. Federal agencies wishing to join the CESU Network shall request admission in writing to the CESU Council. Upon approval an amendment admitting the addition of the federal agency to the Network is added to this MOU. Upon admission to the CESU Network the federal agency is then committed to join at least one CESU.

Withdrawal from the CESU Network
Any federal agency may terminate its participation in the CESU Network under this MOU by delivery of thirty (30) days advance written notice to the CESU Council. Termination by a federal agency of its participation in the CESU Network under this MOU will not affect any ongoing project under an existing CESU agreement to which it is a party.

VI. THE PARTICIPATING FEDERAL AGENCIES AGREE TO DO THE FOLLOWING:
1. Participate in at least one CESU.

2. Assign agency representative(s) to serve on the CESU Council.

3. Provide support for the CESU Network within the missions, authorities, and available resources of the participating federal agencies.

4. Review, update, and approve administrative procedures and guidelines for the CESU Network.

5. Review and revise the CESU Network strategic plan as necessary and appropriate.

6. Provide technical assistance to partners in individual CESUs, as requested, available and appropriate.

7. Facilitate interagency agreements, when necessary, to allow full access to the resources of the CESU Network for all participating agencies.

VII. IT IS MUTALLY AGREED AND UNDERSTOOD BY AND AMONG THE PARTICIPATING FEDERAL AGENCIES THAT:
1. This MOU in no way restricts participants from involvement in similar activities with other public and private agencies, organizations, and individuals. This includes separate cooperative agreements with universities participating in the CESU Network.

2. Nothing in the MOU shall be construed as obligating agencies to expend funds or to provide resources or be involved in any obligation for future payment of money or provision of resources.

3. All amendments to this MOU shall be in writing and must have the consent of all member agencies.

4. This instrument is neither a fiscal nor a funds-obligation document. Any activity involving reimbursement or contribution of funds between the parties to this instrument will be handled in accordance with applicable laws, regulations, and procedures including those for federal procurement, assistance, and printing. Such activities will be outlined in separate agreements that shall be made in writing by representatives of the parties and shall be independently authorized by appropriate statutory

authority.

5. The activities conducted under this Memorandum of Understanding will be in compliance with the nondiscrimination provisions in Title VI and VII of the Civil Rights Act of 1964, as amended; the Civil Rights Restoration Act of 1987 (P.L. 100-259); and other nondiscrimination statutes; namely, Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendments of 1972, and the Age Discrimination Act of 1975.

6. No member of Congress shall be admitted to any share or part of this instrument, or any benefits that may arise therefrom.

7. This MOU continues the CESU Network and replaces the previous MOU that was in effect 22 June 1999 – 22 June 2005.

8. This instrument expires no later than six years from the effective date, at which time it is subject to review, renewal, or expiration.

VIII. EFFECTIVE DATE
IN WITNESS WHEREOF, the parties hereto have entered into this Memorandum of Understanding as evidenced by their signatures below. This Memorandum of Understanding is effective upon the date of the second signature.

U.S. Department of the Interior
Bureau of Land Management

signed by JM Hughes, 6/15/2005

_____
Name:
Title:

U.S. Department of Defense

signed by Alex Beehler, 5/26/2005

_____
Alex Beehler
Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health)

U.S. Department of Agriculture
Forest Service

signed by Bov S. Eav 6/16/2005

_____
Ann M. Bartuska
Deputy Chief

National Aeronautics and Space Administration

signed by James B. Gavin, 5/16/2005

_____
Name:
Chief Scientist

U.S. Department of Commerce
National Marine Fisheries Service

signed by William T. Hogarth, 6/11/2005

_____
William T. Hogarth
Assistant Administrator for Fisheries

U.S. Department of the Interior
National Park Service

signed by Fran P. Mainella, 5/4/2005

_____
Fran P. Mainella
Director

U.S. Department of Agriculture
Natural Resources Conservation Service

P. Dwight Holman, 5/17/2005

_____
Name:
Dep Chief MGT

U.S. Department of the Interior
U.S. Fish and Wildlife Service

signed by Marshall P. Jones, Jr., 6/10/2005

_____
Name:
Deputy Director

U.S. Department of the Interior
U.S. Geological Survey

signed by Robert C. Szaro, 5/31/2005

_____
Robert C. Szaro
Chief Scientist for Biology

Amendment 1

AMENDMENT TO MEMORANDUM OF UNDERSTANDING

continuation of the

COOPERATIVE ECOSYSTEM STUDIES UNITS NETWORK

I. INTRODUCTION
It is mutually agreed on and understood by and between the parties to the Memorandum of Understanding (MOU) that additional agencies may become members of the Council upon formal participation in at least one CESU and after their agency head or designated representative has signed this Amendment to the MOU.

II. AUTHORITIES
This MOU is entered into by the following agency consistent with the mission and relevant authorities described below.

Minerals Management Service (MMS)
Department of the Interior (DOI) Secretarial Order No. 3071 established the Minerals Management Service in 1982 with responsibility for managing the Nation's oil, natural gas, and other mineral resources on the Federal Outer Continental Shelf (OCS) and the mineral revenues from OCS, Federal, and Indian lands as authorized by the OCS Lands Act (OCSLA) (43 U.S.C. 1331-1356). The MMS manages the mineral resources on 1.76 billion acres of the OCS to ensure that the U.S. government receives fair market value for acreage made available for leasing and that any oil and gas activities conserve resources, operate safely, and protect the coastal and marine environment. In addition to OCSLA, numerous laws, but particularly NEPA, provides the basis for environmental assessment and study of impacts associated with OCS related activities. OCSLA Section 1346 mandates the conduct of environmental and socioeconomic studies needed for the assessment and management of environmental impacts on the human, marine, and coastal environments which may be affected by oil and gas or other mineral development. It further states that the Secretary may by agreement utilize, with or without reimbursement, the services, personnel, or facilities of any Federal, State, or local government agency. OCSLA Section 1345 authorizes the use of cooperative agreements with affected States to meet the requirements of OCSLA, including sharing of information, joint utilization of available expertise, formation of joint monitoring arrangements to carry out applicable Federal and State laws, regulations, and stipulations relevant to outer Continental Shelf operations both onshore and offshore.

III. CESU COUNCIL
The joining agency is now a full member of the CESU Council. The agency is now authorized to send a voting/formal representative to Council meetings, and to participate in all actions of the Council.

IV. EFFECTIVE DATE
IN WITNESS WHEREOF, the party hereto has entered into the Memorandum of Understanding with this Amendment as evidenced by their signature below. The Amendment to the Memorandum of Understanding is effective upon the date of the signature.

Minerals Management Service

signed by Johnnie Burton, 6/14/05

_____

Johnnie Burton
Director

Amendment 05-2

AMENDMENT TO MEMORANDUM OF UNDERSTANDING

continuation of the

COOPERATIVE ECOSYSTEM STUDIES UNITS NETWORK

I. INTRODUCTION

It is mutually agreed upon and understood by and between the parties to the Memorandum of Understanding (MOU) that additional agencies and other federal entities such as the US Army Corps of Engineers may become members of the Council upon formal participation in at least one CESU and after their designated representative has signed this Amendment to the MOU.

II. AUTHORITIES

This MOU is entered into by the US Army Corps of Engineers consistent with the mission and relevant authorities described below.

US Army Corps of Engineers – Civil Works (USACE-CECW)

The US Army Corps of Engineers' Civil Works Program (USACE-CECW) provides assistance in the development and management of the nation's water resources. The main missions of USACE-CECW, i.e., the Corps, are 1) to facilitate commercial navigation, 2) to protect citizens and their property from flood and storm damages, and 3) to protect and restore environmental resources. The Corps carries out most of its work in partnership with Tribal, state and local governments and other non-federal entities. The Corps must rely upon using the best available science in the evaluation of water resources needs and in the development of recommendations for water resources management. The university and scientific institutions that comprise the CESU network have knowledge and expertise of the latest scientific advances that will assist the Corps in reaching sound, scientifically based decisions. Membership in the CESU network thus provides direct access to the sound science and technical base upon which the Corps can develop its sound, credible conclusions.

Corps field offices may avail themselves of support from the regional CESUs by entering into cooperative agreements with such CESUs, thus enabling these Corps offices to receive direct scientific support from regional CESU members. CESU provides independent and objective research and technical assistance that will directly benefit the Corps' missions and programs. In addition, by participating in CESU, scientists within the Corps will have direct access to university resources within the CESU network and be able to interact with colleagues in various scientific disciplines, and thereby further their own professional development. Furthermore, by participating in the CESU Council, USACE-CECW will broaden and strengthen its partnerships with the other agencies and entities which comprise this Council.

USACE-CW is authorized to cooperate with other agencies in accordance with Title 33 U.S.C. 2323a and 10 U.S.C. 3036(d).

III. CESU COUNCIL

The US Army Corps of Engineers-Civil Works is now a full member of the CESU Council. USACE-CECW is now authorized to send a voting/formal representative to Council meetings, and to participate in all actions of the Council.

IV. EFFECTIVE DATE

IN WITNESS THEREOF, the party hereto has entered into the Memorandum of Understanding with this Amendment as evidenced by the signature below. The Amendment to the Memorandum of Understanding is effective upon the date of the signature.

US Army Corps of Engineers – Civil Works

signed by Steven L. Stockton, 6/21/2005

_____
Steven L. Stockton, P.E.
Deputy Director of Civil Works

Amendment 05-3

AMENDMENT TO MEMORANDUM OF UNDERSTANDING

continuation of the

COOPERATIVE ECOSYSTEM STUDIES UNITS NETWORK

I. INTRODUCTION
It is mutually agreed on and understood by and between the parties to the Memorandum of Understanding (MOU) that additional agencies may become members of the Council upon formal participation in at least one CESU and after their agency head or designated representative has signed this Amendment to the MOU.

II. AUTHORITIES
This MOU is entered into by the following agency consistent with the mission and relevant authorities described below.

US Bureau of Reclamation (USBR)
The USBR mission is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public. In accordance with the Reclamation Act of 1902, 43 U.S.C. 391, as amended and supplemented, USBR is authorized to enter into this MOU, and pursuant to P.L. 108-447, Div. C, § 206, is authorized to enter into grants and cooperaive agreements with universities or non-profit research institutions in FY 2005 to fund water use efficiency research.

III. CESU COUNCIL
The joining agency is now a full member of the CESU Council. The agency is now authorized to send a voting/formal representative to Council meetings, and to participate in all actions of the Council.

IV. EFFECTIVE DATE
IN WITNESS WHEREOF, the party hereto has entered into the Memorandum of Understanding with this Amendment as evidenced by their signature below. The Amendment to the Memorandum of Understanding is effective upon the date of the signature.

U.S. Bureau of Reclamation

signed by John W. Keys, III, 7/12/2005

_____
John W. Keys, III
Commissioner

THE PACIFIC COOPERATIVE STUDIES UNIT & THE HAWAII-PACIFIC ISLANDS COOPERATIVE ECOSYSTEMS STUDIES UNIT
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THE NATURE CONSERVANCY OF HI
UC BERKELEY
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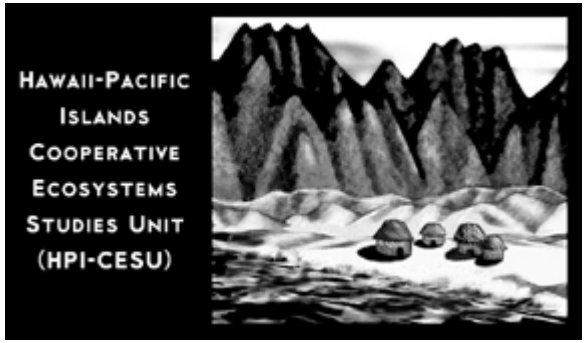
UNIVERSITY OF GUAM
USDA-NRCS
US FISH AND WILDLIFE SERVICE

ON-LINE REPORTS

ATOLL RESEARCH BULLETIN
AVIAN HISTORY RPTS
BOOKS PUBLISHED BY PCSU/HPI-CESU
INT. BIOLOGICAL PROGRAM RPTS
PCSU/HPI-CESU TECHNICAL RPTS
PCSU/HPI-CESU SPECIAL RPTS
OANRP YEAR END REPORTS



MISSION STATEMENT

The Hawaii-Pacific Islands Cooperative Ecosystems Studies Unit *(HPI-CESU), a coalition of governmental agencies, non-governmental organizations and universities, promotes research, education and technical assistance to support better stewardship of imperiled natural and cultural resources within the Pacific.*

On 1 July 2004, Hawaii and the Pacific Islands became part of Cooperative Ecosystem Studies Units Network, a national network which links federal land-managing agencies with universities, museums and other organizations that can provide research, training and technical expertise in managing natural and cultural resources. In many ways, the CESU concept is similar to the original PCSU, but it involves a wider range of partners, both federal and nonfederal. It allows easy transfer of federal funds through cooperative agreements to individual principal investigators. The initial agreement runs for five years.

The CESU does not provide the administrative and management expertise that the PCSU does. The CESU serves more to link PIs with the needs of the agencies. The CESU has a director, webmaster and "grantsmaster" to track agreements run through the CESU. Agreements themselves are administered through the individual non-federal partners. The HI-CESU will also continue the PCSU technical report series.

The contacts for the HI-CESU are:

Director: David Duffy, Tel 808-956-8218, fax 808-973-2936, email dduffy@hawaii.edu

Grantsmaster: Kyle Koza, Tel 808-956-2772, email kkoza@hawaii.edu

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HAWAII-PACIFIC ISLANDS CESU

The technical representatives for the Federal Agencies are as follows:

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Figure 1.
Photo of Marine amphibious assault vehicle plowing mudflats of Nu'upia Ponds, crushing invasive weeds and opening water channels to expand and improve Hawaiian stilt nesting and feeding opportunities (photo by D. Sensui, Honolulu Star-Bulletin, 1990, used with permission).

Ho'ola I Ka Aina

(Restoring Health to the Land)

Marine Corps Environmental Stewardship

Marine Corps Base Hawaii (MCBH) is proud to announce a new phase in its ongoing environmental stewardship program on Mokapu Peninsula [MAP].

BACKGROUND

For the past two decades, Marines have taken deliberate management actions to restore wildlife habitat at Nu'upia Ponds Wildlife Management Area -- a 482 acre wetland/waterbird habitat/historic fishpond complex on Mokapu Peninsula.

- Annual plow-like maneuvers of 26-ton Amphibian Assault Vehicles (Figure 1) within the pond shoreline mudflats have broken open thick mats of invasive pickleweed plants to improve Hawaiian stilt feeding and nesting opportunities. See:
  - January 12, 2003 *Honolulu Star Bulletin*
  - January 13, 2003 *Honolulu Advertiser*

- Extensive involvement by community volunteers (Figures 2a & 2b) and contractors (Figure 3) has removed 20 acres of alien mangrove trees, further restoring wildlife habitat and water quality;

- A steady growth in endangered Hawaiian stilt bird counts in the ponds from 60 to over 130 birds in the past 15 years pays tribute to the success of these efforts.

Management plans for Nu'upia Ponds have been developed to ensure the biological and cultural integrity of the ponds will be sustained well into the 21st century. Continuing community education and involvement are essential ingredients in the success of these plans.

Find out more in the Hawaii Marine on-line

Figure 2a.
Volunteers fine cleaning former mangrove area (photo by Diane

Figure 2b.
Volunteers pull and gather mangrove seedlings (photo by Diane

Drigot)

Figure 3.
Contractor using giant chipper to reduce mangrove cuttings (photo by Mark Rauzon).

Drigot)

Figure 4.
Mokapu Girl Scouts building old tire, nest island for stilt nesting in Nu`upia Ponds (photo by Diane Drigot)

Volunteers from both on- and off-Base regularly help in service projects-mangrove removal, nest island building (Figure 4), nature trail tours and repair, sign construction, fish and bird counts, and water quality monitoring.

Together with these volunteers, Marines are developing a shared vision of ecosystem recovery possibilities. One of these visions is to restore health to the entire length of the Mokapu Watershed.

Figure 5.
The neck of Mokapu Peninsula, seen here from high over Kailua Bay, is spanned by the shallow Nu`upia Ponds complex (USMC photo).

THE MOKAPU WATERSHED

Running through the center of Mokapu Peninsula, a series of natural and man-made drainage ways funnel ground and surface water through the heart of Mokapu, spilling into Nu'upia Ponds, and Kane'ohe Bay.

As water runs off the land into these drainage ways, it collects all the "leftovers" of human land uses (e.g., sediment, litter, fertilizer, pet waste, oil and grease from roads and parking lots). The living habits of all who occupy the watershed play a critical role in determining how much this "non-point source pollution" escapes into the drainage ways to adversely affect the health of the watershed for both humans and wildlife alike.

A CONTINUING WATERSHED PLANNING PROCESS

Additional watershed restoration activities are planned and budgeted at Mokapu and in streams adjacent critical Marine training lands on Bellows AFS in Waimanalo with community help.

- For further information on these activities and possibilities for volunteer involvement, contact the Watershed Restoration Program Coordinator, Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH, phone 257-6920 x224.
- For further information about MCBH's full spectrum of environmental stewardship programs, consult the MCBH Environmental Compliance and Protection Department website.
- For further information about Mokapu Peninsula watershed, see the MCBH report titled: *Mokapu: Manual for*

Watershed Health and Water Quality, posted in entirety at the U.S. Department of Defense's Environmental Security Office website.

- For a look at the wildlife in Nu'upia Ponds as observed by the students at Mokapu Elementary School and Kainalu Elementary School visit their 2002 CyberFair (webpage) entry: Nu`upia Ponds - Mokapu Bird Sanctuary.

Na Aina i Ho'ola 'ia e Ka Wai

Windward Watersheds Web-Ring Project

Kane`ohe *ahupua`a*
KO`OLAU NET

G3. MCBH REVIEW AND CONCURRENCE

This appendix contains historical documentation of MCBH review and concurrence with the 2001 INRMP/EA, in particular, documenting compliance with NEPA review:

- FONSI from 2001 Final MCBH INRMP/EA (2002-2006)
- Copies of public notices for 2001 Final MCBH INRMP/EA (2002-2006)
- MCBH Record of EIRB Concurrence with 2001 Final MCBH INRMP/EA (2002-2006)

DEPARTMENT OF DEFENSE

UNITED STATES MARINE CORPS

FINDING OF NO SIGNIFICANT IMPACT FOR THE MARINE CORPS BASE HAWAII INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (2002 - 2006)

Pursuant to the President's Council on Environmental Quality Regulations (40 CFR Parts 1500-1508) implementing procedural provisions of the National Environmental Policy Act (NEPA), the U.S. Marine Corps gives notice that an Environmental Assessment (EA) has been prepared and an Environmental Impact Statement is not required for the proposed Integrated Natural Resources Management Plan (2002 - 2006) at Marine Corps Base Hawaii (MCBH).

The proposed action is to implement an Integrated Natural Resources Management Plan (INRMP) on MCBH properties using an ecosystem management approach. Management actions in this plan cover a five-year time frame. The 1997 Sikes Act Improvement Act (SAIA) requires all military installations with significant natural resources to prepare and implement INRMPs. These plans must support "no net loss" in capability of the installation's lands and waters to support military readiness while also complying with federal laws governing natural resources management and protection, and public access to the same, subject to resource tolerance limits, safety, and military security. These plans must be reviewed annually and updated no less than once every five years.

MCBH's Integrated Natural Resources Management Plan and Environmental Assessment (MCBH INMP/EA) (2002-2006) is a two-volume document that comprises a combined plan and programmatic environmental assessment for its implementation. Implementing this INRMP involves completing many management actions, covering multiple natural resources and geographic areas which comprise MCBH. These management actions are organized and described under seven categories covering Fish and Wildlife, Wetlands, Watersheds, Coastal and Marine Resources, Grounds Maintenance and Landscape Management, Outdoor Recreation and Quality of Life, and Resources Information. Three alternative sets of programmatic actions across these categories are described and assessed: (1) the proposed alternative, or Operational Stewardship--continuing the current level and type of effort; (2) Compliance-focused Stewardship--reduced level and type of effort; and (3) Optimal Stewardship--increased level and type of effort. In each, the set of proposed management actions are consistent with ecosystem management principles and the objective of integrating land use needs for conservation and military readiness. In addition, compliance is a top priority on all MCBH parcels and in each alternative.

The proposed actions are applicable to five MCBH properties with natural resources concerns: Mokapu Peninsula, Marine Corps Training Area Bellows (MCTAB), Camp H. M. Smith, Puuloa Range Facility, and Waikane Valley Impact Area. The proposed or Operational Stewardship alternative consists of 123 management actions across the seven categories and five properties listed above. The alternative of Compliance-focused Stewardship reduces the number of management actions to 68 while the Optimal Stewardship alternative increases the number of management actions to 208. As further explained in the INRMP/EA, the proposed Operational Stewardship Alternative continues the above-minimum level of effort ongoing for the past twenty years and reflects what is most realistic to accomplish under current levels of staff and funding at MCBH. In keeping with ecosystem management principles of *adaptive management* and *continuous improvement*, sustaining the current level of effort does not preclude also implementing actions unique to the Optimal Stewardship action set. As documented in MCBH's experience over the past twenty years, unforeseen opportunities do arise to complete Optimal Stewardship management actions in areas such as interagency partnering, community volunteer assistance, and securing supplemental funds from outside sources. For example, supplemental special funds from Department of Defense enabled eradication of alien mangrove from Nu'upia Ponds and more extensive community involvement in streamside native plantings activities.

In all three alternatives, established methods of controlling invasive species in land/water areas of MCBH will continue (e.g., alien mangrove and pickleweed control in wetlands/shoreline areas, and alien fire-adapted grass control in upland areas such as the Crater booby seabird colony). Natural resources improvement studies will continue to completion. These ongoing studies address improvements needed in wetland delineations, invasive species control, coral reef ecosystem management, regional stilt waterbird recovery, native plant landscaping, Crater fire management, and nature-oriented outdoor recreation. Evaluation and adoption of appropriate study recommendations will lead to additional projects being programmed and reflected in future updates of this plan. Some projects already funded for design will be implemented across the five years and the three alternatives. They include site-specific improvements in wetland and watershed functioning, erosion and invasive species control, landscaping and endangered waterbird habitats. Details of how and when these projects will be completed are explained in the INRMP/EA. Some of them will require additional project-specific EAs, permits, interagency consultation, and public review prior to final design and build. The main differences among Alternatives considered for INRMP implementation are level and type of effort invested in: public outreach/involvement; field monitoring of changes in environmental conditions as a result of management actions; quantity and quality of data collected, analyzed, automated, and shared; amount of training received and provided by natural resources staff; interagency data sharing and cost-shared partnering to improve regional ecosystem management. The INRMP/EA displays a detailed breakdown and cost comparison of planned management actions among the three alternatives.

Likely environmental consequences of implementing the three Alternatives are described and compared in the INRMP/EA. The discussion of consequences is broad due to the programmatic nature of the proposed action. Site-specific environmental review and analyses, including additional EAs as needed, will be prepared for some specific planned site improvements as explained in the INRMP/EA. None of the sets of management action alternatives will have significant adverse environmental consequences, individually or collectively. As more thoroughly reviewed in forthcoming site-specific EAs, some projects will require short-lived environmental disturbances (e.g., dredging, soil and alien vegetation removal), in order to obtain long-term environmental improvements (e.g., restored wetlands and stream corridor contours, revegetation of disturbed areas with native species). Necessary mitigative measures will be implemented where appropriate, such as: silt curtains to control turbidity during in-water work; soil testing for contaminants and development of appropriate disposal protocols; archaeological monitoring to ensure no inadvertent disturbance of artifacts or human remains, and seasonal control of actions to avoid disturbance of protected native waterbirds during breeding months. In general, to varying degrees, the natural resources management actions in the INRMP/EA will result in long term, cumulative improvements in environmental conditions which support more viable regional native fish and wildlife populations and habitat; wetland conditions, watershed functioning, sustainable landscaping, coastal and marine resource management; improved landscape conditions for military training; improved qualify of life and outdoor recreation; more public involvement and outreach; more stakeholder communication, data sharing, and cost-shared partnering to help achieve a vision of improved regional ecosystem health.

This INRMP has been prepared in cooperation with US Fish and Wildlife Service (USFWS), and Hawaii Department of Land and Natural Resources as required by the Sikes Act Improvement Act. Since the INRMP also covers coastal and offshore marine natural resources within MCBH jurisdiction, the plan was also coordinated with US National Marine Fisheries Service. A record of this cooperation and emergent concurrence with INRMP/EA contents by all three of these agencies is contained in the INRMP/EA document. In addition, since many programmed management actions will likely have positive impact on listed endangered species, concurrence with a determination of "no adverse effect" to these species was solicited under Section 7 of the Endangered Species Act. US FWS concurred with the determination that general activities outlined in the INRMP are not likely to adversely affect listed species. NMFS refrained from a specific section 7 concurrence, saying that such consultation was not appropriate for the overall plan, but that it would be expected when the individual planned projects come "on line." In sum,

both USFWS and NMFS concurred with MCBH's own admission that, due to the general programmatic nature of this INRMP/EA, MCBH fully expects to complete site-specified EAs, Section 7 Endangered Species Act consultations, for relevant projects, and complete other agency reviews and permit applications, as appropriate to the specific projects, when they came "on line" during the five-year time frame covered by this plan. The INRMP/EA also describes that a separate Integrated Cultural Resources Management Plan (ICRMP) is being prepared by MCBH, which will have overlapping activities in some areas covered by natural resource projects in this INRMP/EA. This plan acknowledges the existence of cultural resource sensitivities in certain areas of natural resource activities, and pledges a continuation of the existing practice to perform historic preservation consultations under Section 106 of the National Historic Preservation Act and under the Native American Graves Protection and Repatriation Act, when appropriate, and to involve Native Hawaiian stakeholders in appropriate projects as has already occurred. Reviewing historic preservation agencies (State Historic Preservation Division and Office of Hawaiian Affairs) concurred in this understanding and are relying on MCBH's assurances that proper mitigation and consultation will occur should any unidentified cultural, historic, or burial sites and/or resources be encountered during implementation of projects covered by the INRMP/EA. Other reviewing agencies generally concurred with the plan contents, pointed out areas of specific interest to their agencies, and indicated that they look forward to further interaction with MCBH during implementation of specific plan projects. A List of Reviewing Agencies and a record of these communications is contained in the INRMP/EA.

Based on information gathered during the preparation of this INRMP/EA, and concurring comments received from reviewing agencies, the U.S. Marine Corps finds that the proposed INRMP/EA (2002 - 2006) will not significantly impact the environment. In conclusion, this document demonstrates how MCBH intends to achieve an overall ecosystem management goal of improving the sustainability and native biological diversity of the ecosystems of which it is a part, while supporting MCBH's military mission, and addressing regulatory and community stakeholder concerns.

The INRMP/EA addressing this action may be obtained from: Commander, Marine Corps Base Hawaii, Box 63062, Kaneohe Bay, Hawaii 96863-3062 (Attention: Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH Environmental Department), telephone (808) 257-6920 x224.

J. A. LEMOINE
Colonel, U.S. Marine Corps
Commander, Marine Corps Base Hawaii

16 Nov 2001
Date

Permits Required: Demolition, grading, construction

The Housing and Community Development Corporation of Hawai‘i (HCDCH) is proposing to redevelop a portion of State-owned property in ‘Iwilei. HCDCH has selected Pacific Assistance Housing Corporation, a non-profit corporation, to develop and manage the proposed elderly residential complex. The project will be constructed on approximately 1.6 acres located between the OR&L Terminal building and the ‘Iwilei Business Center. It will include 156 affordable rental units, an adult day care center with assisted and supportive living services, parking, utilities, and landscaping. The facility will consist of a 21-story residential tower connected to a two-story community services building that will house the adult day program, offices, and a recreation deck. A separate five-story parking structure will contain 139 parking stalls.

In the early 1990s, a State office complex known as Liliha Civic Center was planned for the project site. An EIS for the proposed Liliha Civic Center was prepared and accepted in 1992, but the project was postponed indefinitely. Because of substantive changes in project description and loss of timeliness, HCDCH is preparing a Supplemental EIS for the proposed elderly residential complex.

The housing development will occupy approximately 28 percent of the site formerly planned for Liliha Civic Center. At present the State’s ‘Iwilei property is comprised of some 18 individual parcels. HCDCH plans to consolidate the affected parcels and to subdivide the site to create a separate lot for residential development. Easements on the 1.6-acre portion will be canceled or relocated.

National Environmental Policy Act (NEPA)

(5) Marine Corps Base Hawai‘i Integrated Natural Resources Management Plan (EA/FONSI)

District: Ko‘olaupoko

Applicant: Commanding General
Attn: Environmental Dept.
Marine Corps Base Hawai‘i
Box 63002
Kane‘ohe Bay, Hawaii 96863-3062
Contact: Dr. Diane Drigot (257-6920 x 224)

Per the 1997 Sikes Act Improvement Act and federal regulations implementing the National Environmental Policy Act (40 CFR Parts 1500-1508), the U.S. Marine Corps gives notice that an Environmental Assessment (EA) has been prepared and an Environmental Impact Statement is not required for the proposed Integrated Natural Resources Management Plan (2002-2006) at Marine Corps Base Hawai‘i (MCBH).

The combined INRMP/EA covers MCBH Kane‘ohe Bay, Marine Corps Training Area-Bellows, Waikane Valley Impact Area, Camp H.M. Smith, and Pu‘uloa Training Facility. The proposed action is to implement the INRMP using an ecosystem management approach. It must result in “no net loss” of combat readiness while complying with natural resources and public access laws.

None of the three alternatives assessed will have significant adverse environmental consequences. They each contribute, in varying degrees, to long term, cumulative, improved environmental conditions for supporting: more viable regional native wildlife populations and habitat; improved wetland/watershed functioning, sustainable landscaping; marine resource management; quality of life, public involvement, communication, data- and cost-shared partnering.

U.S. Fish and Wildlife Service (USFWS), Hawai‘i Department of Land and Natural Resources, and National Marine Fisheries Service concur in the INRMP. USFWS also concurs with a determination of “no adverse effect” to listed endangered species. Based on the assessment and agency comments, the U.S. Marine Corps finds that the proposed INRMP will not significantly impact the environment or generate significant controversy.

Copies of the FONSI and INRMP/EA are in public libraries near affected MCBH parcels. Direct inquiries to: Commander, Marine Corps Base Hawai‘i, Box 63062, Kane‘ohe Bay, Hawaii 96863-3062 (Attn: Dr. Diane Drigot, Senior Natural Resources Management Specialist, Environmental Department), telephone (808) 257-6920 x 224.

IN THE MATTER OF

NOTICE OF AVAILABILITY

NOTICE OF AVAILABILITY

Per the 1997 Sikes Act Improvement Act and the President's Council on Environmental Quality Regulations (40 CFR Parts 1500-1508) implementing procedural provisions of the National Environmental Policy Act (NEPA), the U.S. Marine Corps gives notice that an Environmental Assessment (EA) has been prepared and an Environmental Impact Statement is not required for the proposed Integrated Natural Resources Management Plan (2002-2006) at Marine Corps Base Hawaii (MCBH).

The combined plan and programmatic EA covers five MCBH properties with significant natural resources: MCBH Kaneohe Bay, Marine Corps Training Area-Bellows, Waikane Valley Impact Area, Camp H. M. Smith, and Puuloa Training Facility. The proposed action is to implement the INRMP using an ecosystem management approach. This plan must support "no net loss" in capability of MCBH's lands and waters to support military readiness while also complying with federal laws governing natural resources management and protection, and public access to the same, subject to resource tolerance limits, safety, and military security.

Implementing this INRMP covers multiple natural resources and management action. Three alternative sets of management actions are described and assessed: (1) the proposed Operational Stewardship alternative - continuing current above-minimum level and type of effort; (2) the Compliance-focused Stewardship alternative--reducing level and type of effort to minimum; and (3) the Optimal Stewardship alternative--increasing level and type of effort to optimum. The proposed alternative does not preclude implementing actions unique to the Optimal Stewardship alternative if opportunities arise through partnering, volunteer, and/or supplemental funding assistance.

None of the INRMP alternatives will have significant adverse environmental consequences, individually or collectively. Site-specific environmental analyses, including EAs, will be prepared for certain actions during the five-year time frame. In general, implementing INRMP actions will contribute to long term, cumulative, improved environmental conditions. Among them: more viable regional native fish and wildlife populations and habitat; wetland and watershed functioning; sustainable landscaping; coastal and marine resource management; improved quality of life and outdoor recreation; more public involvement, stakeholder communication, data sharing, and cost-shared partnering toward improved regional ecosystem health.

This INRMP has been prepared with cooperation and concurrence from US Fish and Wildlife Service (USFWS), Hawaii Department of Land and Natural Resources, and National Marine Fisheries Service. Concurrence with a determination of "no adverse effect" to listed endangered species was also obtained from USFWS under Section 7 of the Endangered Species Act. This does not preclude additional consultations on specific projects as appropriate.

Based on information gathered during the preparation of this INRMP/EA, and concurring comments from reviewing agencies, the U.S. Marine Corps finds that the proposed INRMP/EA (2002-2006) will not significantly impact the environment or generate significant controversy.

Copies of the FONSI and INRMP/EA addressing this proposed action are located in public libraries near affected MCBH parcels. Direct inquiries to: Commander, Marine Corps Base Hawaii, Box 63062, Kaneohe Bay, Hawaii 96863-3062 (Attn: Dr. Diane Drigot, Senior Natural Resources Management Specialist, Environmental Department), telephone (808) 257-6920 x224.

(Hon. Adv.: Nov. 25, 26, 27, 2001) (A-175067)

AFFIDAVIT OF PUBLICATION

STATE OF HAWAII
City and County of Honolulu *ss.*

Grace Santos *being duly sworn, deposes and says that she is a clerk, duly authorized to execute this affidavit of THE HONOLULU ADVERTISER, a division of GANNETT PACIFIC CORPORATION, that said newspaper is a newspaper of general circulation in the State of Hawaii, and that the attached notice is a true notice as was published in the aforereferenced newspaper as follows:*

The Honolulu Advertiser: 3 *time(s), on*

11/25/2001, 11/26/2001, 11/27/2001

and that affiant is not a party to or in any way interested in the above entitled matter.

Grace Santos

Subscribed and sworn to before me this 27th day of November A.D. 2001

Jeanette T Ching

Notary Public of the First Judicial Circuit JEANETTE T. CHING

State of Hawaii

My commission expires JUN 16 2002

AFFIDAVIT OF PUBLICATION

STATE OF HAWAII)
City & County of Honolulu) S. S.

Dawn Goto being duly sworn, deposes and says that she/he is a clerk, duly authorized to execute this affidavit of Midweek Printing, Inc., publisher of MidWeek and the Honolulu Star-Bulletin, that said newspapers are newspapers of general circulation in the State of Hawaii, and that the attached notice is true notice as was published in the aforementioned newspapers as follows:

MidWeek: _____ times, on _____

Honolulu Star-Bulletin: 3 times, on November 25, 26 and 27, 2001

And that affiant is not a party to or in any way interested in the above entitled matter. Dawn Goto

Subscribed and sworn to before me this 30th day of NOVEMBER A.D. 2001

Patricia K. Reese

Notary Public of the First Judicial Circuit
State of Hawaii
My commission expires: October 07, 2002

PATRICIA K. REESE
Notary Public
State of Hawaii

1016 Notices of Availability | 1016 Notices of Availability

NOTICE OF AVAILABILITY

Per the Sikes Act Improvement Act and the President's Council on Environmental Quality Regulations (40 CFR Parts 1500-1508) implementing procedural provisions of the National Environmental Policy Act (NEPA), the U.S. Marine Corps gives notice that an Environmental Assessment (EA) has been prepared and an Environmental Impact Statement is not required for the proposed Integrated Natural Resources Management Plan (2002 - 2006) at Marine Corps Base Hawaii (MCBH).

The combined plan and programmatic EA covers five MCBH properties with significant natural resources: MCBH Kaneohe Bay, Marine Corps Training Area-Bellows, Waikane Valley Impact Area, Camp H. M. Smith, and Puuloa Training Facility. The proposed action is to implement the INRMP using an ecosystem management approach. This plan must support "no net loss" in capability of MCBH's lands and waters to support military readiness while also complying with federal laws governing natural resources management and protection, and public access to the same, subject to resource tolerance limits, safety, and military security.

Implementing this INRMP covers multiple natural resources and management actions. Three alternative sets of management actions are described and assessed: (1) the proposed Operational Stewardship alternative--continuing current, above-minimum level and type of effort; (2) the Compliance-focused Stewardship alternative--reducing level and type of effort to minimum; and (3) the Optimal Stewardship alternative--increasing level and type of effort to Optimum. The proposed alternative does not preclude also implementing actions unique to the Optimal Stewardship alternative if opportunities arise through partnering, volunteer, and/or supplemental funding assistance.

None of the INRMP alternatives will have significant adverse environmental consequences, individually or collectively. In general, implementing INRMP actions will contribute to long term, cumulative, improved environmental conditions. Among them: more viable regional native fish and wildlife populations and habitat; wetland and watershed functioning; sustainable landscaping; coastal and marine resource management; improved quality of life and outdoor recreation; more public involvement, stakeholder communication, data sharing, and cost-shared partnering toward improved regional ecosystem health.

This INRMP has been prepared with cooperation and concurrence from US Fish and Wildlife Service (USFWS), Hawaii Department of Land and Natural Resources, and National Marine Fisheries Service. Concurrence with a determination of "no adverse effect" to listed endangered species was also obtained from USFWS under Section 7 of the Endangered Species Act. This does not preclude additional consultations on specific projects in the plan, as appropriate.

Based on information gathered during the preparation of this INRMP/EA, and concurring comments from reviewing agencies, the U.S. Marine Corps finds that the proposed INRMP/EA (2002 - 2006) will not significantly impact the environment or generate significant controversy.

Copies of the FONSI and INRMP/EA addressing this proposed action are located in public libraries near affected MCBH parcels. Direct inquiries to: Commander, Marine Corps Base Hawaii, Box 63062, Kaneohe Bay, Hawaii 96863-3062 (Attn: Dr. Diane Drigot, Senior Natural Resources Management Specialist, Environmental Department), telephone (808) 257-6920 x224. (SB05505536 11/25, 11/26, 11/27/01)

DISTRIBUTION OF MCBH INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN/ENVIRONMENTAL ASSESSMENT TO EIRB MEMBERS:

Received by:	Received for:	Date
SGT ALTAMIRANO	1ST RADIO BN	6 NOV 01
Sgt Melvin M.D.	3rd MAR	6 Nov 01
MGYSGT DeWitt	CSSG-3	6 NOV 01
MAJOR LAMBERT	MPO/PMO	6 Nov 01
SGTMAJ GARIBAY	MCAF	6 NOV 01
LtCol Erb	ASEK	6 Nov 01
Wendy Kojima	G4	6 NOV 01
John Claucherty	G-3	6 Nov
CHRIS HUGHES	PAO	6 NOV 01
Sharon K. Zeimer	MCCS	7 NOV 01
Maj Hitesman	SJA	7 Nov 01

ENVIRONMENTAL IMPACT REVIEW BOARD ENDORSEMENT

PROJECT: **MCBH INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN/ENVIRONMENTAL ASSESSMENT (MCBH/EA) (2002 - 2006)**

LOCATION: **MARINE CORPS BASE HAWAII**

As a member of the Marine Corps Base Hawaii Environmental Impact Review Board, I have reviewed the combined MCBH INRMP/EA and Draft Finding of No Significant Impact (FONSI) and

Concur **Non-concur** **(CIRCLE ONE)**

in the conclusion of the command environmental staff that the document adequately addresses potential impacts of the proposed action, and supports the FONSI.

Signature: [signature] Date: 11/14/01

Title: XO

Activity: 1ST RADIO BN

Telephone: 257-5203

Comments: (If non-concurring, state reason(s))

ENVIRONMENTAL IMPACT REVIEW BOARD ENDORSEMENT

PROJECT: **MCBH INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN/ENVIRONMENTAL ASSESSMENT (MCBH/EA) (2002 - 2006)**

LOCATION: **MARINE CORPS BASE HAWAII**

As a member of the Marine Corps Base Hawaii Environmental Impact Review Board, I have reviewed the combined MCBH INRMP/EA and Draft Finding of No Significant Impact (FONSI) and

Concur **Non-concur** **(CIRCLE ONE)**

in the conclusion of the command environmental staff that the document adequately addresses potential impacts of the proposed action, and supports the FONSI.

Signature: [illegible] Date: 11-14-01

Title: ACIS G4

Activity: MCBH

Telephone: 2578821

ENVIRONMENTAL IMPACT REVIEW BOARD ENDORSEMENT

PROJECT: **MCBH INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN/ENVIRONMENTAL ASSESSMENT (MCBH/EA) (2002 - 2006)**

LOCATION: **MARINE CORPS BASE HAWAII**

As a member of the Marine Corps Base Hawaii Environmental Impact Review Board, I have reviewed the combined MCBH INRMP/EA and Draft Finding of No Significant Impact (FONSI) and

Concur **Non-concur** **(CIRCLE ONE)**

in the conclusion of the command environmental staff that the document adequately addresses potential impacts of the proposed action, and supports the FONSI.

Signature: [illegible] Date: 14 NOV 01

Title: PROVOST MARSHAL

Activity: PMO

Telephone: 257-3110 x1

ENVIRONMENTAL IMPACT REVIEW BOARD ENDORSEMENT

PROJECT: MCBH INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN/ENVIRONMENTAL ASSESSMENT (MCBH/EA) (2002 - 2006)

LOCATION: MARINE CORPS BASE HAWAII

As a member of the Marine Corps Base Hawaii Environmental Impact Review Board, I have reviewed the combined MCBH INRMP/EA and Draft Finding of No Significant Impact (FONSI) and

Concur Non-concur (CIRCLE ONE)

in the conclusion of the command environmental staff that the document adequately addresses potential impacts of the proposed action, and supports the FONSI.

Signature: _____ Date: 11/14/01

Title: G-3 A

Activity: MCBH

Telephone: 257-8818

ENVIRONMENTAL IMPACT REVIEW BOARD ENDORSEMENT

PROJECT: MCBH INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN/ENVIRONMENTAL ASSESSMENT (MCBH/EA) (2002 - 2006)

LOCATION: MARINE CORPS BASE HAWAII

As a member of the Marine Corps Base Hawaii Environmental Impact Review Board, I have reviewed the combined MCBH INRMP/EA and Draft Finding of No Significant Impact (FONSI) and

Concur Non-concur (CIRCLE ONE)

in the conclusion of the command environmental staff that the document adequately addresses potential impacts of the proposed action, and supports the FONSI.

Signature: _____ Date: 11/14/1

Title: MCBH A/S MCCS Director

Activity: MCCS

Telephone: (808) 254-7540

ENVIRONMENTAL IMPACT REVIEW BOARD ENDORSEMENT

PROJECT: **MCBH INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN/ENVIRONMENTAL ASSESSMENT (MCBH/EA) (2002 - 2006)**

LOCATION: **MARINE CORPS BASE HAWAII**

As a member of the Marine Corps Base Hawaii Environmental Impact Review Board, I have reviewed the combined MCBH INRMP/EA and Draft Finding of No Significant Impact (FONSI) and

Concur **Non-concur** **(CIRCLE ONE)**

in the conclusion of the command environmental staff that the document adequately addresses potential impacts of the proposed action, and supports the FONSI.

Signature: [illegible] Date: 13 Nov 2001

Title: DSJA

Activity: MCBH

Telephone: 257-5742

ENVIRONMENTAL IMPACT REVIEW BOARD ENDORSEMENT

PROJECT: **MCBH INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN/ENVIRONMENTAL ASSESSMENT (MCBH/EA) (2002 - 2006)**

LOCATION: **MARINE CORPS BASE HAWAII**

As a member of the Marine Corps Base Hawaii Environmental Impact Review Board, I have reviewed the combined MCBH INRMP/EA and Draft Finding of No Significant Impact (FONSI) and

Concur **Non-concur** **(CIRCLE ONE)**

in the conclusion of the command environmental staff that the document adequately addresses potential impacts of the proposed action, and supports the FONSI.

Signature: [illegible] LtCol. USMC Date: 14 Nov 2001

Title: ASEK Executive Officer

Activity: 1st MAW ASEK

Telephone: 257-2898

Comments: (If non-concurring, state reason(s))

ENVIRONMENTAL IMPACT REVIEW BOARD ENDORSEMENT

PROJECT: **MCBH INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN/ENVIRONMENTAL ASSESSMENT (MCBH/EA) (2002 - 2006)**

LOCATION: **MARINE CORPS BASE HAWAII**

As a member of the Marine Corps Base Hawaii Environmental Impact Review Board, I have reviewed the combined MCBH INRMP/EA and Draft Finding of No Significant Impact (FONSI) and

Concur **Non-concur** **(CIRCLE ONE)**

in the conclusion of the command environmental staff that the document adequately addresses potential impacts of the proposed action, and supports the FONSI.

Signature: C. W. [illegible] Date: 01/11/14

Title: DIRECTOR, PUBLIC AFFAIRS

Activity:

Telephone: 257-8841

ENVIRONMENTAL IMPACT REVIEW BOARD ENDORSEMENT

PROJECT: **MCBH INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN/ENVIRONMENTAL ASSESSMENT (MCBH/EA) (2002 - 2006)**

LOCATION: **MARINE CORPS BASE HAWAII**

As a member of the Marine Corps Base Hawaii Environmental Impact Review Board, I have reviewed the combined MCBH INRMP/EA and Draft Finding of No Significant Impact (FONSI) and

Concur **Non-concur** **(CIRCLE ONE)**

in the conclusion of the command environmental staff that the document adequately addresses potential impacts of the proposed action, and supports the FONSI.

Signature: [illegible] Date: 13 NOV 01

Title: CO, 3D MARINES

Activity: 3D MAR. DIV

Telephone: 257-2621

G4. AGENCY CORRESPONDENCE AND CONCURRENCE

This appendix contains copies of correspondence exchanged between MCBH and external reviewing agencies regarding review of the *MCBH INRMP Update (2007-2011)* (e.g. letters requesting review and letters/comments received[1]). It also contains copies of letters of concurrence with the *Final MCBH INRMP Update (2007-2011)* (November 2006) received from pertinent agencies (e.g., USFWS, Hawaii DLNR, and NOAA Fisheries). This *Final MCBH INRMP Update* (November 2006) contains the most complete record of cumulative correspondence exchange available at time of publication.

It should be noted that the INRMP Update was also submitted for internal MCBH staff review, and concurrence was received from the MCBH Environmental Impact Review Board. A complete record of this internal review process is maintained in the MCBH Environmental Department files.

LIST OF AGENCIES RECEIVING MCBH INRMP UPDATE (2007-2011)

FOR REVIEW AND RECORD OF RESPONSES RECEIVED/ADDRESSED

Name	Draft Rev[2]	Draft Comm[3]	Pre-Final Rev	Pre-Final Comm	Final Dist
US FISH AND WILDLIFE SERVICE, PACIFIC ISLANDS OFFICE, HONOLULU[*]	X	+	X		X
US FISH AND WILDLIFE SERVICE, REGION 1 OFFICE, OREGON[*]	X		X	+	X
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, FISHERIES, PACIFIC ISLANDS OFFICE, HONOLULU[*]	X	+	X	+	X
STATE OF HAWAII, DEPARTMENT OF LAND AND NATURAL RESOURCES[*]	X		X	+	X
Division of Forestry and Wildlife	X	+	X	0	X
Division of Aquatic Resources	X	0	X	+	X
US AIR FORCE, 15 CEC/CC, HICKAM AFB	X	+	X	0	X
US NAVY, NAVAL FACILITIES ENGINEERING COMMAND, PACIFIC	X	+	X	+	X
US NAVY, NAVAL FACILITIES ENGINEERING SERVICE CENTER			X	+	X
US DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE	X	+			X

[1] MCBH's responses to the comments are detailed in Appendix G5.
[2] *Rev*: Received for Review from MCBH; *Comm*: Comments Received by MCBH; *Dist*: Final for Distribution
[3] "+" indicates that comments were received. "0" indicates that no comments were received.
[*] Sikes Act Partner

Name	Draft Rev[2]	Draft Comm[3]	Pre-Final Rev	Pre-Final Comm	Final Dist
US ARMY ENGINEER DISTRICT, HONOLULU	X	0			X
STATE OF HAWAII, DEPARTMENT OF DEFENSE	X	+			X
STATE OF HAWAII, DEPARTMENT OF HEALTH	X	0			X
STATE OF HAWAII, OFFICE OF HAWAIIAN AFFAIRS	X	+			X
STATE OF HAWAII, OFFICE OF PLANNING	X	+			X
CITY AND COUNTY OF HONOLULU, DEPARTMENT OF PLANNING	X	+			X
UNIVERSITY OF HAWAII, ENVIRONMENTAL CENTER	X	0			X

"X"s in the Final Dist column reflect the fact that all of the external agencies will receive a courtesy copy of the Final INRMP Update. External agencies that made substantive review comments on the Draft INRMP Update were sent the Pre-Final Draft for review, along with a summary of how their comments were addressed (see Appendix G5 for details).

FINAL INRMP UPDATE CONCURRENCE LETTERS

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

911 NE 11th Avenue
Portland, Oregon 97232-4181

In Reply Refer To:
06-361

NOV 3 2006

Lieutenant Colonel Dean Levi
US Marine Corps
Director, Environmental Compliance
and Protection Department
Box 63002
Kaneohe Bay, Hawaii 96863-3002

Re: Integrated Natural Resources Management Plan for Marine Corps Base Hawaii

Dear Lieutenant Colonel Levi:

The U.S. Fish and Wildlife Service (Service), Pacific Islands Fish and Wildlife Office (PIFWO) has reviewed the Pre-Final Integrated Natural Resources Management Plan (INRMP) update for Marine Corps Base Hawaii on Oahu (MCBH). The purpose of this letter is to communicate that the Service and MCBH are in mutual agreement with regard to the plan's content, consistent with paragraph (a)(2) of the Sikes Act (16 U.S.C. 670a *et seq.*).

The PIFWO reviewed earlier versions of the draft MCBH INRMP and shared a variety of natural resource concerns with your staff over the course of several meetings. These concerns were largely resolved, and we continue to be impressed with the energy and cooperative spirit brought to this task by Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH. As a result of this early and open planning dialogue, the Service constructively contributed to the INRMP as reflected in the Pre-Final Draft.

With regard to protection of species listed under the Endangered Species Act of 1973, as amended (ESA), the Service and Marine Corps agree that the INRMP is programmatic in nature and is a planning document. For this reason, we anticipate that consultation under Section 7 of the ESA will be undertaken on a project-specific basis prior to implementation of each project.

Thank you for the opportunity to comment on the INRMP for MCBH. You and your staff have produced a useful planning document that will assist achieving the concurrent goals of protecting natural resources while accomplishing the important mission of the U.S. Marine Corps.

TAKE PRIDE® IN AMERICA

Please contact Mr. Patrick Leonard, Field Supervisor, Pacific Islands Fish and Wildlife Office, at 808-792-9400 if you wish to discuss INRMP implementation.

Sincerely,

Acting

Regional Director

cc:
Hawaii Department of Land & Natural Resources
National Marine Fisheries Service

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Regional Office
1601 Kapiolani Blvd., Suite 1110
Honolulu, Hawaii 96814-4733
(808) 944-2200 • Fax: (808) 973-2941

NOV 09 2006

LtCol. Dean Levi, USMC
Director, Environmental Compliance
and Protection Department
Marine Corps Base Hawaii
Kaneohe Bay, Hawaii 96863-3002

Dear Colonel Levi:

NOAA Fisheries Service, Pacific Islands Regional Office (PIRO), has received the Pre-Final Marine Corps Base Hawaii (MCBH) 2006 Draft Update to the 2001 Integrated Natural Resources Management Plan (INRMP) for the military installation. We have reviewed the Pre-Final edition of the INRMP update and offer the following comments for your consideration.

NOAA Fisheries Service, PIRO, has worked closely with your staff during the development of the original MCBH INRMP. Most recently we have reviewed and provided comments on the draft INRMP, which have been addressed to our satisfaction in the Pre-Final document. In addition, your environmental staff under Dr. Diane Drigot closely coordinates with NOAA Fisheries Service and the other federal and state resource agencies, to assess proposed activities at MCBH which may impact terrestrial and marine resources and their habitats within the jurisdiction of the installation.

We appreciate the continued efforts by MCBH to coordinate with NOAA Fisheries Service, and look forward to working with you during ongoing and future implementation of the INRMP.

Sincerely,

William L. Robinson
Regional Administrator

cc: U.S. Fish and Wildlife Service
Hawaii Dept. of Land & Natural Resources

LINDA LINGLE
GOVERNOR OF HAWAII

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

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF AQUATIC RESOURCES
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

November 14, 2006

LTC Dean Levi
Director, Environmental Compliance
and Protection Department
United States Marine Corps
Marine Corps Base Hawaii
P.O. Box 63002
Kaneohe Bay, Hawaii 96863-3002

Dear LTC Levi:

The Division of Aquatic Resources (DAR) in receipt of the cover letter and update to the 2006 Pre-Final edition of the Integrated Natural Resources Management Plan (INRMP), addressed to Mr. Peter Young, Chairperson of the Department of Land and Natural Resources (DLNR). In your letter, it states that no comments were received from DAR. DAR did not receive the letter of July 14, 2006 and the INRMP to review. Apparently, it went only to one Division (Forestry and Wildlife).

The DAR offers a few minor edits. On page7.4-5 in the last sentence of the second paragraph of the Evaluate and implement appropriate recommendations from the HI20009 Coral Reef Ecosystem Management Study section, it is uncertain if it means, "State Department of Land and Natural Resources or State Division of Aquatic Resources", but State Department of Aquatic Resources is incorrect (DAR is a Division within the Department of Land and Natural Resources). On page 7.4-6, in the first paragraph line-6, it reads, "CY206" and should either be CY2006 or CY '06.

We appreciate this opportunity to provide our comments. DAR is interested in collaborating, to the extent possible, with the Marine Corps Base Hawaii on implementing actions included in this management plan.

Very truly yours,

Dan Polhemus, Administrator
Division of Aquatic Resources

LINDA LINGLE
GOVERNOR OF HAWAII

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

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
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AQUATIC RESOURCES
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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

November 2, 2006

Ms. Diane Drigot
Senior Natural Resources Management Specialist
U.S. Marine Corps, Marine Corps
Base Hawaii
Box 63062 (Environmental)
Kaneohe Bay, Hawaii 96863-3062

Dear Ms. Drigot:

Subject: MCTAB – INRMP 2006.

Thank you for providing the Department an opportunity to comment on your INRMP plan. The affected Divisions will be preparing and submitting comments specific to their programs under separate correspondence. If you have questions, please follow-up with each directly.

Sincerely yours,

PJC Peter Young
Chairperson

C: DOFAW Oahu Branch
DAR

PRE-FINAL INRMP UPDATE DISTRIBUTION LETTERS

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UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/119-06
October 11, 2006

Department of Interior
Fish and Wildlife Service
Attn: Dr. Patrick Leonard
Field Supervisor
Box 50088
Honolulu, HI 96850

Dear Dr. Leonard:

Thank you for your September 2006 review comments on Marine Corps Base Hawaii's 2006 Draft Update to the 2001 Integrated Natural Resources Management Plan (INRMP). Your comments have been addressed in the enclosed 2006 Pre-Final edition of the INRMP update (both hard copy and on CD). Please go to Appendix G-4 of the pre-final 2006 INRMP update which tabulates MCBH's response to each of the Service's review comments as well as those received from other agencies.

In keeping with the timetable agreed to in a June 1, 2006 meeting with your staff, the next step is for the Service to compose a concurrence letter with the 2006 INRMP as updated by November 1, 2006. We will incorporate that concurrence letter in the appendix of the Final INRMP update prior to distribution to all agencies concerned. Of course, should there be need for any additional minor edits between now and November 1, noted by the Service and others, they will be incorporated. Obtaining that concurrence letter by November 1, 2006 will allow sufficient time to meet the regulatory deadline of November 17, 2006 to finalize the INRMP update (incorporating concurrence letters) and distributing to interested stakeholders.

We wish to take this opportunity to express our appreciation of your staff's review of our INRMP update and look forward to working with the Service in the years to come as we implement it.

Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

Enclosures:
1. Pre-Final MCBH INRMP Update (2007-2011) of October 2006
2. CD: Pre-Final MCBH INRMP Update (2007-2011) of October 2006
(with copy of 2001 INRMP/EA included for historical reference)

Copy: Ms. T. Rabot, Asst. Regional Director, US FWS Region 1 Office

UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/119-06
October 11, 2006

National Oceanic and Atmospheric
Administration (NOAA)/Fisheries
Pacific Islands Office
Attn: Mr. William Robinson, Administrator
1601 Kapiolani Blvd., Suite 1110
Honolulu, HI 96814-4700

Dear Mr. Robinson:

Thank you for your September 8, 2006 review comments (email from Arlene Pangelinan, NOAA Fisheries staff) on Marine Corps Base Hawaii's 2006 Draft Update to the 2001 Integrated Natural Resources Management Plan (INRMP). Your comments have been addressed in the enclosed 2006 Pre-Final edition of the INRMP update (both hard copy and on CD). Please go to Appendix G-4 of the pre-final 2006 INRMP update which tabulates MCBH's response to each of NOAA/Fisheries review comments as well as those received from other agencies.

In keeping with the regulatory timetable needed for completion, the next step is for NOAA/Fisheries to compose a concurrence letter with the 2006 INRMP as updated by November 1, 2006. We will incorporate that concurrence letter in the appendix of the Final INRMP update prior to distribution to all agencies concerned. Of course, should there be need for any additional minor edits between now and November 1, noted by your staff and others, they will be incorporated. Obtaining that concurrence letter by November 1, 2006 will allow sufficient time to meet the regulatory deadline of November 17, 2006 to finalize the INRMP update (incorporating concurrence letters) and distributing to interested stakeholders.

We wish to take this opportunity to express our appreciation of your staff's review of our INRMP update and look forward to working with your agency in the years to come as we implement it.

Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

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(1) Pre-Final MCBH INRMP Update (2007-2011) of October 2006
(2) CD: Pre-Final MCBH INRMP Update (2007-2011) of October 2006
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UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/119-06
October 11, 2006

Hawaii Department of Land and Natural Resources
Attn: Mr. Peter Young, Chair
1151 Punchbowl Street
Honolulu, HI 96813

Dear Mr. Young:

Thank you for your September 7, 2006 review comments on Marine Corps Base Hawaii's 2006 Draft Update to the 2001 Integrated Natural Resources Management Plan (INRMP). Your comments have been addressed in the enclosed 2006 Pre-Final edition of the INRMP update (both hard copy and on CD). Please go to Appendix G-4 of the 2006 prefinal INRMP update which tabulates MCBH's response to each of DLNR's staff review comments as well as those received from other agencies. However, please note that we received comments from the Division of Forestry and Wildlife but not from the Division of Aquatic Resources.

In keeping with the regulatory timetable need for completion, the next step is for DLNR to compose a concurrence letter by November 1, 2006 with the 2006 INRMP as updated. We will incorporate that concurrence letter in the appendix of the 2006 Final INRMP Update prior to distribution to all agencies concerned. Of course, should there be need for any additional minor edits between now and November 1, noted by DLNR staff or others, they will be incorporated. Obtaining that DLNR concurrence letter by November 1, 2006 will allow sufficient time to meet the regulatory deadline of November 17, 2006 to finalize the INRMP update (incorporating concurrence letters) and distributing to interested stakeholders.

We wish to take this opportunity to express our appreciation of your staff's review of our INRMP update and look forward to working with DLNR in the years to come as we implement it.

Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

Enclosures:
1. Pre-Final MCBH INRMP Update (2007-2011) of October 2006
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UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/119-06
October 11, 2006

15 CES/CEV
Attn: Mr. Ronnie D. Lanier
Chief, Environmental Flight
75 H Street
Hickam AB HI 96863-5233

Dear Mr. Lanier:

Thank you for your September 18, 2006 review comments on Marine Corps Base Hawaii's 2006 Draft Update to the 2001 Integrated Natural Resources Management Plan (INRMP). Your comments have been addressed in the enclosed 2006 Pre-Final edition of the INRMP update (both hard copy and on CD). Please go to Appendix G-4 of the pre-final 2006 INRMP update which tabulates MCBH's response to each of the Air Force's review comments as well as those received from other agencies.

In keeping with the regulatory timetable required for completion, please provide any additional review comments before November 1, 2006 so that they can be incorporated into the Final INRMP update prior to distribution to all agencies concerned.

We wish to take this opportunity to express our appreciation of your staff's review of our INRMP update and look forward to working with the Air Force on natural resources issues of common concern at Marine Corps Training Area-Bellows.

Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

Enclosures:
(1) Pre-Final MCBH INRMP Update (2007-2011) of October 2006
(2) CD: Pre-Final MCBH INRMP Update (2007-2011) of October 2006
(with copy of 2001 INRMP/EA included for historical reference)

UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/119-06
October 11, 2006

Naval Facilities Engineering Command, Pacific
Attn: Mr. Leighton G. M. Wong
Business Line Manager, Environmental
258 Makalapa Drive Ste 100
Pear Harbor, HI 96860-3134

Dear Mr. Wong:

Thank you for your September 21 August, 2006 review comments on Marine Corps Base Hawaii's 2006 Draft Update to the 2001 Integrated Natural Resources Management Plan (INRMP). Your comments have been addressed in the enclosed 2006 Pre-Final edition of the INRMP update (both hard copy and on CD). Please go to Appendix G-4 of the pre-final 2006 INRMP update which tabulates MCBH's response to each of the Navy's review comments as well as those received from other agencies.

In keeping with the regulatory timetable required for completion, please provide any additional review comments before November 1, 2006 so that they can be incorporated into the Final INRMP update prior to distribution to all agencies concerned.

We wish to take this opportunity to express our appreciation of your staff's review of our INRMP update and look forward to cooperative input from your staff, as appropriate, in implementing the plan.

Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

Enclosures:
(1) Pre-Final MCBH INRMP Update (2007-2011) of October 2006
(2) CD: Pre-Final MCBH INRMP Update (2007-2011) of October 2006
(with copy of 2001 INRMP/EA included for historical reference)

UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/119-06
October 11, 2006

Ms. Laura Thielen
Director, Office of State Planning
State of Hawaii
P.O. Box 2359
Honolulu, HI 96804-2359

Dear Ms. Thielen:

Thank you for your August 1, 2006 review comments on Marine Corps Base Hawaii's 2006 Draft Update to the 2001 Integrated Natural Resources Management Plan (INRMP). Your comments have been addressed in the enclosed 2006 Pre-Final edition of the INRMP update (both hard copy and on CD). Please go to Appendix G-4 of the pre-final 2006 INRMP update which tabulates MCBH's response to each of your office's review comments as well as those received from other agencies.

In keeping with the regulatory timetable required for completion, please provide any additional review comments before November 1, 2006 so that they can be incorporated into the Final INRMP update prior to distribution to all agencies concerned.

We wish to take this opportunity to express our appreciation of your staff's review of our INRMP update and look forward to working with the State on addressing natural resources management issues of common concern in the years to come.

Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

Enclosures:
(1) Pre-Final MCBH INRMP Update (2007-2011) of October 2006
(2) CD: Pre-Final MCBH INRMP Update (2007-2011) of October 2006
(with copy of 2001 INRMP/EA included for historical reference)

DRAFT INRMP UPDATE COMMENT LETTERS

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

In Reply Refer To:
PN-06-361

SE 8 2006

Lieutenant Colonel Dean Levy
Director, Environmental Compliance
and Protection Department
Marine Corps Base Hawaii
Box 63002
Kaneohe Bay, Hawaii 96863-3002

Dear Lt. Colonel Levy:

The U.S. Fish and Wildlife Service (Service) has reviewed the July 2006 draft Marine Corps Base Hawaii (MCBH) Integrated Natural Resources Management Plan (INRMP) for the period 2007 through 2011. On August 25, we met with your Senior Natural Resources Management Specialist, Dr. Diane Drigot, to discuss our comments on the draft INRMP. In general, the plan identifies important natural resource goals, which are clearly stated and succinct, and proposes reasonable and realistic management actions to achieve those goals. Specific comments on plan components are summarized below.

Executive Summary

Table ES-1 identifies a total of 126 MCBH operational stewardship management actions planned for yearly implementation during 2007 through 2011. However, the text in line 20 on page 2-3 states that the number of actions is 192. Clarification is needed.

Component 7.1 Fish and Wildlife Management

We fully support the proposed actions to maintain healthy populations of protected species that currently exist within MCBH land, water, and air space.

Component Plan 7.2 Wetland Management

The Service supports continued wetland restoration activities at Sag Harbor. Because restoration approaches and techniques are not well established for coastal wetlands in Hawaii, we are willing to provide technical assistance to aid in the planning and design of wetland projects.

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Component Plan 7.3 Watershed Management

The lower reaches of Waimanalo Stream and its tributaries have been are extensively altered throughout the Marine Corps Training Area at Bellows (MCTAB), primarily by stream channel realignment and straightening. Because techniques to restore low-elevation stream and estuarine aquatic environments are not well established in Hawaii, we recommend coordination with our office on the planning and design of watershed impairment solutions and restoration activities at MCTAB.

Component Plan 7.4 Coastal and Marine Resources Management

The inventory of marine life within the 500-yard seaward security zone around the base will identify sub-habitats that support a variety of ecological functions that contribute to the maintenance of intact coral reef communities. Quantitative information from the inventory will help serve as baseline information that can be used to monitor representative sub-habitats. The Service is willing to lead future monitoring efforts, in collaboration with state and other federal resource agencies, to help evaluate the long-term health of resources that occur within the security zone. Among other things, monitoring efforts should be designed to make reporting useful for MCBH managers in planning mission-related activities, avoiding and minimizing impacts to coral reef resources, and detecting natural versus anthropogenic changes.

Long-term monitoring efforts will provide MCBH with the information to design and implement appropriate measures to protect and conserve coral reef resources for the future. The Service is willing to help MCBH develop strategies to conserve coral reef resources in a manner that is compatible with MCBH mission requirements. We recommend that future planning efforts consider implementing conservation strategies within near-term (1-3 years), mid-term (3-5 years), and long-term (5-10 years) periods.

Component Plan 7.7 Resource Information Management

If the management actions presented in the INRMP are successfully pursued, MCBH will have an exceptional information management system for natural resources. The automation of available natural resources data for ease of reporting, trend analysis, and eventual integration with MCBH's Environmental Geographic Information System (EGIS) is highly beneficial. These actions are producing a set of documents that record the natural resource history of MCBH, and forming a sound baseline for evaluating changes in the natural resources of MCBH. In addition, the management actions prioritize the large collection of documents for incorporation into the EGIS. This ongoing effort will allow for the continual inclusion of historic data into a format that can be used in current resource management and will also allow for potential trend analysis over the history of MCBH.

Actions to maintain and enhance natural resource management databases for MCBH-KB in MCBH's EGIS are excellent. In addition to updating and maintaining EGIS base layers and data layers, this objective emphasizes the need for well maintained metadata that meets the Federal Geographic Data Committee (FGDC) standards. Metadata is essential for understanding the quality, resolution, etc. of the data and base layers being used to formulate natural resource

management. It serves as a check on the "garbage in – garbage out" effects that can result from the inappropriate use of data. It is an essential part of any GIS program and it receives appropriate discussion in the draft INRMP. Also of note is development and implementation of "standard operating procedures" (SOP) for tracking significant natural resources. Without this type of standardization, data collection can vary over time, and jeopardize the usefulness of the information. The SOP will help safeguard data quality.

The development of base maps and related natural resource databases for MCBH properties other than MCBH-KB recognizes the need to compile data bases for all areas and integrate them into the main EGIS. This will enhance the natural resource management activities at MCBH and also increase the value of MCBH resource data relative to other management actions in Hawaii. This will become more important as MCBH enters into cooperative data sharing.

Sharing of natural resource data among base-wide management units and with appropriate agencies and groups is a fundamental part of ongoing natural resource management in Hawaii. Data complied by MCBH will be of interest to other agencies and groups, and these agencies and groups can provide MCBH with additional natural resource data that will enhance the management efforts on all MCBH lands and place those efforts in the larger context of natural resource management in Hawaii. Currently, the Hawaii GAP program has available state-wide information on land cover and stewardship that may be of interest to MCBH. Other layers may be available on listed species, stream and aquatic systems, etc that could enhance MCBH's activities. Pursuit of interactions with appropriate agencies and groups will provide access to this information.

GIS and data management are rapidly evolving technical areas that greatly affect how data can be used by managers, which in turn, can affect management decisions. The draft INRMP appropriately identifies the need to maintain hardware and software needed to perform the needed GIS, administrative, and technical tasks, and allows for training of technical staff and those who collect field data for use in EGIS. In addition, the plan identifies the need to enhance access to commonly used GIS and natural resource data, including the maintenance of electronic natural resource management data. ArcReader may provide an easily used means of achieving this objective.

The lack of GPS services in the area of natural resource management is a significant issue. An effective natural resource management program needs to use GPS integrated with the EGIS in order to accurately record position information. This is a common practice and an expected standard in effective natural resource management program. The draft INRMP appropriately identifies this current short coming and the steps that are being taken to resolve them.

<u>Component Plan 7.6 Quality of Life, Outdoor Recreation and Outreach Management</u>

Overall, the outreach component of the draft INRMP would benefit from the inclusion of additional details. According to data and other information in Appendix G, MCBH has conducted extensive work throughout the years involving military and non-military personnel and often relied on volunteers to conduct the majority of this work. This data should be analyzed and used to tailor the outreach program to (a) the needs of target audiences, (b) the resources that

are available to support actions (monetary, in-kind and volunteers), (c) the distribution of information, and (d) identification of high-priority areas in greatest need of outreach.

It may be prudent to change the due date for the outreach study to FY2007 and then update the outreach component of the INRMP accordingly. This would allow for development of a more detailed plan that should expedite implementation. In addition, consideration should be given to including a full-time, or at least a part-time, volunteer outreach coordinator position in the plan. This will alleviate the workload of full-time natural resource professionals while expanding the capacity and effectiveness of the volunteer program.

For several years, MCBH has continued to conduct valuable resource management with a variety of groups. There is a need to include a media component in the outreach plan to do a better job of informing the outside world of all the good work that is being done. This can be accomplished by inviting the media to volunteer/activity days and by providing worthwhile reports and/or articles to non-military media sources.

The continuous assessment and improvement of the awareness of environmental constraints associated with the Nu'upia Ponds Recreational Run Trail is important, but the INRMP does not provide sufficient detail pertaining to the implementation and evaluation of this action. The plan would be improved if it addressed how often and in what manner recreational use of the trail will be evaluated (*e.g.,* user survey form, on-site monitoring, etc.) and what specific tools will be used to improve awareness (*e.g.,* interpretive signs, use of the media, specific outreach to target audiences such as runners, etc.).

In summary, the draft INRMP presents a well-reasoned approach to natural resource management and includes actions that should support the goal of improving the sustainability and native biological diversity of the ecosystems represented at the base without compromising MCBH's military mission. We hope these comments are useful in revising the draft INRMP and we look forward to receiving the final draft for review in early October. If you have any questions, please direct them to Environmental Review Coordinator, Michael Molina, at michael_molina@fws.gov or (808) 792-3440.

Sincerely,

Patrick Leonard
Field Supervisor

This message provides National Marine Fisheries Service (NMFS) Pacific Islands Regional Office comments on the July 2006 Draft Marine Corps Base Hawaii Integrated Natural Resources Management Plan.

General Comments

Overall, the document outlines the Marine Corps Base Hawaii's (MCBH) strategy for overall ecosystem management by improving the sustainability and native biological diversity of the ecosystems, while supporting the MCBH's military mission. Specific management actions are identified along with a five-year implementation schedule across seven Course of Action (COA) component plans, and are systematically linked to specific goals and objectives within each of those COA components. This Integrated Natural Resources Management Plan (INRMP) updates the original 2001 MCBH INRMP/Environmental Assessment (EA). The document provides detailed information on its terrestrial resources (i.e., wetlands, endangered waterbirds, watersheds) and associated management strategies for them. A course of action component for coastal and marine resources management, pertinent laws, and protected species under NMFS oversight such as endangered Hawaiian monk seals, endangered Humpback whales, threatened green sea turtles, dolphins, and coral reef habitats are also included. As MCBH develops site specific management plans for the above marine resources, we offer our technical assistance to collaborate, assess, and develop management strategies with MCBH for protected marine species on the base. Specific comments on sections of interest to NMFS are provided below.

Specific Comments

Section 6. Existing Environmental Conditions

Page 6-5. Fish and Wildlife. Updated information on marine species.
This section identifies and maps sensitive marine resources and locations (finger corals (*Porites compressa*)), a portion of an area used by hammerhead sharks for pupping, coral colonies with high conservation value, an area dominated by finger corals supporting a high diversity of other corals and turtle sleeping spots, and an area used by turtles for grazing) for use during interagency "spill drills" and during real-time spill responses. Does the MCBH have other plans to further manage these resources beyond spill drill activities?

This section also states that the species lists in Appendix C will be updated upon receipt of a project final report from the USFWS. NMFS offers to review this list when available to confirm marine species under our jurisdiction.

Page 6-11. Fish and Wildlife. Updated information on marine species.

This section states there is limited information specifically about marine resources at MCTAB or on the transit route from Fort Hase Beach, MCBH-KB to Bellow Beach, MCTAB. Does the MCBH plan to conduct future coastal and marine surveys to confirm

the presence/absence of marine species in these areas?

Section 7. Course of Action Components

Page 7.1-9. Objective 7.1.2: Increase emphasis on Fish and Wildlife Management Program elements at MCBH-KB outside the two Wildlife Management Areas.

Second bullet: Incorporate updated fisheries/marine mammal policy into Base Plans, projects, and Protocols as appropriate.

This section identifies the need for policy clarification regarding recreational fisheries access, sustainable yield, indigenous access, marine mammal protection protocols, and Essential Fish Habitat (EFH) designations in MCBH's 500-yard buffer zone. This clarification should be reflected in updates to the Master Plan, Base Regulations, training Standard Operating Procedures, etc.

NMFS staff are willing to meet with MCBH to discuss and develop marine mammal protection protocols including when pupping events occur on the base. Logistical considerations include access onto the installation, setting up a perimeter around the mom and pup, establishing a volunteer network to monitor the pair over a six-week period, and possible relocation sites elsewhere on the base, as appropriate. NMFS staff may also assist with EFH designations in MCBH's 500-yard buffer zone around Mokapu Peninsula.

7.4. Coastal and Marine Resources Management Component Plan

Pages 7.4-1 through 7.4-3

This section identifies environmental laws and resources of interest to NMFS. They include the Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Marine resources include humpback whales, Hawaiian monk seals, and green sea turtles, coral reefs, benthic and pelagic areas, and EFH for fish species. We commend the MCBH for its focus on coral reef ecosystem management and resulting reef ecosystem management actions initiated or completed during the first five years of INRMP/EA implementation. The plan will continue identified management in this updated INRMP, including marine alien threats and their impacts. Nevertheless, the MCBH acknowledges its need to expand and improve its inventory of known fisheries, shellfish, marine mammal and reptile (turtle) resources within its coastal zone to ensure proper compliance with consultation requirements under the ESA, MMPA, and MSA. NMFS is willing to meet and collaborate with MCBH to assess the above-mentioned resources and facilitate consultation requirements for them.

Page 7.4-6. Objective 7.4.1: Improve inventory and conditions of biological and geophysical processes and features in MCBH littoral areas.

We support MCBH's plan to use results from the U.S. Fish and Wildlife Service (USFWS)-led marine survey (anticipated completion by October 2006) to design and implement appropriate follow-up management actions and continue collaboration with the State of Hawaii Department of Land and Natural Resources (State DLNR), USFWS, and NOAA Fisheries. MCBH will fund programs that consider the cumulative results of new information from the updated marine survey and completed actions in FY 2008 and FY 2009 when completing the next five-year updated INRMP in 2011. We recommend the results of the USFWS report be appendixed in the next version of the INRMP as it identifies resource assessment information on the base. We are also available to provide technical assistance for development of future strategies involving the littoral zone.

Page 7.4.8. Objective 7.4.2: Identify impacts and threats on MCBH coastal and marine resources.

This section discusses MCBH management of oil spill risks and need for data from NOAA Fisheries, State DLNR, University of Hawaii and other sources. We are willing to share any pertinent data in support of this effort. Additionally, the plan identifies a need to inventory marine threats, such as alien species invasions, and through consultations with military operations, resource management agencies, and stakeholder user groups, compile, characterize, and categorize these threats by relative significance to military readiness as well as to MCBH resource conservation missions. NMFS may provide technical assistance to address marine alien species invasions upon request.

Page 7.4-9. Objective 7.4.3: Plan restoration, avoidance, mitigation or monitoring activities on MCBH coastal and marine resources.

This section identifies a need to implement ecosystem-based risk assessments to natural resource management decision making and identifies three strategies. NMFS is available to provide technical assistance and assist MCBH with this effort upon request.

Page 7.4-10. Objective 7.4.5: Improve awareness and training on coastal and marine resources.

We support MCBH's strategies to ensure appropriate training and education in NRDA, Ecological Risk Assessments and for operational and residential personnel. NMFS is available to provide educational presentations on marine mammal behaviors, protocols for monitoring Hawaiian monk seal pupping events, rehabilitating oiled marine resources, reducing entanglement interactions with marine species, etc. Pertinent information on why and when to contact NMFS staff may also be distributed including the monk seal hotline and sighting line.

Page 7.4.11. Objective 7.4.6: Optimize interaction with regional stakeholders to address coastal and marine conservation impacts and opportunities.

This section mentions exploring opportunities over the next five-year INRMP implementation period and developing cooperative projects in additional areas of coastal

and marine conservation. The plan cites NOAA Fisheries' Species of Concern (SOC) workshop as an example of future cooperative conservation as MCBH has two species of concern to NMFS in Kaneohe Bay: the Hawaiian reef coral (*Montipora dilatata*) and inarticulate brachiopod (*Lingula reevii*). We will continue to coordinate with the MCBH to share information and collaborate on conservation opportunities for both species.

Section 8. Relationship of Other Plans and Programs to INRMP

Page 8-5. 8.1.11 Natural Resources Trustee and Natural Resource Damage Assessment (NRDA)

This section acknowledges the developmental stage of the MCBH program and its lack of a systematic and readily available database on marine resources at risk due to potential spills from Marine/Navy operations or outside sources. Comprehensive and readily accessible maps and associated data bases specific to coastal areas of MCBH properties will facilitate effective MCBH compliance with NRDA and spill response obligations. Future NMFS-MCBH collaboration may result with creation of some of these tools. Additionally, if MCBH has a specific spill response plan with protocols for rehabilitating oiled and stranded turtles and monk seals, we are wiling to review and comment on this plan. If this plan is not available, we are willing to provide assistance to develop this plan.

In summary, the MCBH recognizes its ongoing management of its marine resources on base. The INRMP includes a course of action component specific to coastal and marine resources management. Although the document identifies data necessary to develop management strategies for listed marine species and their habitats especially during oil spills, it also acknowledges need for collaboration with other state and federal agencies for continued conservation and management activities over this five-year period and beyond. NOAA Fisheries supports MCBH's activities for coral reef ecosystem management and we offer technical assistance to develop future management actions for other protected marine resources on the base.

We appreciate the opportunity to comment on the MCBH INRMP. If you have questions regarding these comments, please contact Arlene Pangelinan at 944-2258.

LINDA LINGLE
GOVERNOR OF HAWAII

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

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF FORESTRY AND WILDLIFE
1151 Punchbowl Street
HONOLULU, HAWAII 96813

September 7, 2006

LTC Dean Levi
Director, Environmental Compliance
And Protection Department
United States Marine Corps
Marine Corps Base Hawaii
P.O. Box 63002
Kaneohe Bay, HI 96863-3002

Dear LTC Levi:

It is our understanding that branches of the military are required to prepare an integrated natural resources management plan (INRMP) to be in compliance with the Sikes Act Improvement Act. We have been in receipt of your Command's INRMP and thank you for the opportunity to review and comment on the plan. We have vested interest in that the plan address actions which benefit natural/cultural resources within your agency's jurisdictional areas.

Because the current INRMP is "an update of the original 2001 MCBH INRMP/EA, it simplified our review of the document. The following general comments are offered to continue the effectiveness of your approach towards "stewarding" installation attributes while fulfilling the military mission:

- Executive Summary-Second paragraph, change Table references from ES to E3.
- Considering the current trend in overseas defense spending in active theater(s) of operations, resource management at the "operational" level is challenging and prudent but may not be the best for conserving natural resources or protecting species of concern, endangered species, and valuable cultural resources. We urge that you strive for the "optimal" level of management when threats require it or other funding/partnership opportunities become available.
- We note that your INRMP is in appropriate context with other installation and agency plans, e.g. Section 8--State of Hawaii Comprehensive Wildlife Conservation Strategy. The absence of consideration for elements of the National Fire Plan concerns us because the presence of a wildland-urban interface issue

exists at MCTAB. We urge that this issue be a vital part of INRMP because of public safety and to avoid complications similar to that experienced by the U.S. Army in Hawaii.

- Page 6-5, first paragraph last sentence: Change to read, "Since vegetation is the fuel source of wildland fires, it also has a direct influence on fire risk and spread, the vegetation map was used in combination with information about the probability of ignition and fire history to develop a 'fire risk' map for Ulupa'u Crater." That said, we suggest that a re-evaluation be made of the fuel model map and the "line of fire" (LOF) profile to redesignate the moderate risk to high fire risk. It is our opinion that in the moderate risk area depicted on the photomap, the fuel types which within a major portion of the LOF is similar in component to the high fire risk area, i.e. predominantly grass with sparse covering of trees and shrubs.
- Page 6-7, first paragraph references removal of mangrove within MCBH-KB and also other smaller jurisdictional wetland areas outside of Nu'upia Ponds. The latter appears to be submerged waters within DLNR jurisdictional areas and may be a challenge in determining who your partner(s) should be in addressing this issue. We are hoping that at least one of our sister agency(s), i.e. Division of Aquatic Resources, may be able to help in this matter as the described area may be within a fishery management area within Kaneohe Bay.
- Page 6-10, first paragraph. We recommend that similar evaluation be made in regards the mapping of fire prone vegetation and risk ranking for MCTAB.
- Page 6-11-Species of Concern. Include fountain grass.
- Page 7.1-6. Element Category Three: Species/Habitat Enhancement Actions at UHWMA: We urge that you develop a Wildland Fire Management Plan for all your management units. A comprehensive plan which includes prevention, presuppression, and suppression can address your concern for wildfire in a comprehensive manner. Maintaining and improving fire-fighting capabilities are admirable courses of action but unless it is part of an integrated approach for fire protection, it may be not be the best approach for efficient and effective use of available fire protection resources, i.e. a lot of investment made and being proposed to enhance natural resources via several courses of action but these are at risk because of the perceived fire threat.
- Page 7.5-8. Ditto comments immediately above. We urge that the update/revision of the Ulupa'u Fire Management Study be moved up on the scheduling. (Reference Table E3-1) We note that it's scheduled to occur in the latter part of the next operational period, i.e. FY 11. Additionally, consider evolving the study into a comprehensive fire management plan. Suggest the same be attained for your other jurisdictional areas.
- Section 8, Relationship of Other Plans and Programs to INRMP. We note the absence of a Wildland Fire Management Plan. Also, as part of Section 8.1.9—include considerations for possible effects of natural disasters on natural and cultural resources. We recommend that measures for mitigation, preparation, response, and recovery be considered to stabilize populations of natural resources and cultural sites following major natural disaster or man-made occurrences.
- Section 9.5, Stakeholder Involvement (Cooperation Conservation). Because of proximity to the Koolau Mountains, i.e. Waikane Valley Impact Area and MCBH-Camp H.M. Smith, we recommend your agency's association with the

Koolau Mountains Watershed Partnership to leverage resources for the conservation of natural/cultural resources along portions of the greater Koolau watershed which extend into Kaneohe Bay.

- Page 11-1. Change listing for DLNR to read: "Department of Land and Natural Resources, Division of Aquatic Resources and Division of Forestry & Wildlife"

Should you have any questions regarding specific natural resource management issues in any of MCBH's installations, you may call on any of my forestry or wildlife administration staff at 587-0166. Mahalo!

Sincerely,

Paul J. Conry
Administrator

DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

18 SEP 2006

Mr. Ronnie D. Lanier
Chief, Environmental Flight
15 CES/CEV
75 H Street
Hickam AFB HI 96853-5233

Lt Col Dean F. Levi
Director, Environmental Compliance
and Protection Department
Box 63062
Kaneohe Bay HI 96863-3002

Dear Lt Col Levi

Thank you for allowing us the opportunity to review the Marine Corps Base Hawaii Integrated Natural Resources Management Plan Update (MCBH INRMP) (2007–2011). Our comments are noted in the attached Comment Review Form.

Per your request on the status of our INRMP update, a contract was recently awarded for its update. Among other changes, it will incorporate your comments to the 2003–2007 INRMP, and we will provide a copy of the new update for your review. We expect this draft product to be available to you by 31 Dec 06.

We appreciate your intent on working with us to better manage the natural resources on our respective properties. If you have further natural resource inquiries, please direct them to our Natural Resources Program Manager, Mr. Aaron Hebshi, at (808) 449-1584 x234, or via email at aaron.hebshi@hickam.af.mil.

Sincerely

Ronnie D. Lanier

RONNIE D. LANIER

Attachment:
MCBH INRMP Comment Review Form

DOCUMENT REVIEW COMMENTS	DATE OF REVIEW 20060901	PAGE 1 OF 1 PAGES

TO:	FROM: *(Name of reviewer)*	OFFICE SYMBOL	DUTY PHONE
Dr. Diane Drigot	Aaron Hebshi , Hickam AFB	15CES /CEVP	449-1584 x 234

DOCUMENT NUMBER AND DATE

Marine Corps Base Hawaii Integrated Natural Resources Management Plan (MCBH INRMP) Update Draft 2007 - 2011. July 2006

PAGE NO.	PARAGRAPH(S)	LINE NO.	COMMENTS
7.1-15	3rd Paragraph	32	The area of concern (AOC) 18 referenced in this paragraph was converted to a site in 2004. The site name is now Disposal Area 101. It would be appropriate to properly identify the current site name.
	Bullet		The final decision for DA101 is likely to be similar to that for LF01 (ROD is expected to be finalized in a few months). The ROD will probably include implementation of land use controls (LUCs) at the sites, and will likely include access controls, periodic monitoring, training, and notifications to various land management offices, etc., as part of the overall long term management of the site. Although the Air Force is legally responsible for hazardous chemicals in these dumps and the overall long term management, MCBH will likely be the "gatekeepers,' to some extent, and some discussion of this may be appropriate for discussion in the MCBH INRMP. Maps clearly showing where these sites are, also to include LF24 (solid waste dump), could also be appropriate. Attached is a map of the area showing location of all sites (but note that DA101 is still labeled AOC18).
7.2-4	2nd bullet		Funds for mangrove clearing in the Air Force jurisdictional boundary of the oxbow region of Waimanaolo stream have currently been programmed for the 2nd consecutive fiscal year. We acknowledge our responsibility to restore this area, and we anticipate funding a multi-year program to reach this goal.
7.5	General		Create a living "DO NOT PLANT" list based on new results from the on-going Weed-Risk Assessment program through Lyon Arboretum. Coordinate this list with on-base plant retailers and landscape architects to ensure recently-realized invasive species are not planted. Note, this is in addition to the "DO NOT PLANT" list that is already published in Appendix F of the 2002 MCBH INRMP
7.6-6	3rd bullet		Hickm AFB INRMP 2003-2007 (Draft) does not include public awareness funding for Bellows AFS except for installation of a turtle sign at the mouth of Waimanalo Stream (completed in FY03). However, AF will gladly coordinate on making available any brochures manufactured by MCBH/City-County of Honolulu available to cabin users of Bellows AFS, and consider requesting funds for cost sharing in our updated INRMP (2007-2011).
App. B	Figure 12		Jurisdictional boundary matches AF real estate records. Although not specified in the figure, Tinker road belongs to AF.
General			Develop with Oahu Invasive Species Committee incipient invasives survey: roadside weed surveys, coqui frog awareness campaign, etc.

DATE *(YYYYMMDD)*	TYPED NAME, GRADE, TITLE, ORGANIZATION, AND OFFICE OF APPROVING AUTHORITY	SIGNATURE

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, PACIFIC
258 MAKALAPA DR., STE. 100
PEARL HARBOR, HAWAII 96860-3134

11015.4A8K
Ser EV2/ 0825
21 AUG 2006

Lieutenant Colonel Dean F. Levi
U.S. Marine Corps
Director, Environmental Compliance and Protection Department
Marine Corps Base Hawaii
Box 63002
Kaneohe Bay, Hawaii 96863-3002

Dear Colonel Levi:

Subj: COMMENTS ON MARINE CORPS BASE HAWAII'S DRAFT 2006 INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (INRMP) UPDATE

This responds to your August 1, 2006 request (your reference LE/102-06) for Naval Facilities Engineering Command Pacific's review and comments on the subject draft.

The draft update is thorough, complete, and accurate, and we did not find any errors of fact or unclear interpretations of the set of laws, Executive Orders, or other directives that guide the INRMP process or other actions related to environmental management. Our comments, provided as Enclosure (1), are almost entirely editorial.

Thank you for the opportunity to review the draft.

Sincerely,

for LEIGHTON G. M. WONG
Business Line Manager
Environmental

Enclosure
(1) Detailed comments on Draft

Date: August 2006
Reviewer: William Kramer
Organization/Code: EV22, Environmental Business Line, NAVFAC Pacific
Project Title: July 2006 Draft MCBH INRMP

DO NOT RELEASE – STAFF WORKING PAPER
Prepared prior to decision-making. Contains opinions, advice and/or recommendations. Not for public release; not subject to release under the Freedom of Information Act (Exemption 5) nor to discovery during litigation.

No.	Page	Line	Comment	Action
1.	iii	6	Change title to "Acronyms and Abbreviations"	
2.	iv	-	Change HIARANG to HIRANG	
3.	2-2	2	Provide abbreviation for US Fish and Wildlife Service (USFWS is used on page 2-4, line 18)	
4.		3	Delete "e.g.,"	
5.		36-37	"No action" is not a way to implement a "management action." Clarify/add language to explain.	
6.	2-3	TableES-1	The "Total" column is not intuitively derived from data presented. Clarify with a footnote or other explanation (e.g., why is the total for 7.1 "40" ?)	
7.		20	Total number of management actions presented (192) is not in accordance with total provided in Table ES-1 (126).	
8.		22	It seems unreasonable to ask the reader to compare data with the 2001 INRMP; it is unlikely that the reader will have that obsolete document for reference once the revised INRMP is final. Ditto, parenthetical on page 2-4 line 23.	
9.	2-4	3	Delete "also."	
10.	2-5	Table ES-2	Decimal points needed in "Total" line.	
11.	3-1	28	Delete "e.g." and insert "i.e."	
12.	3-2	1	Define abbreviation "MCO" (move up from line 10, same page.)	
13.		12	Define abbreviation "FR"	
14.		13	Insert "(EO)" after "Executive Order"	
15.	3-3	Table 3.1	Total in "Operational Stewardship" column should be 125 vice 126.	
16.	3-5	27	Delete first "of"	
17.		31	Change comma to a period after "installation"	
18.	3-6	24	Suggestion: provide metric equivalents in parentheses for English units throughout document. (e.g., "...500-yard (457-meter) buffer..." On page 4-2, line 34, change "...2,951-acre..." to "...2,951-acre (1,195-hectare...), etc.	
19.		26	Add IAFWA to acronym and abbreviation list	
20.	General	General	Although maps and diagrams are included in Appendices, it would be helpful to include general maps (locations of installation components referenced in the text) in the main INRMP document as well.	
21.	4-7	34	Change "Tables 2.1" to "Table 2.1"	

Date: August 2006
Reviewer: William Kramer
Organization/Code: EV22, Environmental Business Line, NAVFAC Pacific
Project Title: July 2006 Draft MCBH INRMP

DO NOT RELEASE – STAFF WORKING PAPER
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No.	Page	Line	Comment	Action
22.		34	Referenced Table 2.1 and Table 2.2 are in the old (2001) INRMP. Suggest placing in the updated INRMP.	
23.		37	Use of "at the time of this writing" will begin to lose its meaning as time passes. Suggest change to something like, "...as of July 2006,..."	
24.	4-8	1	ditto	
25.		4	Change "two to three" to "two or three"	
26.	4-8 4-9	26 forward	This level of detail of personal information on individual staff histories and accomplishments is not appropriate for a management document. Suggest deleting section.	
27.	4-9	9	Add CESU to the Abbreviation and Acronym section	
28.		17	Add DOCARE to the Abbreviation and Acronym section	
29.	4-10	40	Add NAVFAC and EFD to Abbreviation and Acronym section	
30.	5-3	28	Add ECPSOP to the Abbreviation and Acronym section	
31.	5-4	3	Add EMS to the Abbreviation and Acronym section	
32.		6	Define ISO and add to the Abbreviation and Acronym section	
33.		34	Add OSD to the Abbreviation and Acronym section	
34.	6-4	33	Add NWP to the Abbreviation and Acronym section	
35.	6-5	37	Add CREMS to the Abbreviation and Acronym section	
36.		40	Italicize "scolopes"	
37.	6-8	15	Add ISMS to the Abbreviation and Acronym section	
38.		35	Add CREMS to the Abbreviation and Acronym section	
39.	6-17	10	Change "alternations" to "alterations"	
40.	7-5	13	Change "Specie" to "Species"	
41.	7.1-7	7	CNO's 10 January 2002 memorandum "Policy letter preventing feral cat and dog populations on Navy property" should be reiterated and copy provided in the Appendix. NAVFAC has a pdf copy if needed (contact william.r.kramer.ctr@navy.mil). The directive requires (1) control by removal of free roaming dogs and cats (not a trap, neuter, release program); (2) micro-chipping registration of all pet cats and dogs; (3) prohibition of feeding free-	

Date: August 2006
Reviewer: William Kramer
Organization/Code: EV22, Environmental Business Line, NAVFAC Pacific
Project Title: July 2006 Draft MCBH INRMP

DO NOT RELEASE – STAFF WORKING PAPER
Prepared prior to decision-making. Contains opinions, advice and/or recommendations. Not for public release; not subject to release under the Freedom of Information Act (Exemption 5) nor to discovery during litigation.

No.	Page	Line	Comment	Action
			roaming cats and dogs, etc.	
42.	7.1-8	22	Change "Natural" to "Nature"	
43.		11, 24, 29, 34, (11 and 12 on page 7.1-9)	General: Consider dropping the italicized words "on-site," "off-site," "available," "additional," monitor," and "coordinate." Although a minor edit, it's distracting to the reader. Or, italicize all the action verbs for emphasis. (similar changes on page 7.2-10, 7.3-7 and elsewhere in the document)	
44.	7.1-9	32	Regarding special consideration for "indigenous access" for fishing, this could be highly problematic. Does such preferential access already exist at MCBH or elsewhere in the State? It may be very difficult to monitor and establish just what "indigenous" means in this context and could be extremely hard to manage. Recommend equal access procedures for all fishers regardless of ancestry. However, traditional types of allowable fishing techniques (throw net, e.g.) in certain areas could be specified without prejudice to ancestry.	
45.	7.1-10	25	Insert "conduct" to read "...and conduct at least visual surveys..."	
46.		28	Delete second "and"	
47.		31	Insert "by" to read "...and/or by installing ..."	
48.		36	Replace "our" with "its"	
49.		37	Replace "our" with "MCBH"	
50.	7.1-11	1	Replace "are" with "is"	
51.		3	Delete period after "requirements" and move period within parenthesis after "parcels" to outside parenthesis.	
52.	7.5		The *Tropical Landscaping and Plant Selection Guide for Hawaii, Guam, and the Pacific Islands* (July 2003) was developed by the Navy to assist in plant selection on military installations. This could be referenced in this Chapter. A copy is available on a CD from NAVFAC Pacific, if needed.	
53.	7.7-1	15	delete comma after "very"	

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
P.O. Box 50004 Rm. 4-118
Honolulu, HI 96850
808-541-2600

August 4, 2006

Lieutenant Colonel Dean F. Levi
U. S. Marine Corps
Director, Environmental Compliance and Protection Department
Marine Corps Base Hawaii
Box 63002
Kaneohe Bay, Hawaii 96863-3002

Subject: Marine Corps Base Hawaii Intergrated Natural Resource Management Plan Update (2007 – 2010)

Dear Lieutenant Colonel Levi,

We have reviewed the above mentioned document and have no comment to offer at this time.

Thank you for the opportunity to comment.

Sincerely,

LAWRENCE T. YAMAMOTO
Director
Pacific Islands Area

Drigot GS-12 Diane C

From: Buermeyer, Karl R Mr NGHI/RCUH [Karl.Buermeyer@us.army.mil]
Sent: Friday, August 25, 2006 7:58 AM
To: Drigot GS-12 Diane C
Subject: MCBH & MCTAB INRMP

Hi Diane --

It was nice to talk with you yesterday.

As we discussed, the only comments I have are to correct the designation of the Hawaii Army National Guard on pages 4-2 and 4-5 (maybe I missed other references elsewhere in the plan?). Should be HIARNG instead of HIRANG, the "R" is from "Army", to distinguished from us from Air National Guard. Drop "Regional". We will make sure our projects are consistent with your INRMP, and I will draft a letter to this effect in the next couple of weeks.

When you get a chance, can you make a cd of the Invasive Species Management Plan (Garrison, 2002), and the Veg mapping study identifying high fire risk areas (Geo Insight 2004)? You can mail it to the address in the signature block, or let me know when it's ready, and I can pick it up on my way home. Another option, if it makes it easier on you: I could stop by with my thumb-drive and just download it. Let me know what you prefer.

My contact info is in the signature block, Stacy's is: stacy.enoch@us.army.mil, phone: 672-1278.

I'll let you know as contacts change!

Karl

Karl R. Buermeyer
NEPA Administrator
Hawaii Army National Guard
Environmental Office
Conservation Division
3949 Diamond Head Road
Honolulu, HI 96816
Ph. 808-672-1265
Fax 808-672-1262

Malama i Ka Aina Koa

PHONE (808) 594-1888

FAX (808) 594-1865

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

HRD06/2610

August 28, 2006

Dean Levi
Lieutenant Colonel, U.S. Marine Corps
Director, Environmental Compliance and Protection
Marine Corps Base Hawaii
Box 63002 Kaneohe Bay, HI 96863-3002

RE: Draft Update to MCBH 2001 Integrated Natural resources Management Plan, MCBH, O'ahu.

Dear Dean Levi,

The Office of Hawaiian Affairs (OHA) is in receipt of your July 27, 2006 submission and offers the following comments:

Our staff has no specific comment regarding the above-listed draft updates at this time. Thank you for your continued correspondence.

OHA further requests your assurances that if the project goes forward, should iwi or Native Hawaiian cultural or traditional deposits be found during ground disturbance, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Thank you for the opportunity to comment. If you have further questions or concerns, please contact Jesse Yorck, Native Rights Policy Advocate, at (808) 594-0239 or jessey@oha.org.

Aloha,

Clyde W. Nāmu'o
Administrator

LINDA LINGLE
GOVERNOR
THEODORE E. LIU
DIRECTOR
MARK K. ANDERSON
DEPUTY DIRECTOR
LAURA H. THIELEN
DIRECTOR
OFFICE OF PLANNING

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

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

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

Ref. No. P-11457

August 1, 2006

Lieutenant Colonel Dean F. Levi
Director, Environmental Compliance and
Protection Department
U.S. Marine Corps
Marine Corps Base Hawaii
Box 63002
Kaneohe Bay, Hawaii 96863-3002

Dear Lt. Colonel Levi:

Subject: 2006 Draft Marine Corps Base Hawaii Integrated Natural Resources Management Plan Update

The Hawaii Coastal Zone Management (CZM) Program has reviewed the 2006 draft update of the Marine Corps Base Hawaii (MCBH) Integrated Natural Resources Management Plan (INRMP). We agree with the management action identified under Objective 7.4.1 as "Continue CZM Consistency/Shoreline Determination Improvements." This management action states that, "MCBH will continue to refine its screening procedures to ensure all relevant projects are subjected to the CZM consistency determination process." We would like to clarify that if any of the INRMP projects affect any land or water use or natural resource of the coastal zone, i.e., outside of MCBH properties and federally controlled areas such as security zones, then a CZM federal consistency review by the Hawaii CZM Program is required in accordance with the Coastal Zone Management Act of 1972.

Thank you for the opportunity to review and comment on the draft MCBH INRMP update and for your continued cooperation in complying with the Hawaii CZM Program. If you have any questions, please call John Nakagawa of our CZM Program at 587-2878.

Sincerely,

Laura H. Thielen
Director

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
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MUFI HANNEMANN
MAYOR

HENRY ENG, FAICP
DIRECTOR

DAVID K. TANOUE
DEPUTY DIRECTOR

2006/ELOG-1858(ry)

August 1, 2006

Dr. Diane Drigot
Senior Natural Resources Management Specialist
Marine Corps Base Hawaii
Box 63002
Kaneohe Bay, Hawaii 96863-3002

Dear Dr. Drigot:

Re: Draft Marine Corps Base Hawaii Integrated Natural Resources Management Plan Update (2007 – 2011)

We have reviewed the subject document and have no comments to offer.

Thank you for the opportunity to comment.

Very truly yours,

for

Henry Eng, FAICP, Director
Department of Planning & Permitting

HE:lh
Doc. 468539

DRAFT INRMP UPDATE DISTRIBUTION LETTERS

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UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/098-06
July 14, 2006

U.S. Department of Interior
Fish and Wildlife Service
Attn: Dr. Patrick Leonard
Field Supervisor
Box 50088
Honolulu, HI 96850

Dear Dr. Leonard:

Pursuant to the Sikes Act Improvement Amendments (SAIA), Marine Corps Base Hawaii (MCBH) submits the enclosed draft update to the 2001 Integrated Natural Resources Management Plan for comment. Also, enclosed is a CD containing a copy of the original two volume 2001 Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA) upon which these updates are based. This courtesy copy of the original INRMP/EA supplements copies already delivered to your agency at time of its completion. In MCBH's January 12, 2006 annual INRMP implementation progress review request letter to the Service (MCBH Ltr 5090 Ser LE/003-06), we announced the beginning of our work on the updated INRMP and solicited your feedback. In a June 1 staff meeting with Mr. Mike Molina of the Service, the following timetable was agreed to: Service comments on this draft INRMP update returned to MCBH by September 1; MCBH revises draft per review comments and returns a revised final draft for Service review by October 6; and a concurrence letter anticipated from the Service by November 1, 2006. This will allow sufficient time to meet the regulatory deadline of November 17, 2006 to finalize the INRMP update (incorporating concurrence letters) and distributing to interested stakeholders.

Per Headquarters Marine Corps guidance, we request a written acknowledgement of receipt of this Draft MCBH INRMP Update within 15 days of receipt of this letter. We wish to take this opportunity to express our appreciation of your staff's record of acknowledging past INRMP annual progress reports (as documented in Appendix E of Enclosure (2)) and look forward to being responsive to any comments that you may submit.

Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

Enclosures:
1. Draft MCBH INRMP Update (2007-2011) of July 06
2. Draft MCBH INRMP Update (2007-2011) Appendices of July 06
3. CD: MCBH INRMP/EA 2002-2006 of Nov 2001 (w/Appendices)

Copy: Ms. T. Rabot, Asst. Regional Director, US FWS Region 1 Office

UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/098-06
July 14, 2006

National Oceanic and Atmospheric
Administration (NOAA)/Fisheries
Pacific Islands Office
Attn: Mr. William Robinson, Administrator
1601 Kapiolani Blvd., Suite 1110
Honolulu, HI 96814-4700

Dear Mr. Robinson:

Pursuant to the Sikes Act Improvement Amendments (SAIA), Marine Corps Base Hawaii (MCBH) submits the enclosed draft update to the 2001 Integrated Natural Resources Management Plan for comment. Also, enclosed is a CD containing a copy of the original two volume 2001 Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA) upon which these updates are based. This courtesy copy of the original INRMP/EA supplements copies already delivered to your agency at time of its completion. In MCBH's January 12, 2006 annual INRMP implementation progress review request letter to your office (MCBH Ltr 5090 Ser LE/003-06), we announced the beginning of our work on the updated INRMP and solicited your feedback. We also provided your agency an opportunity to comment on our progress regularly over the last five years since the initial INRMP/EA was implemented (as documented in Appendix E of enclosure (2). Although we have not received written comments on our regular progress reports submitted since 2001 on INRMP implementation, we have enjoyed an on-going excellent working relationship with many individuals on your staff over that time frame.

Per Headquarters Marine Corps guidance, we request a written acknowledgement of receipt of this Draft MCBH INRMP Update within 15 days of receipt of this letter. US Fish and Wildlife Service has agreed to the following review schedule. We respectfully request that you do so as well: NOAA/Fisheries comments on this draft INRMP update returned to MCBH by September 1; MCBH revises draft and returns a revised final draft for NOAA/Fisheries review by October 6; NOAA/Fisheries sends a concurrence letter to MCBH by November 1, 2006. This will allow sufficient time to meet the regulatory deadline of November 17, 2006 to finalize the INRMP update (incorporating concurrence letters from agencies) and distributing to interested stakeholders.

We look forward to being responsive to any comments that you may submit. Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

Enclosures:
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3. CD: MCBH INRMP/EA 2002-2006 of Nov 2001 (w/Appendices)

UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/098-06
July 14, 2006

Hawaii Department of Land and Natural Resources
Attn: Mr. Peter Young, Chair
1151 Punchbowl Street
Honolulu, HI 96813

Dear Mr. Young:

Pursuant to the Sikes Act Improvement Amendments (SAIA), Marine Corps Base Hawaii (MCBH) submits the enclosed draft update to the 2001 Integrated Natural Resources Management Plan for comment. Also, enclosed is a CD containing a copy of the original two volume 2001 Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA) upon which these updates are based. This courtesy copy of the original INRMP/EA supplements copies already delivered to your agency at time of its completion. In MCBH's January 12, 2006 annual INRMP implementation progress review request letter to your office (MCBH Ltr 5090 Ser LE/003-06), we announced the beginning of our work on the updated INRMP and solicited your feedback. We also provided your agency an opportunity to comment on our progress regularly over the last five years since the initial INRMP/EA was implemented (as documented in Appendix E of enclosure (2). Although we only once received written DLNR comments on our regular progress reports submitted since 2001 on INRMP implementation, we have enjoyed an on-going excellent working relationship with many individuals on your staff over that time frame.

Per Headquarters Marine Corps guidance, we request a written acknowledgement of receipt of this Draft MCBH INRMP Update within 15 days of receipt of this letter. US Fish and Wildlife Service has agreed to the following review schedule. We respectfully request that you do so as well: DLNR comments on this draft INRMP update returned to MCBH by September 1; MCBH revises draft and returns a revised final draft for DLNR review by October 6; DLNR sends a concurrence letter to MCBH by November 1, 2006. This will allow sufficient time to meet the regulatory deadline of November 17, 2006 to finalize the INRMP update (incorporating concurrence letters from agencies) and distributing to interested stakeholders.

We look forward to being responsive to any comments that you may submit. Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

Enclosures:
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3. CD: MCBH INRMP/EA 2002-2006 of Nov 2001 (w/Appendices)

UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/100-06
July 25, 2006

15 CEC/CC
Attn: LtCol David H. Maharrey, Jr., USAF
Commander, 15th Civil Engineer Squadron
75 H Street
Hickam AB HI 96863-5322

Dear LtCol Maharrey:

Pursuant to the Federal Sikes Act Improvement Amendments (SAIA), Marine Corps Base Hawaii (MCBH) submits the 2006 draft update to our 2001 Integrated Natural Resources Management Plan for comment as enclosures (1) and (2). Enclosure (3) is a CD containing a copy of this same draft update and the original 2001 Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA), still in effect, upon which this update is based. This courtesy copy of the original MCBH INRMP/EA supplements hard copies already delivered to your agency at time of its original completion (Nov 2001). At that time, we had provided your agency an opportunity to comment and the outcome of that process is documented in Appendix H of the 2001 MCBH INRMP/EA (See enclosure (3)).

In order to meet required regulatory deadlines mandated by the SAIA and Headquarters Marine Corps guidance, we request any review comments be sent to this office by September 1. This will allow MCBH time to address any review comments received, revise the draft appropriately, and meet the regulatory deadline of November 17, 2006 to finalize the INRMP update and distribute to interested stakeholders.

This department had the opportunity to comment on your INRMP and is interested to know the current status. As you know we share common boundary and a mutual goal of preserving, protecting and enhancing the natural resources on Bellows. One area of particular interest is the wetland located along the Waimanalo stream, which is infested with invasive mangrove plants (see Figure 12 Appendix B of Enclosure (2)). These invasive plants have had a deleterious impact on endangered waterbird habitat and on water flow and quality.

We look forward to addressing any review comments you may wish to submit by September 1, 2006 and as to an update of your INRMP. Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

Enclosures:
1. Draft MCBH INRMP Update (2007-2011) of July 06
2. Draft MCBH INRMP Update (2007-2011) Appendices of July 06
3. CD: Copy of Draft INRMP Update (2006) and of MCBH INRMP/EA (Nov 2001)

UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/102-06
Aug 1, 2006

Naval Facilities Engineering Command, Pacific
Attn: Ms. Karen Sumida, Director
Environmental Planning Division Code EV2
258 Makalapa Drive Ste 100
Pear Harbor, HI 96860-3134

Dear Ms. Sumida:

Pursuant to the Federal Sikes Act Improvement Amendments (SAIA), Marine Corps Base Hawaii (MCBH) submits the 2006 draft update to our 2001 Integrated Natural Resources Management Plan for comment as enclosures (1) and (2). Enclosure (3) is a CD containing a copy of this same draft update and the original 2001 Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA) still in effect, upon which this update is based. This courtesy copy of the original MCBH INRMP/EA supplements hard copies already delivered to your agency at time of its original completion (Nov 2001). At that time, we had provided your agency an opportunity to comment and the outcome of that process is documented in Appendix H of the 2001 MCBH INRMP/EA (See enclosure (3)).

In order to meet required regulatory deadlines mandated by the SAIA and Headquarters Marine Corps guidance, we request any review comments be sent to this office by September 1. This will allow MCBH time to address any review comments received, revise the draft appropriately, and meet the regulatory deadline of November 17, 2006 to finalize the INRMP update and distribute to interested stakeholders.

We look forward to addressing any review comments you may wish to submit by September 1, 2006. Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean F. Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

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UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/100-06
July 25, 2006

Mr. Larry Yamamoto
State Conservationist
US Department of Agriculture
Natural Resources Conservation Service
Box 50004
Honolulu, HI 96850

Dear Mr. Yamamoto:

Pursuant to the Federal Sikes Act Improvement Amendments (SAIA), Marine Corps Base Hawaii (MCBH) submits the 2006 draft update to our 2001 Integrated Natural Resources Management Plan for comment as enclosures (1) and (2). Enclosure (3) is a CD containing a copy of this same draft update and the original 2001 Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA), still in effect, upon which this update is based. This courtesy copy of the original MCBH INRMP/EA supplements hard copies already delivered to your agency at time of its original completion (Nov 2001). At that time, we had provided your agency an opportunity to comment and the outcome of that process is documented in Appendix H of the 2001 MCBH INRMP/EA (See enclosure (3)).

In order to meet required regulatory deadlines mandated by the SAIA and Headquarters Marine Corps guidance, we request any review comments be sent to this office by September 1. This will allow MCBH time to address any review comments received, revise the draft appropriately, and meet the regulatory deadline of November 17, 2006 to finalize the INRMP update and distribute to interested stakeholders.

We look forward to addressing any review comments you may wish to submit by September 1, 2006. Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean F. Leyl
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

Enclosures:
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UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/100-06
July 25, 2006

Mr. James Bersson, P.E.
Deputy District Engineer
For Programs and Project Management
US Army Engineer District, Honolulu
Ft. Shafter, Hawaii 96858-5440

Dear Mr. Bersson:

Pursuant to the Federal Sikes Act Improvement Amendments (SAIA), Marine Corps Base Hawaii (MCBH) submits the 2006 draft update to our 2001 Integrated Natural Resources Management Plan for comment as enclosures (1) and (2). Enclosure (3) is a CD containing a copy of this same draft update and the original 2001 Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA), still in effect, upon which this update is based. This courtesy copy of the original MCBH INRMP/EA supplements hard copies already delivered to your agency at time of its original completion (Nov 2001). At that time, we had provided your agency an opportunity to comment and the outcome of that process is documented in Appendix H of the 2001 MCBH INRMP/EA (See enclosure (3)).

In order to meet required regulatory deadlines mandated by the SAIA and Headquarters Marine Corps guidance, we request any review comments be sent to this office by September 1. This will allow MCBH time to address any review comments received, revise the draft appropriately, and meet the regulatory deadline of November 17, 2006 to finalize the INRMP update and distribute to interested stakeholders.

We look forward to addressing any review comments you may wish to submit by September 1, 2006. Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean F. Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

Enclosures:
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UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/100-06
July 25, 2006

Adjutant General, Hawaii Dept of Defense
Attn LtCol Margene Stubbert
Facilities Management Officer (HIARNG-ENV)
3949 Diamond Head Road
Honolulu, HI 96816

Dear LtCol Stubbert:

Pursuant to the Federal Sikes Act Improvement Amendments (SAIA), Marine Corps Base Hawaii (MCBH) submits the 2006 draft update to our 2001 Integrated Natural Resources Management Plan for comment as enclosures (1) and (2). Enclosure (3) is a CD containing a copy of this same draft update and the original 2001 Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA), still in effect, upon which this update is based. This courtesy copy of the original MCBH INRMP/EA supplements hard copies already delivered to your agency at time of its original completion (Nov 2001). At that time, we had provided your agency an opportunity to comment and the outcome of that process is documented in Appendix H of the 2001 MCBH INRMP/EA (See enclosure (3)).

In order to meet required regulatory deadlines mandated by the SAIA and Headquarters Marine Corps guidance, we request any review comments be sent to this office by September 1. This will allow MCBH time to address any comments received, revise the draft appropriately, and meet the regulatory deadline of November 17, 2006 to finalize the INRMP update and distribute to interested stakeholders. We would like to express our gratitude for cooperative work with your natural resources staff at Bellows in monitoring and controlling invasive Fountain Grass there in order to keep it from spreading and enhancing brushfire risk. We look forward to expanded opportunities for cooperative projects such as this with your staff in the future with regards to activities around your leased training facility there. Please remember that any natural resources actions that are performed around your training facility at MCTAB must be consistent with our MCBH INRMP (e.g., the host installation's INRMP). This is explained in "Supplemental Guidance for Implementation of the Sikes Act Improvement Act" by the Office of the Under Secretary of Defense (May 17, 2005).

We look forward to addressing any review comments you may wish to submit by September 1, 2006. Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean F. Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

Enclosures:
1. Draft MCBH INRMP Update (2007-2011) of July 06
2. Draft MCBH INRMP Update (2007-2011) Appendices of July 06
3. CD: Copy of Draft INRMP Update (2006) and of MCBH INRMP/EA (Nov 2001)

UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/100-06
July 25, 2006

Mr. Thomas Arizumi
Chief, Environmental Management Division
Hawaii Department of Health
919 Ala Moana Blvd, Room 300
Honolulu, HI 96814

Dear Mr. Arizumi:

Pursuant to the Federal Sikes Act Improvement Amendments (SAIA), Marine Corps Base Hawaii (MCBH) submits the 2006 draft update to our 2001 Integrated Natural Resources Management Plan for comment as enclosures (1) and (2). Enclosure (3) is a CD containing a copy of this same draft update and the original 2001 Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA), still in effect, upon which this update is based. This courtesy copy of the original MCBH INRMP/EA supplements hard copies already delivered to your agency at time of its original completion (Nov 2001). At that time, we had provided your agency an opportunity to comment and the outcome of that process is documented in Appendix H of the 2001 MCBH INRMP/EA (See enclosure (3)).

In order to meet required regulatory deadlines mandated by the SAIA and Headquarters Marine Corps guidance, we request any review comments be sent to this office by September 1. This will allow MCBH time to address any review comments received, revise the draft appropriately, and meet the regulatory deadline of November 17, 2006 to finalize the INRMP update and distribute to interested stakeholders.

We look forward to addressing any review comments you may wish to submit by September 1, 2006. Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean F. Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

Enclosures:
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UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/100-06
July 25, 2006

Mr. Clyde Namuo
Administrator
Office of Hawaiian Affairs
711 Kapiolani Blvd, Suite 500
Honolulu, HI 96813

Dear Mr. Namuo:

Pursuant to the Federal Sikes Act Improvement Amendments (SAIA), Marine Corps Base Hawaii (MCBH) submits the 2006 draft update to our 2001 Integrated Natural Resources Management Plan for comment as enclosures (1) and (2). Enclosure (3) is a CD containing a copy of this same draft update and the original 2001 Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA), still in effect, upon which this update is based. This courtesy copy of the original MCBH INRMP/EA supplements hard copies already delivered to your agency at time of its original completion (Nov 2001). At that time, we had provided your agency an opportunity to comment and the outcome of that process is documented in Appendix H of the 2001 MCBH INRMP/EA (See enclosure (3)).

In order to meet required regulatory deadlines mandated by the SAIA and Headquarters Marine Corps guidance, we request any review comments be sent to this office by September 1. This will allow MCBH time to address any review comments received, revise the draft appropriately, and meet the regulatory deadline of November 17, 2006 to finalize the INRMP update and distribute to interested stakeholders.

We look forward to addressing any review comments you may wish to submit by September 1, 2006. Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

Enclosures:
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UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/100-06
July 25, 2006

Ms. Laura Thielen
Director, Office of State Planning
State of Hawaii
P.O. Box 2359
Honolulu, HI 96804-2359

Dear Ms Thielen:

Pursuant to the Federal Sikes Act Improvement Amendments (SAIA), Marine Corps Base Hawaii (MCBH) submits the 2006 draft update to our 2001 Integrated Natural Resources Management Plan for comment as enclosures (1) and (2). Enclosure (3) is a CD containing a copy of this same draft update and the original 2001 Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA), still in effect, upon which this update is based. This courtesy copy of the original MCBH INRMP/EA supplements hard copies already delivered to your agency at time of its original completion (Nov 2001). At that time, we had provided your agency an opportunity to comment and the outcome of that process is documented in Appendix H of the 2001 MCBH INRMP/EA (See enclosure (3)).

In order to meet required regulatory deadlines mandated by the SAIA and Headquarters Marine Corps guidance, we request any review comments be sent to this office by September 1. This will allow MCBH time to address any review comments received, revise the draft appropriately, and meet the regulatory deadline of November 17, 2006 to finalize the INRMP update and distribute to interested stakeholders.

We look forward to addressing any review comments you may wish to submit by September 1, 2006. Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean F. Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

Enclosures:
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UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/100-06
July 25, 2006

Mr. Henry Eng, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, HI 96813

Dear Mr. Eng:

Pursuant to the Federal Sikes Act Improvement Amendments (SAIA), Marine Corps Base Hawaii (MCBH) submits the 2006 draft update to our 2001 Integrated Natural Resources Management Plan for comment as enclosures (1) and (2). Enclosure (3) is a CD containing a copy of this same draft update and the original 2001 Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA), still in effect, upon which this update is based. This courtesy copy of the original MCBH INRMP/EA supplements hard copies already delivered to your agency at time of its original completion (Nov 2001). At that time, we had provided your agency an opportunity to comment and the outcome of that process is documented in Appendix H of the 2001 MCBH INRMP/EA (See enclosure (3)).

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We look forward to addressing any review comments you may wish to submit by September 1, 2006. Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean F. Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

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UNITED STATES MARINE CORPS
MARINE CORPS BASE HAWAII
BOX 63002 KANEOHE BAY, HAWAII 96863-3002

IN REPLY REFER TO:
5090
Ser LE/100-06
July 25, 2006

Dr. John Harrison, Director
University of Hawaii
Environmental Center
2500 Dole Street, Krauss Annex 19
Honolulu, HI 96822

Dear Dr. Harrison:

Pursuant to the Federal Sikes Act Improvement Amendments (SAIA), Marine Corps Base Hawaii (MCBH) submits the 2006 draft update to our 2001 Integrated Natural Resources Management Plan for comment as enclosures (1) and (2). Enclosure (3) is a CD containing a copy of this same draft update and the original 2001 Integrated Natural Resources Management Plan/Environmental Assessment (INRMP/EA), still in effect, upon which this update is based. This courtesy copy of the original MCBH INRMP/EA supplements hard copies already delivered to your agency at time of its original completion (Nov 2001). At that time, we had provided your agency an opportunity to comment and the outcome of that process is documented in Appendix H of the 2001 MCBH INRMP/EA (See enclosure (3)).

In order to meet required regulatory deadlines mandated by the SAIA and Headquarters Marine Corps guidance, we request any review comments be sent to this office by September 1. This will allow MCBH time to address any review comments received, revise the draft appropriately, and meet the regulatory deadline of November 17, 2006 to finalize the INRMP update and distribute to interested stakeholders.

We look forward to addressing any review comments you may wish to submit by September 1, 2006. Our point of contact is Dr. Diane Drigot, Senior Natural Resources Management Specialist, MCBH at (808) 257-6920 ext. 224, (808) 257-2794 (fax), or via email at diane.drigot@usmc.mil.

Sincerely,

Dean F. Levi
Lieutenant Colonel, U. S. Marine Corps
Director, Environmental Compliance
and Protection Department
By direction of the Commanding General

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3. CD: Copy of Draft INRMP Update (2006) and of MCBH INRMP/EA (Nov 2001)

G5. EXTERNAL AGENCY REVIEW COMMENTS

Appendix G4 lists of all the external agencies provided copies of the *Draft MCBH INRMP Update (2007-2011)* (July 2006) and the *Pre-Final Draft MCBH INRMP Update (2007-2011)* (October 2006) for review, and whether or not review comments were received. This appendix details how review comments received on the draft and pre-final draft reports were addressed by MCBH.

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Section	Page	Line	Comment/Change requested	Response/Action
General			*In summary, the draft INRMP presents a well-reasoned approach to natural resource management and includes actions that should support the goal of improving the sustainability and native biological diversity of the ecosystems represented at the base without compromising MCBH's military mission.*	MCBH appreciates USFWS's comments on the draft report and their on-going commitment to interagency partnering and cooperation in support of protection and management of natural resources under MCBH jurisdiction. In particular, MCBH acknowledges the Service's offer of technical support in the following areas and looks forward to continued partnering in these and other areas of mutual interest/concern as they arise (see copy of detailed comments on draft included in Appendix G4): ***Component Plan 7.2 Wetland Management****: The Service supports continued wetland restoration activities at Sag Harbor. Because restoration approaches and techniques are not well established for coastal wetlands in Hawaii, we are willing to provide technical assistance to aid in the planning and design of wetland projects.* ***Component Plan 7.3 Watershed Management****: Because techniques to restore low-elevation stream and estuarine aquatic environments are not well established in Hawaii, we recommend coordination with our office on the planning and design of watershed impairment solutions and restoration activities at MCTAB.* ***Component Plan 7.4 Coastal and Marine Resources Management****: The Service is willing to lead future monitoring efforts, in collaboration with state and other federal resource agencies, to help evaluate the long-term health of resources that occur within the security zone. Among other things, monitoring efforts should be designed to make reporting useful for MCBH managers in planning mission-related activities, avoiding and minimizing impacts to coral reef resources, and detecting natural versus anthropogenic changes.* *Long-term monitoring efforts will provide MCBH with the information to design and implement appropriate measures to protect and conserve coral reef resources for the future. The Service is willing to help MCBH develop strategies to conserve coral reef resources in a manner that is compatible with MCBH mission requirements. We recommend that future planning efforts consider implementing conservation strategies within near-term (1-3 years), mid-term (3-5 years), and long-term (5-10 years) periods.*

2			Table ES-1 identifies a total of 126 MCBH operational stewardship management actions planned for yearly implementation during 2007 through 201 1. However, the text in line 20 on page 2-3 states that the number of actions is 192. Clarification is needed.	Thanks for detecting this typographical error. Text in line 20, page 2-3 has been changed to reflect the correct number of planned management actions under "Operational Stewardship": 126.
7.6			Overall, the outreach component of the draft INRMP would benefit from the inclusion of additional details. According to data and other information in Appendix G, MCBH has conducted extensive work throughout the years involving military and non-military personnel and often relied on volunteers to conduct the majority of this work. This data should be analyzed and used *to* tailor the outreach program to (a) the needs of target audiences, (b) the resources that are available to support actions (monetary, in-kind and volunteers), (c) the distribution of information, and (d) identification of high-priority areas in greatest need of outreach. It may be prudent to change the due date for the outreach study to *FY2007* and then update the outreach component of the INRMP accordingly. This would allow for development of a more detailed plan that should expedite implementation. In addition, consideration should be given to including a full-time, or at least a part-time, volunteer outreach coordinator position in the plan. This will alleviate the workload of full-time natural resource professionals while expanding the capacity and effectiveness of the volunteer program.	Thank you for acknowledging MCBH's already existing extensive outreach work as summarized in Section 7.6 and Appendix G of the Draft INRMP Update. We do as much as we can with the limited staff and time available. **Re: Outreach Coordinator Position**--As you point out, the program does not meet its maximum potential due to limited staff and lack of a full-time outreach coordinator. Under the "optimal stewardship" scenario, in both editions of the INRMP (covering 2002-2006 and covering 2007-2011), we have stated MCBH's need for a full-time outreach coordinator on-board. However, war-time priorities and the absence of one civilian natural resources staff member for most of the past five years while on Active Marine Reserve Duty status has reduced our likelihood of being able to address this need. In addition, our other staffing priority to "stand up" the new Conservation Law Enforcement position has taken precedence and more time than we originally expected. We will continue to strive for a full-time outreach coordinator position in the INRMP planning/budget programming process, but are required to assign it a "level III" priority at this time. (See INRMP Update Appendix E4, p. E4-3, for a definition of Compliance Class III (Enhancement Actions Beyond Compliance) in the USMC Funding Priorities Scheme). Should the opportunity present itself to receive funding commitments, or staff assist from an outside source, we would not hesitate to take advantage of it to acquire more outreach assistance. If the Service is aware of any such outside funding sources or staff assist options, please share that information with us. **Re: Outdoor Recreation/Outreach Study Funding Year Priority**—For reasons similar to those explained above, we are unable to coordinate an Outdoor Recreation/Outreach Study prior to FY08. Our limited staff already has a full load administering contracts valued at over $1.9 Million in the other subject areas listed in the FY06 and FY07 columns in Table 33-1 of Appendix 3E. FY08 is the earliest we can realistically assign staff time to the project and give it the attention it deserves. We look forward to having the Service's input to this study at that time.

7.6			For several years, MCBH has continued to conduct valuable resource management with a variety of groups. There is a need to include a media component in the outreach plan to do a better job of informing the outside world of all the good work that is being done. This can be accomplished by inviting the media to volunteer activity days and by providing worthwhile reports and/or articles to non-military media sources.	Thank you for your suggestions about improving media involvement. For your information, media are often invited to our volunteer activity days and articles/television coverage does occur (e.g., such as the photogenic Annual 'Mud Ops" maneuvers each spring at Nu'upia Ponds). Interviews and articles are offered to non-military media sources for publication as well. See examples in Appendix G. We have added a list of various publications by MCBH natural resources managers and various scientists provided access permits to MCBH natural resources, resulting in publications in scientific and professional journal as another form of outreach. The Outreach summary tables include reference to both "on-base" hosting of groups and "off-base" outreach presentations to public audiences performed on a routine basis by various natural resources staff. We have also listed web pages from several non-governmental and governmental sources where MCBH-related accomplishments are posted. We hope to expand even further these media outreach efforts in the years to come. However, despite Press Releases issued, the outside press does not always show up if other news priorities demand their attention. We benefit by the fact that the Service hosts a military outreach section on their own website referencing, for example, the USFWS/USMC "Saving a Few Good Species" poster series, including the MCBH-featured one—"Masters of Amphibious Assault." We look forward to continued partnering in news outreach with the Service.

7.6			The continuous assessment and improvement of the awareness of environmental constraints associated with the Nu'upia Ponds Recreational Run Trail is important, but the INRMP does not provide sufficient detail pertaining to the implementation and evaluation of this action. The plan would be improved *if* it addressed how often and in what manner recreational use *of* the trail will be evaluated *(e.g.,* user survey form, on-site monitoring, etc.) and what specific tools will be used to improve awareness *(e.g.,* interpretive signs, use of the media, specific outreach to target audiences such as runners, etc.).	For your information, current use of the Nu'upia Ponds Recreational Run Trail is monitored by natural resources staff and Military Police. Our Federally-Commissioned Conservation Law Enforcement Officer (G.Olavyar) patrols the pond trail route at least once daily—at varying hours of the day or night (G. Olayvar, pers. com.) and in response to specific calls. The rest of the natural resources staff is in the ponds several times weekly performing various management actions, including general monitoring of trail use. Signs with maps posting the pond route, and traffic barriers along the route guide runners through the trail and prevent them from entering the core feeding/nesting areas used by endangered waterbirds. Pond use rules and constraints are printed in the Base Regulations (BaseOrder P5500.15B) and reviewed at monthly "New Joins" briefs held in the Base Theatre for incoming troops and their families, as well as in quarterly "SOP" classes hosted by MCBH Environmental Department to active duty military audiences. Since the trail was opened in 2001, there has been no resource-related violation/citation issued to the recreational runner audience (G. Olayvar, pers com.). Primary would-be resource violators have been from poachers caught trespassing into the ponds from off-base--not legitimate trail users. However, there is an acknowledged noise problem; complaints received from adjacent civilian neighbors, from trail users talking loudly or chanting in early morning hours while they run near the fence boundary (despite posted signs prohibiting such noise). Extra signs and outreach efforts have been implemented to address the noise problem, including a recent article in *Hawaii Marine*. MCBH appreciates the reminder to remain vigilant for potential resource-violations along this route through an environmentally-sensitive area and reminds runners that trail access through this area is a privilege, not a right and that trail access will be suspended if it ever becomes an unmanageable problem.
7.7			**Component Plan 7.7 Resource Information Management**: Sharing of natural resource data among base-wide management units and with appropriate agencies and groups is a fundamental part of ongoing natural resource management in Hawaii. (see details in Appendix G4). USFWS comments provide data sources that may be of interest to MCBH, and the recommendation of Arc Reader as a possible way of improving in-house accessibility to geospatial data.	MCBH appreciates the thoughtful comments received on Component Plan 7.7, including the suggestions for additional data sources that may be useful for natural resources management.

Section	Page	Line	Comment/Change requested	Response/Action
General			In summary, NMFS acknowledges that the INRMP update document outlines how MCBH recognizes its ongoing responsibilities for proper management of marine resources within its jurisdiction and that the INRMP includes a course of action component specific to coastal and marine resources management. Although the document identifies data necessary to develop management strategies for listed marine species and their habitats especially during oil spills, it also acknowledges need for collaboration with other state and federal agencies for continued conservation and management activities over this five-year period and beyond. "*NOAA Fisheries supports MCBH's activities for coral reef ecosystem management and we offer technical assistance to develop future management actions for other protected marine resources on the base.*"	MCBH appreciates NMFS's comments on the draft report and their on-going commitment to interagency partnering and cooperation for the protection and management of marine resources under MCBH jurisdiction. In particular, MCBH acknowledges NMFS's offer of technical assistance in the following areas and looks forward to continuing to work with NMFS (see copy of detailed comments on draft report included in Appendix G4): **Section 7.1** *Page 7.1-9, Objective 7.1.2: NMFS staff are willing to meet with MCBH to discuss and develop marine mammal protection protocols including when pupping events occur on the base. Logistical considerations include access onto the installation, setting up a perimeter around the mom and pup, establishing a volunteer network to monitor the pair over a six-week period, and possible relocation sites elsewhere on the base, as appropriate. NMFS staff may also assist with EFH designations in MCBH's 500-yard buffer zone around Mokapu Peninsula.* MCBH will not hesitate to request NMFS assistance in any pupping events (as happened in 1996 during the last pupping event on MCBH Kaneohe Bay). We are familiar with these protocols as we also hosted a NMFS project in 1992 to "house" emaciated female pups brought in from French Frigate shoals, helped "fatten" them up in NMFS-supervised control pens in MCBH waters, and then NMFS re-released them into the wild. **Section 7.4** *Page 7.4-1-3: NMFS is willing to meet and collaborate with MCBH to assess the above-mentioned resources [Marine resources include humpback whales, Hawaiian monk seals, and green sea turtles, coral reefs, benthic and pelagic areas, and EFH for fish species.] and facilitate consultation requirements for them.* *Page 7.4-6, Objective 7.4.1: We are also available to provide technical assistance for development of future strategies involving the littoral zone.*

Section	Page	Line	Comment/Change requested	Response/Action
				Page 7.4-8, Obj 7.4.2: We are willing to share any pertinent data in support of this effort [to manage oil spill risks and the need for associated data]. NMFS may provide technical assistance to address marine alien species invasions upon request. *Page 7.4-9, Objective 7.4.3: NMFS is available to provide technical assistance and assist MCBH with this effort [to implement ecosystem-based risk assessments to natural resource management decision making] upon request.*
6	6-5		Does the MCBH have other plans to further manage these [sensitive marine] resources beyond spill drill activities?	MCBH awaits the completion of the FWS-led marine resources inventory report and related conservation recommendations (expected by the end of CY2006) in order to formulate any more specific management plans than are already reflected in this INRMP update. Whatever plans evolve will be included in future updates of the INRMP. NOAA/Fisheries will be provided an opportunity to review/comment on this FWS marine resources inventory report and work with MCBH natural resources managers, FWS, and DLNR partners to recommend priorities for various conservation actions to be taken within the limits of available staff and budget and partner resources available.
6	6-5		NMFS offers to review this [species] list [Appendix C] when available to confirm marine species under our jurisdiction.	MCBH will provide the USFWS marine resources survey to NMFS for review and comment and a copy of the final report for their files. An updated species list was received from USFWS just prior to release of this revised pre-final INRMP update and has been incorporated into Appendix C for your review and comment.
6	6-11		Does the MCBH plan to conduct future coastal and marine surveys to confirm the presence/absence of marine species in these areas [at MCTAB or on the transit route from Fort Hase Beach, MCBH-KB to Bellows Beach, MCTAB]?	After review of the FWS marine resources inventory and related recommendations, MCBH will be in a better position to prioritize follow-on marine resource management actions, including this one. Such a survey outside our jurisdictional waters would require a team approach with pooled staff and financial resources and could possibly occur under an “optimal stewardship” level of effort.
7.1	7.1-9	Obj 7.1.2	This clarification [regarding recreational fisheries access, sustainable yield, indigenous access, marine mammal protection protocols, and Essential Fish Habitat (EFH) designations in MCBH's 500-yard buffer zone] should be reflected in updates to the Master Plan, Base Regulations, Training Standard Operating Procedures, etc.	MCBH acknowledges the need and will seek out such clarification when various Base documents are being reviewed/updated.

Section	Page	Line	Comment/Change requested	Response/Action
7.4	7.4-6	Obj 7.4.1	We recommend the results of the USFWS report be appendixed in the next version of the INRMP as it identifies resource assessment information on the base. We are also available to provide technical assistance for development of future strategies involving the littoral zone.	MCBH will provide the USFWS marine resources survey to NMFS for review and comment and a copy of the final report for their files. The results of the survey will be summarized in the appropriate annual progress report, recommendations for follow-on actions will be programmed as needed, and the species lists in Appendix C of the INRMP update.

Section	Page	Line	Comment/Change requested	Response/Action
2			Executive Summary-Second paragraph, change Table references from ES to E3.	Table references have been updated to 2-1 and 2-2.
General			Considering the current trend in overseas defense spending in active theater(s) of operations, resource management at the "operational" level is challenging and prudent but may not be the best for conserving natural resources or protecting species of concern, endangered species, and valuable cultural resources. We urge that you strive for the "optimal" level of management when threats require it or other funding/partnership opportunities become available.	At the present time, MCBH remains committed to the current "operational" level of stewardship and the budgeted items in Table E3-1 over the next five years of INRMP implementation are currently proceeding as planned. However, we will also seek to implement 'Optimal Stewardship' actions, as feasible. See page 2-5 lines 5-12 and Section 7.0.3 where this point is further discussed.
General			We note that your INRMP is in appropriate context with other installation and agency plans, e.g. Section 8--State of Hawaii Comprehensive Wildlife Conservation Strategy. The absence of consideration for elements of the National Fire Plan concerns us because the presence of a wildland-urban interface issue exists at MCTAB. We urge that this issue be a vital part of INRMP because of public safety and to avoid complications similar to that experienced by the U.S. Army in Hawaii.	Please be aware that the US Marine Corps holds G-3/operations (not G-4/environmental) responsible for developing appropriate wildland fire management plans. In 2006, MCBH's G-3 is drafting BaseO 3000.1B Wildland Fire Management Plan to replace and update BaseO 3000.1A Ch 1 (Fire Bucket Standby Order). G-3 continues to maintain Chapter 9 of BaseO 3574.6 SOP for the Ulupau Range Training Facility (referenced in Section 8.1.3 of the INRMP update). G-3 has also requested funds to develop and implement a specific wildland fire management plan for MCTAB. Complementary to these G-3 initiatives, G-4/environmental's INRMP actions focus on identifying areas of highest wildland fire risk through such projects as vegetation mapping studies, development of a vegetation management strategy for MCBH ranges, and by funding projects to reduce invasive, fire-prone grasses and replace them with more sustainable, less flammable ground covers). These INRMP actions are further discussed in Section 7 of the INRMP and are primarily the responsibility of G-4 (Environmental and/or Facilities Departments) to execute. In sum, the MCBH INRMP is not the appropriate document within which to expect to see a wildland fire fighting component but we have updated the draft to make it clearer what the responsibilities of the G-3/operations and the G-4/environmental are in that regard. It would be helpful to MCBH's overall planning efforts to know what specific elements of the National Fire Plan you are referring to in this comment. While the National Fire Plan is not specifically mentioned in vegetation studies underway for MCTAB as part of the INRMP, the fire risk and related mitigating actions needed are addressed. See for example, GII 2004 report and related maps in Appendix B of this updated INRMP.

Section	Page	Line	Comment/Change requested	Response/Action
				A follow-on vegetation management planning strategy report is underway and will be sent to DLNR for review and comment. We urge you to make appropriate comments on that draft upon receipt (expected in October 2006 for review). We also urge you to understand that first response for fires at MCBH is the responsibility of an outside federal agency--the Federal Fire Department, not MCBH in-house staff. MCBH is one of a minority of USMC installations that do not control their own Fire Department. See the following revised sections of the INRMP update where these distinctions have been clarified: Section 4.4.2, in management actions "Maintain fire-fighting capabilities using established methods" and "Improve fire-fighting capabilities" under Objective 7.1.1, and in Section 8.1.4.
6	6-5	First paragraph, last sententce	Change to read, "Since vegetation is the fuel source of wildland fires, it also has a direct influence on fire risk and spread, the vegetation map was used in combination with information about the probability of ignition and fire history to develop a 'fire risk' map for Ulupa'u Crater." That said, we suggest that a re-evaluation be made of the fuel model map and the "line of fire" (LOF) profile to redesignate the moderate risk to high fire risk. It is our opinion that in the moderate risk area depicted on the photomap, the fuel types which within a major portion of the LOF is similar in component to the high fire risk area, i.e. predominantly grass with sparse covering of trees and shrubs.	The Fire Risk map included as part of Figure 6 in the draft report was part of a completed report (SRGII 2004) and will not be amended. The criterion for ranking fire risk areas was based on fuel types, ignition sources, and historical information on the known distribution and frequency of fires in the crater. We recognize that fuel sources in terms of specific plant species and fuel hours overlaps between the zones depicted on the map, however, the occurrence of ignition sources is lower in the area delineated as moderate. The differentiation of the high and moderate areas was based on probability of occurrence of ignition sources.
6	6-7	First paragraph	First paragraph references removal of mangrove within MCBH-KB and also other smaller jurisdictional wetland areas outside of Nu'upia Ponds. The latter appears to be submerged waters within DLNR jurisdictional areas and may be a challenge in determining who your partner(s) should be in addressing this issue. We are hoping that at least one of our sister agency(s), i.e. Division of Aquatic Resources, may be able to help in this matter as the described area may be within a fishery management area within Kaneohe Bay.	Comment acknowledged. However, we were disappointed that no comments were received from DAR on the draft INRMP Update. We will not be able to address this concern without their help.
6	6-10	First paragraph	We recommend that similar evaluation be made in regards the mapping of fire prone vegetation and risk ranking for MCTAB.	We did a baseline evaluation of fire prone vegetation, including mapping in a 2004 study (GII 2004). We agree that this evaluation should be updated, and it is part of the on-going management actions as described in Objective 7.5.2 (see page 7.5-5).

Section	Page	Line	Comment/Change requested	Response/Action
6	6-11		Species of Concern. Include fountain grass.	We have amended line 28, 6-11 to include specific reference to Fountain Grass which is one of the invasive species covered in the ISMS. Also, since 2001 we have regularly conducted interagency surveys on Bellows involving OISC, Hawaii Army National Guard, and USMC to search and find incipient populations of Fountain Grass. We look forward to hearing what the state is doing to control the fountain grass infestations in Lanikai, which are the likely source for the infestations on Bellows along the ridgeline that separates Lanikai from Bellows.
7.1	7.1-6		Element Category Three: Species/Habitat Enhancement Actions at UHWMA: We urge that you develop a Wildland Fire Management Plan for all your management units. A comprehensive plan which includes prevention, presuppression, and suppression can address your concern for wildfire in a comprehensive manner. Maintaining and improving fire-fighting capabilities are admirable courses of action but unless it is part of an integrated approach for fire protection, it may be not be the best approach for efficient and effective use of available fire protection resources, i.e. a lot of investment made and being proposed to enhance natural resources via several courses of action but these are at risk because of the perceived fire threat.	The need for such a plan is acknowledged, although the lead for such a plan is under other departments per USMC direction, as explained above. The State will be provided an opportunity to review and comment on whatever plan is developed.
7.5	7.5-8		Ditto comments immediately above. We urge that the update/revision of the Ulupaʻu Fire Management Study be moved up on the scheduling. (Reference Table E3-1) We note that it's scheduled, to occur in the latter part of the next operational period, i.e. FY 11. Additionally, consider evolving the study into a comprehensive fire management plan. Suggest the same be attained for your other jurisdictional areas.	The Ulupaʻu Crater Fire Management Study is not the same as a Wildland Fire Management Plan. These are distinct documents covering distinct requirements. An Integrated Fire Management Plan should be developed earlier in time than the update to the Fire Management Study and the responsible office—MCBH G-3/Opeations, has requested funds for such a plan. Per Headquarters Marine Corps direction, it will not be funded as part of the MCBH INRMP since G-3 is the designated lead agency in this regard.
8			Section 8, Relationship of Other Plans and Programs to INRMP. We note the absence of a Wildland Fire Management Plan. Also, as part of Section 8.1.9— include considerations for possible effects of natural disasters on natural and cultural resources. We recommend that measures for mitigation, preparation, response, and recovery be considered to stabilize populations of natural, resources and cultural sites following major natural disaster or man-made occurrences.	Section 8 of the INRMP Update has been amended to provide reference to the Wildlland Fire Management Plan update underway through G-3/Operations and to Emergency Response Plans (i.e., natural disaster preparedness) that are also executed under the lead of G-3/Operations. Updated subsections of Section 8 are Sections 8.1.4 Wildlife Fire Management Plan and 8.1.10 Emergency Response Plan of the revised draft INRMP Update.

Section	Page	Line	Comment/Change requested	Response/Action
9.5			Section 9.5, Stakeholder Involvement (Cooperation Conservation). Because of proximity to the Koolau Mountains. i.e. Waikane Valley Impact Area and MCBH-Camp H.M. Smith, we recommend your agency's association with the Koolau Mountains Watershed Partnership to leverage resources for the conservation of natural/cultural resources along portions of the greater Koolau watershed which extend into Kaneohe Bay.	MCBH does attend meetings when invited and currently does not have sufficient staff for any expanded commitment.
11	11-1		Change listing for DLNR to read: "Department of Land and Natural Resources, Division of Aquatic Resources and Division of Forestry & Wildlife"	This section has been consolidated into Appendix G4. Listing for DLNR has been updated.

No.	Page	Line	Comment	Action
1.	iii	6	Change title to "Acronyms and Abbreviations"	Text revised as requested.
2.	iv	-	Change HIARANG to HIRANG	Text revised as requested.
3.	2-2	2	Provide abbreviation for US Fish and Wildlife Service (USFWS is used on page 2-4, line 18)	Text revised as requested.
4.		3	Delete "e.g.,"	Text revised as requested.
5.		36-37	"No action" is not a way to implement a "management action." Clarify/add language to explain.	In this context, “no action” is the continuing level of effort (i.e., Operational Stewardship) and is not different than what is ongoing as described in the INRMP/EA (2002-2006). During the next five years covered by the INRMP update, there is again a “no action” alternative being followed; i.e., no change in the current Operational Stewardship level of effort. The text has been revised to make this clearer. Use of there term “no action” alternative as the “status quo” alternative is common practice in the preparation of Environmental Assessment documentation and this follows guidance provided by Headquarters Marine Corps. When the INRMP was first devised in 2001, the INRMP/EA at that time defined the current level of effort (Operational Stewardship) as the “no action” alternative being evaluated in that document—i.e. continuing the status quo. The text of the INRMP Update has been revised to make this clearer.
6.	2-3	TableES -1	The "Total" column is not intuitively derived from data presented. Clarify with a footnote or other explanation (e.g., why is the total for 7.1 "40" ?)	Table note expanded to clarify data in table. “The ‘Total’ column represents the total number of management actions contained within any COA component plan. The numbers in the CY columns represent the subset of this total that is scheduled for implementation in any given year.”
7.		20	Total number of management actions presented (192) is not in accordance with total provided in Table ES-1 (126).	Text in line 20, page 2-3 has been changed to reflect the correct number of planned management actions under “Operational Stewardship”: 126.

No.	Page	Line	Comment	Action
8.		22	It seems unreasonable to ask the reader to compare data with the 2001 INRMP; it is unlikely that the reader will have that obsolete document for reference once the revised INRMP is final. Ditto, parenthetical on page 2-4 line 23.	The 2001 INRMP/EA covering years 2001-2006 is not and will never be obsolete for several reasons: (1) The 2001 document is still current in the discussion of environmental consequences of taking the current (continuing) level and type of action as in the baseline 2001-2006 INRMP/EA document. That is why no new NEPA analysis is required. This is explained on page 2-1 of the Executive Summary of the INRMP update. (2) For conscientious natural resources managers, former editions of the natural management plans implemented at a given installation are never obsolete. They always contain valuable historic information on the state of the environment and the management program at that particular point in time; a valuable benchmark against which to judge the effectiveness of current actions. At MCBH, natural resources management staff have copies of natural resources management and fish and wildlife management plans on this installation dating back to the mid-1960s and we do refer to these prior-edition management plans in helping us assess cumulative results of past efforts as well as to help guide future management actions. (3) In order to control the length of the INRMP update to within reasonable levels, the authors made a conscious decision to refer to the immediate past INRMP/EA (2001) when baseline information or history was being referenced rather than regurgitate it in the update document. For reasons thus explained, the 2001 INRMP/EA is not and will never be obsolete and will be included on a CD with Final 2006 INRMP Update for ease of reference by the interested reader.
9.	2-4	3	Delete "also."	Text revised as requested.
10.	2-5	Table ES-2	Decimal points needed in "Total" line.	Text revised as requested.
11.	3-1	28	Delete "e.g." and insert "i.e."	Text revised to not require either e.g. or i.e.
12.	3-2	1	Define abbreviation "MCO" (move up from line 10, same page.)	Text revised as requested.
13.		12	Define abbreviation "FR"	Text revised as requested.
14.		13	Insert "(EO)" after "Executive Order"	Text revised as requested.
15.	3-3	Table 3.1	Total in "Operational Stewardship" column should be 125 vice 126.	The total in Component Plan 7.7 has been corrected from 18 to 19, which makes the total in the “Operational Stewardship” column correct at 126.
16.	3-5	27	Delete first "of"	Text revised as requested.

No.	Page	Line	Comment	Action
17.		31	Change comma to a period after "installation"	Text revised as requested.
18.	3-6	24	Suggestion: provide metric equivalents in parentheses for English units throughout document. (e.g., "...500-yard (457-meter) buffer..." On page 4-2, line 34, change "...2,951-acre..." to "...2,951-acre (1,195-hectare...), etc.	Insufficient time was available to do a systematic check throughout the pre-final draft document to insert metric equivalents next to English units used throughout. However, an attempt will be made to do so prior to final publication.
19.		26	Add IAFWA to acronym and abbreviation list	Text revised as requested.
20.	Gene ral	General	Although maps and diagrams are included in Appendices, it would be helpful to include general maps (locations of installation components referenced in the text) in the main INRMP document as well.	No changes made. Figures and maps are in the appendix vice the main document for ease of update purposes as this 'living' document goes through regular review and update.
21.	4-7	34	Change "Tables 2.1" to "Table 2.1"	Text revised to "Chart 4.1".
22.		34	Referenced Table 2.1 and Table 2.2 are in the old (2001) INRMP. Suggest placing in the updated INRMP.	Text revised to "Chart 4.1" and "Chart 4.2" of the current document.
23.		37	Use of "at the time of this writing" will begin to lose its meaning as time passes. Suggest change to something like, "...as of July 2006,..."	The document is being reviewed to catch phrases of this nature and revise them as suggested before final publication and distribution.
24.	4-8	1	ditto	Same response as above.
25.		4	Change "two to three" to "two or three"	Text revised as requested.
26.	4-8 4-9	26 forward	This level of detail of personal information on individual staff histories and accomplishments is not appropriate for a management document. Suggest deleting section.	No changes made. HQ Marine Corps has issued guidance that INRMPs clearly demonstrate, among other things, that the plan is being implemented by persons "capable of accomplishing the objectives" (i.e., *qualified, experienced natural resources personnel*); and that the plan show "certainty" that the plan efforts will be "effective." In order to help demonstrate high likelihood of plan effectiveness, a summary of MCBH's consistent, cumulative record of natural resources accomplishments as judged by external peer and public review is key. During annual INRMP review, if staff changes or additional institutional achievements have occurred, these sections will be revised and updated accordingly. See also FN #9.
27.	4-9	9	Add CESU to the Abbreviation and Acronym section	Text revised as requested.
28.		17	Add DOCARE to the Abbreviation and Acronym section	Text revised as requested.
29.	4-10	40	Add NAVFAC and EFD to Abbreviation and Acronym section	Text revised as requested.
30.	5-3	28	Add ECPSOP to the Abbreviation and Acronym section	Text revised as requested.
31.	5-4	3	Add EMS to the Abbreviation and Acronym section	Text revised as requested.
32.		6	Define ISO and add to the Abbreviation and Acronym section	Text revised as requested.

No.	Page	Line	Comment	Action
33.		34	Add OSD to the Abbreviation and Acronym section	Text revised as requested.
34.	6-4	33	Add NWP to the Abbreviation and Acronym section	Text revised as requested.
35.	6-5	37	Add CREMS to the Abbreviation and Acronym section	Text revised as requested.
36.		40	Italicize "scolopes"	Text revised as requested.
37.	6-8	15	Add ISMS to the Abbreviation and Acronym section	Text revised as requested.
38.		35	Add CREMS to the Abbreviation and Acronym section	Text revised as requested.
39.	6-17	10	Change "alternations" to "alterations"	Text revised as requested.
40.	7-5	13	Change "Specie" to "Species"	Text revised as requested.
41.	7.1-7	7	CNO's 10 January 2002 memorandum "Policy letter preventing feral cat and dog populations on Navy property" should be reiterated and copy provided in the Appendix. NAVFAC has a pdf copy if needed (contact william.r.kramer.ctr@navy.mil). The directive requires (1) control by removal of free roaming dogs and cats (not a trap, neuter, release program); (2) micro-chipping registration of all pet cats and dogs; (3) prohibition of feeding free-roaming cats and dogs, etc.	This current Navy and Marine Corps policy is already reflected in the latest update of Base Regulations (MCO P5500.15B). Thank you for sending the document. It has been added to Appendix A2. Law, Regulations, and Other Directives.
42.	7.1-8	22	Change "Natural" to "Nature"	Text revised as requested.
43.		11, 24, 29, 34, (11 and 12 on page 7.1-9)	General: Consider dropping the italicized words "on-site," "off-site," "available," "additional," monitor," and "coordinate." Although a minor edit, it's distracting to the reader. Or, italicize all the action verbs for emphasis. (similar changes on page 7.2-10, 7.3-7 and elsewhere in the document)	Text revised to remove italics.
44.	7.1-9	32	Regarding special consideration for "indigenous access" for fishing, this could be highly problematic. Does such preferential access already exist at MCBH or elsewhere in the State? It may be very difficult to monitor and establish just what "indigenous" means in this context and could be extremely hard to manage. Recommend equal access procedures for all fishers regardless of ancestry. However, traditional types of allowable fishing techniques (throw net, e.g.) in certain areas could be specified without prejudice to ancestry.	This management action exists because issues such as the one indicated in this comment need to be resolved. Comments are appreciated and will be taken into consideration when MCBH Environmental provides feedback on the plans, policies and protocols indicated.
45.	7.1-10	25	Insert "conduct" to read "...and conduct at least visual surveys..."	Text revised as requested.
46.		28	Delete second "and"	Text revised as requested.
47.		31	Insert "by" to read "...and/or by installing ..."	Text revised as requested.
48.		36	Replace "our" with "its"	Text revised as requested.
49.		37	Replace "our" with "MCBH"	Text revised as requested.

No.	Page	Line	Comment	Action
50.	7.1-11	1	Replace "are" with "is"	Text revised as requested.
51.		3	Delete period after "requirements" and move period within parenthesis after "parcels" to outside parenthesis.	Text revised as requested.
52.	7.5		The *Tropical Landscaping and Plant Selection Guide for Hawaii, Guam, and the Pacific Islands* (July 2003) was developed by the Navy to assist in plant selection on military installations. This could be referenced in this Chapter. A copy is available on a CD from NAVFAC Pacific, if needed.	MCBH has requested a copy of this guide and will review it for compatibility with our already existing lists of prohibited and preferred plants. Our MCBH-specific lists have already been thoroughly scrubbed by hired specialists who prepared our MCBH 2002 Master Landscaping Guide as well as by in-house natural resources staff (one of them a trained forester and certified arborist). Our lists reflects the collective on-the-ground experience of our natural resources staff, landscape practitioners, and grounds keepers with what we know works best in the specific microclimates of MCBH properties. However, the INRMP Update is a living document, and—after review of the new NAV FAC guide, we may make appropriate editions to our lists. Thank you for bringing it to our attention and for sending a copy of the new guide. We have added it to our list of general references in Appendix I at this point in time and may make more specific reference to its contents in this chapter when we have received the document and had time to evaluate applicability of its contents to our specific environmental situation on MCBH properties.
53.	7.7-1	15	delete comma after "very"	Text revised as requested.

Page	Para.	Line	Comment	Action
7.1-15	3rd Bullet	32	The area of concern (AOC) 18 referenced in this paragraph was converted to a site in 2004. The site name is now Disposal Area 101. It would be appropriate to properly identify the current site name. The final decision for DA101 is likely to be similar to that for LF01 (ROD is expected to be finalized in a few months). The ROD will probably include implementation of land use controls (LUCs) at the sites, and will likely include access controls, periodic monitoring, training, and notifications to various land management offices, etc., as part of the overall long term management of the site. Although the Air Force is legally responsible for hazardous chemicals in these dumps and the overall long term management, MCBH will likely be the "gatekeepers" to some extent, and some discussion of this may be appropriate for discussion in the MCBH INRMP. Maps clearly showing where these sites are, also to include LF24 (solid waste dump), could also be appropriate. Attached is a map of the area showing location of all sites (but note that DAl0 I is still labeled AOC18).	The paragraph has been revised to reference the current name of the disposal area. The paragraph has also been revised to reflect the fact that natural resources staff will be vigilant when performing natural resources management actions on MCTAB and other properties where IR sites are found and report to relevant IR program managers if anything unusual is encountered. However, the IR site monitoring function is the primary responsibility of IR program managers and incidental reports by natural resources or other land use managers who happen to transit the areas will not substitute for IR program manager monitoring to the extent required in program guidelines. As in our first edition INRMP/EA (2001), a deliberate decision was made, with help of HQ Marine Corps guidance, to not include IR site maps in the INRMP but instead refer the reader to the IR program manager and IR site plans for details. Public distribution of these separate documents has occurred and Restoration Advisory Boards exist as part of the IR program to address public awareness of these sites. Relevant natural resources staff—primarily the Federally-commissioned Conservation Law Enforcement Officer and another natural resources staffer who is dual-hatted as a certified pest control manager—have received relevant training and receive regular updates of that training.
7.2-4	2nd Bullet		Funds for mangrove clearing in the Air Force jurisdictional boundary of the oxbow region of Waimanalo Stream have currently been programmed for the 2nd consecutive fiscal year. We acknowledge our responsibility to restore this area, and we anticipate funding a multi-year program to reach this goal.	Thank you for reporting this good news. With MCBH's extensive experience in removing mangrove at MCBH Kaneohe Bay, and as adjacent stakeholders, we look forward to reviewing and commenting on your environmental assessment documentation and work plan for this programmed action, when available.
7.5	Genera l		Create a living "DO NOT PLANT" List based on new results from the on-going Weed-Risk Assessment program through Lyon Arboretum. Coordinate this list with on-base plant retailers and landscape architects to ensure recently-realized invasive species are not planted. Note, this is in addition to the 'DO NOT PLANT" list that is already published in Appendix F of the 2002 MCBH INRMP.	Thank you of reminding us of this recently-developed resource management tool. We will acquaint ourselves with this tool and its feasibility for application at MCBH properties, and prepare any updates to the INRMP accordingly. There is insufficient time to review this thoroughly before the November 2006 publication guideline this year but review of new tools such as these will be ongoing and the results reflected in next year's annual review/update of the INRMP and other pertinent Base guidance, as appropriate.

Page	Para.	Line	Comment	Action
7.6-6	3rd Bullet		Hickam AFB INRMP 2003-2007 (Draft) does not include public awareness funding for Bellows AFS except for installation of a turtle sign at the mouth of Waimanalo Stream (completed in 2003). However, AF will gladly coordinate on making available any brochures manufactured by MCBH/City-County of Honolulu available to cabin users of Bellows AFS and consider requesting funds for cost sharing in our updated INRMP (2007-2011).	MCBH looks forward to possibly working with Air Force natural resources staff and C/C of Honolulu staff to collaboratively apply for funding from outside sources (e.g., DoD Legacy Program Funds) to produce an educational brochure or static displays for Bellows recreational users.)
App B	Figure 12		Jurisdictional boundary matches AF real estate records. Although not specified in the figure, Tinker road belongs to AF.	MCBH appreciates USAF concurrence with the real estate property boundary. Figures in the pre-final report have been updated to more accurately reflect MCBH property boundaries at MCTAB, including USAF jurisdiction over Tinker Road.
General			Develop with Oahu Invasive Species Committee incipient invasives survey: roadside weed surveys, coqui frog awareness campaign, etc.	In addition to the annual Ft. Grass surveys conducted cooperatively with OISC staff on MCTAB, MCBH natural resources staff actively participates at OISC meetings and planning sessions and has recently endorsed an OISC/Bishop Museum funding application for DoD Legacy Program Funds to perform roadside weed surveys on MCTAB to help refine an early detection model already developed and applied elsewhere on O'ahu. We are glad to see that the Air Force also endorsed this funding application and look forward to collaborative participation on this project with OISC and the Air Force should it be funded by DoD.

Page	Para.	Line	Comment	Action
4-2 and 4-5			Please correct the designation of the Hawaii Army National Guard. Should be “HIARNG” instead of “HIRANG:, the “R” is from “Army” to distinguish us from Air National Guard. Drop “Regional”.	Text changed as requested throughout document.

Page	Para.	Line	Comment	Action
7.4-5	2nd	Last Sent.	It is uncertain if it means "State Department of Land and Natural Resources" or "State Division of Aquatic Resources", but "State Department of Aquatic Resources" is incorrect.	Text revised to correctly reflect "State Division of Aquatic Resources".
7.4-6	1	6	"CY206" should either be CY2006 or CY '06.	Text revised as requested.

Page	Para.	Line	Comment	Action
2-2		22	Last word – should “fully” be “full” ?	Text revised as requested.
5-2		6	Change “Abatement” to “Hazard” (match BASH acronym)	Text revised as requested.
5-2		FN	First sentence doesn’t make sense.	Text has been clarified.
7.1-7		29	Suggest changing “end of CY2006” to ‘early CY2007’	Concur. Text changed as requested.
7.1-11		18	“These surveys would also **to** detect….” Awkward sentence, is it missing “be” or need to delete “to” ?	Text has been clarified by deleting ‘to’.
7.1-12		34	Can the form be identified? I didn’t find the form.	Text has been clarified here and in Appendix F3. 7.1-12,Lines 32 – 35 changed to read: For example, a contractor for MCBH has developed a reporting form which was put into use in early 2006. This form, entitled an Injury, Illness, Mortality, Salvage (IIMS) Report, records detailed information on incidents involving injuries, illness, or fatalities of birds brought to staff attention (see Appendix F3 for an example of a completed IIMS Report). Appendix F-3, p. 3-2, Lines 7-8 changed to read: An Injury Illness Mortality and Salvage (IIMS) Report is a detailed reporting on situations when the incident involves an injured, ill, or dead and salvaged bird brought to staff attention. It is accompanied, when possible, with photos and maps detailing circumstances of the incident (see sample IIMS Report in this appendix). These reports are maintained by the Environmental Department.

Page	Comment	Action
Appendix C, Pages C4-1 thru C4-2	Spiders should not be included with the insects. Separate the spiders and put them in the class Arachnida (see attached table). The centipede should be in class Chilopoda (see attached table). Aquatic insects aren't really a separate taxonomic group, I would lump them with the other insects (see attached table). You've got an isopod and an amphipod included in with insects. Put them in the table under Crustacean (see attached table). I provided some other minor corrections to the insect information in the table (see attached table).	Updates to Table C4 made as requested, per edits provided in "Insect and Spider Species Checklist.doc".

APPENDIX H
GLOSSARY

Adaptive management: "… a willingness to approach all management decisions as experiments to be tested. Rather than prescribe a management scenario, the manager working in an adaptive fashion tests possible solutions to problems in a scientific, experimental way, complete with controls. …under the adaptive management scenario, a final, prescriptive solution to a problem is never accepted, and the door is always left open to new ideas, new data, and revision of plans when better approaches are possible." (Taken from The U.S. DoD and The Nature Conservancy, A Handbook for Natural Resources Managers (Leslie et al. 1996), Conserving Biodiversity on Military Lands, p. 33. 43).

Alien species: with respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem. (*Executive Order 13112, Invasive Species* (February 3, 1999)).

Best Management Practices (BMPs): methods, measures, or practices to prevent or reduce water pollution, including, but not limited to: (1) structural and nonstructural controls; (2) operation and maintenance procedures, and (3) other requirements and scheduling and distribution of activities. (UFP for a Watershed Approach to Federal Land and Resource Management, 65 FR 202 of Oct 18 00, p. 62571).

Bird Aircraft Strike Hazard (BASH): the potential of bird strike hazard to aircraft existing due to both resident and migratory bird species. The BASH program establishes procedures to minimize aircraft exposure to potentially hazardous bird strikes at and around MCBH. No single solution exists to the BASH problem, and a variety of techniques and organizations must be involved in the control program.

Candidate Species: any species, plant or animal, which is being considered for listing as threatened or endangered by the U.S. Department of the Interior. (DoD Instruction 4715.3, E3.1.3).

Categorical Exclusion (CATEX): Per 40 CFR 1508.4 and Section 12104.3 of MCO P5090.2A, actions that the Department of Navy has found to have no significant effect individually or cumulatively on the human environment and therefore do not require an Environmental Assessment (EA) or Environmental Impact Statement (EIS) are documented as such through a CATEX (i.e. a decision memorandum retained in the project file as evidence that some systematic environmental review was followed to reach this conclusion).

Compliance-focused Stewardship: a programmatic set of management actions comprising an alternative under which MCBH will reduce the scale, type, and intensity of its established resource management program actions in the seven COA component plans, although integration of military mission priorities with an ecosystem management approach will continue as a central element of compliance (See Sections 5 and 7, 2001 INRMP/EA).

Critical habitat: the geographic area on which are found those physical or biological features essential to the continued existence of a species listed and published in 50 CFR 17 by the USFWS or NMFS under the authority of the Endangered Species Act. (MCO 5090.2A, p. 11-16).

Cumulative effect: the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. (40 CFR § 1508.7).

Ecosystem-level risk assessment: once ecological hazards or threats are identified, it is the scientific process carried out to assess likely exposure and exposure response of the ecosystem features affected, followed by risk characterization and risk management. (National Research Council 1993).

Ecosystem management: a goal-driven approach to managing natural and cultural resources that supports present and future mission requirements; preserves ecosystem integrity; is at a scale compatible with natural processes; is cognizant of nature's timeframes; recognizes social and economic viability within functioning ecosystems; is adaptable to complex and changing requirements; and is realized through effective partnerships among private, local, State, tribal, and Federal interests. Ecosystem management is a process that considers the environment as a complex system functioning as a whole, not as a collection of parts, and recognizes that people and their social and economic needs are a part of the whole. (DoD Instruction 4715.3, E3.1.9).

Endangered species: a species of fauna or flora that has been listed by the USFWS or NMFS for special protection and management under the Endangered Species Act. (MCO, p 11-17).

Endemic species: a species native to, and restricted to, a particular geographical region.

Enhancement: an activity increasing one or more natural or artificial ecosystem functions.

Erosion: the removal of the surface soil layers by wind, water or ice. The two processes involved are the detachment of individual soil particles and the subsequent transport by wind, water or ice.

Established program: a natural resource management program at MCBH, as described in the Existing Environment and Course of Action sections, whose components have been operating for at least two and up to twenty years or longer.

Geographic Information System (GIS): a computerized system of organizing and analyzing any spatial array of data and information.

Hydrological function: function performed in the context of a watershed or wetland, whose components may include, depending the context: groundwater infiltration (penetration of rainfall and surface water into soil), groundwater recharge (elevating the water table), regulation of water flow including floodwater regulation, and maintenance of estuarine water quality (the physicochemical milieu).

Invasive species: an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. (*Executive Order 13112, Invasive Species* (February 3, 1999)).

Littoral zone: the shore zone from the high water mark to a depth where light is barely sufficient for rooted aquatic plants to grow.

Native species: one that occurs naturally in a particular region, ecosystem and/or habitat without direct or indirect human actions. (*Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds* (60 FR 40837 of August 10, 1995)); with respect to a particular ecosystem, a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem. (*Executive Order 13112, Invasive Species* (February 3, 1999)).

Non-point source pollution: pollution that comes from many diffuse sources that is caused by rainfall moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and underground sources of drinking water. Pollutants include: excess fertilizers, herbicides, and insecticides from agricultural lands and residential areas; oil, grease, and toxic chemicals from urban runoff; sediment from improperly managed construction sites, crop and forest lands, and eroding streambanks; and bacteria and nutrients from livestock, pet wastes, and faulty septic systems. (USEPA website).

Noxious Weeds: plant species identified by Federal or State Agencies as requiring control or eradication.

Operational Stewardship: a programmatic set of management actions comprising an alternative under which MCBH will continue its existing level of effort in the seven COA component plans (See Sections 5 and 7, 2001 INRMP/EA).

Optimum Stewardship: a programmatic set of management actions comprising an alternative under which MCBH will increase the type, intensity and scale of its established natural resource management program actions in the seven COA component plans, providing they continue to integrate with military mission priorities (See Sections 5 and 7, 2001 INRMP/EA).

Outdoor recreation: includes any program, activity, or opportunity dependent on the natural environment, including picnicking, bird watching, hiking, fishing, and wildlife enjoyment. Per MCO P5090.2A, it does not include activity-based outdoor recreation such as in "developed or constructed facilities such as golf courses, tennis courts, riding stables, lodging facilities, boat launching ramps, and marinas…".

Plan: a scheme or method of activity/proceeding.

Program: a plan of action to accomplish a specific end.

Project: something that is planned or devised.

Protocol: a plan for carrying out a scientific study.

Polynesian-introduced species: one that was introduced by the earliest Polynesian settlers either intentionally or unintentionally, and is now naturalized. Treated as "de facto" natives for management purposes. (Wagner et al 1990, Manual of the Flowering Plants of Hawai'i, Vol. 1, p. 14).

Restoration: management actions returning an area from a disturbed or altered condition with lesser functions to a previous condition with greater functions.

Species of special concern: any species listed as threatened, endangered, or that is a candidate for listing by Federal or State agencies; a species of specific ethnobotanic or historical significance.

Sustainable landscape management practices: standards set by the latest Executive Orders, Marine Corps Orders, and related regulations regarding sustainable landscape management including: preferential use of regionally native plants, pollution prevention practices through minimization of fertilizer/pesticide use, recycling landscape trimmings, and control of invasive plant species.

Water quality: a set of parameters that describes the physical, chemical and biological condition of a water body.

Watershed: an area where rain and other water drains to a common location such as a river, lake, or wetland. A "watershed" is one of the functional units of ecosystem-level concern most useful for land use and resource managers. (USEPA 1997).

Watershed approach: a framework to guide watershed management that: (1) uses watershed assessments to determine existing and reference conditions; (2) incorporates assessment results into

resource management planning; and (3) fosters collaboration with all landowners in the watershed. (UFP for a Watershed Approach to Federal Land and Resource Management, 65 FR 65266 of Oct 18 00).

Watershed assessment: an analysis and interpretation of the physical and landscape characteristics of a watershed using scientific principles to describe watershed conditions as they affect water quality and aquatic resources. Watershed condition is the state of the watershed based on physical and biogeochemical characteristics and processes (e.g., hydrologic, geomorphic, landscape, topographic, vegetative cover, and aquatic habitat, water flow characteristics and processes (e.g., chemical, physical, and biological) as it affects water quality and water resources. (UFP for a Watershed Approach to Federal Land and Resource Management, 65 FR 62566 of Oct 18 00).

Wetlands: those areas that have a predominance of hydric soils, that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas. Jurisdictional wetlands are those that have been formally delineated in accordance with US Army Corps of Engineers wetland delineation procedures.

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APPENDIX I
REFERENCES

This appendix contains citations for references included in this 2006 MCBH INRMP Update. Citations for information from the 2001 INRMP/EA incorporated into this update by reference are contained in Section 11 of that document (Drigot et al. 2002). In addition, the MCBH Environmental Department maintains a bibliographic database to support the MCBH natural resources management program (see Appendix F1). This database is maintained by the Senior Natural Resource Management Specialist.

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