

Nominee: Marine Corps Base Hawaii  
Category: Natural Resources Conservation-Small Installation  
Period Covered: FY01 - FY03

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Award Abstract Paragraph:

Marine Corps Base Hawaii is a place of uncommon beauty, biological and cultural diversity. This enhances the challenge of balancing our combat readiness, quality of life, and conservation activities. MCBH's Integrated Natural Resources Management Plan helps meet this challenge through a set of goals, objectives, linked management actions and an \$8M budget over five years. Two years into INRMP implementation, 131 actions are implemented, 26% of them ahead of schedule, with favorable regulator and public review. These include \$5.4M "must fund" projects; innovative approaches; interagency, military; and civilian partnering to enhance the environment, civil works, and "no net loss" in training. Highlights: reduced brushfire and erosion risks; State recognition of invasive species removal projects, a doubling of endangered Hawaiian stilts in MCBH wetlands over 20 years; designs to "naturalize" stream corridors, relieve flooding, and enhance training realism; preference for native plants in landscaping; an interagency marine resource survey in MCBH waters; a project to inventory/archive natural resources data and improve our Geographic Information System; collaborative community involvement from schools, environmental, Native Hawaiian, civic groups, and the State's Emergency Environmental Workforce composed of workers laid-off by the "9-11" terrorist attack. These actions support MCBH's reputation as a trusted environmental steward.

## **INTRODUCTION**

### **1. Mission, Population, Acreage, Geographic, and Community Setting**

a. Marine Corps Base Hawaii (MCBH) consists of 2,951-acre Mokapu Peninsula; 220-acre Camp H. M. Smith; 137-acre Pu'uloa Range Facility; 27-acre Pearl City Warehouse Annex; 63-acre Manana Housing Area; 187-acres of Waikane Valley, and a 1,074-acre Marine Corps Training Area-Bellows (MCTAB), all on the Island of O'ahu. On Moloka'i, we own a 12-acre training facility.

b. Our mission is to enhance and sustain combat readiness of assigned operating forces and tenants and provide for welfare, morale, and safety of assigned service and family members and civilian employees. Tenants on Mokapu are Combat Service Support Group-3, Marine Aircraft Group-24, 3d Radio Battalion, 3d Marine Regiment, HQ Battalion, Fourth Force Reconnaissance Company, and Marine Corps Air Facility Kaneohe Bay. Camp Smith tenants include: US Pacific Command, Special Operations Command Pacific, Marine Forces Pacific, and Joint Task Force Full Accounting.

c. Our military and civilian workforce is over 13,000 strong: approximately 7,996 military personnel with 1,168 civilians working in support of the mission. Military dependents residing on base number 5,317. 10,000 retirees use base service facilities.

d. Hawai'i is the most isolated land mass in the world. It has an evolutionary history leading to unique biological species diversity, which is now greatly endangered. Over 25 percent of U.S. endangered species are found here. Hawaii's unique human settlement history has led to a diverse mix of cultures here. Numerous advocates of Hawaii's natural and cultural heritage can be found.

e. Three parcels composing 90% of MCBH's acreage are on windward O'ahu: Mokapu, MCTAB, and Waikane Valley. About 4,000 acres at Mokapu and MCTAB contain significant natural resources which are the focus of our report. MCTAB's acreage only recently came under USMC jurisdiction, as part of a 1999 land transfer from the Air Force to MCBH. Mokapu has been a USMC asset since 1952.

f. Seventy-five percent of Mokapu peninsula is flat, supporting the "built environment" —2,612 housing units, 80 miles of road, 2,300 buildings and facilities valued at over \$1.8 billion. The remaining 25% is composed of fringing sand dunes, coastal wetlands, and beaches, punctuated by three volcanic features: Ku'au or Pyramid Rock, Pu'u Hawai'i Loa, and Ulupa'u Crater—whose 683-foot head is the highest. Weather is semitropical, temperatures 70's-80's, with 40 inches annual average rainfall.

g. Mokapu is bordered east by Kailua Bay, north by the Pacific, and south/southwest by Kane'ohe Bay and Nu'upia Ponds. Adjacent Kailua and Kane'ohe communities have a combined population of over 120,000. We enforce a 500-yard seaward buffer zone around our 11-mile coastline. Adjacent waters host live corals,

threatened green turtles, endangered marine mammals (whales, monk seals), state seabird island sanctuaries, and public recreation.

h. MCTAB is “downstream” of Waimanalo, a rural community of small farm lots, Native Hawaiian homesteads, and parks along O’ahu’s largest white sand beach. Most Waimanalo residents have Native Hawaiian ancestry. Stormwater runoff from this agricultural, flood-prone watershed contributes heavy non-point pollution to streams that flow through MCTAB into Waimanalo Bay. Amphibious Assault Vehicles (AAVs) travel several miles from Mokapu via open ocean for critical beach landing maneuvers here - the only convenient and cost effective Hawaii training location. AAVs safely transit en route around coral reefs, marine turtles and mammals, subsistence and recreation activities. MCTAB also supports non-live fire, small-scale ground maneuvers, helicopter training, visiting Marine Expeditionary Units (MEUs) and houses Hawaii Regional Army National Guard HIARNG’s 48-acre training institute. Military trainers use MCTAB’s south shoreline (Bellows Field Beach Park) on weekdays. On most weekends it is open to public recreation through a joint use arrangement with City/County of Honolulu. North of this area, Bellows Air Force Station manages 500-acres for military recreation.

## 2. Significant Natural/Cultural Features

a. **“Category One” Watershed Region** – Mokapu and MCTAB are located within the eleven-watershed Ko’olaupoko District. This region is a dramatic tropical landscape, from Ko’olau mountain peaks to off-shore fringing reefs of Kane’ohe, Kailua, and Waimanalo Bays. Its population ranges from urban to rural, ethnically mixed to Native Hawaiian, relatively affluent to low income. Public concern about flooding, non-point pollution, and development impacts caused the State to rank Ko’olaupoko as Category One for watershed restoration under the National Clean Water Action Plan.

b. **Wildlife Management/Wetland Areas** – Mokapu’s 482-acre Nu’upia Ponds Wildlife Management Area (WMA) is a prime breeding area for endangered Hawaiian stilt (*Ae’o*, *Himantopus mexicanus knudseni*), hosts 3 other endangered Hawaiian waterbirds, and 50 other species of native and migratory shorebirds and seabirds. Wedge-tailed shearwater seabirds (*Puffinus pacificus chlororhynchus*) dig nest burrows along the eastern pond shoreline. Sixteen native fish species are found in the ponds (e.g., mullet or *ama’ama* (*Mugil cephalus*), milkfish or *awa* (*Chanos chanos*), ladyfish or *awa’awa* (*Elops hawaiiensis*), threadfin or *moi* (*Polydactylis sexfilis*), barracuda or *kaku* (*Sphyraena barracuda*), flagtail or *aholehole* (*Kuhlia sandvicensis*), bonefish or *o’io* (*Albula vulpes*) and goby or *o’opu-kai* (*Oxyurichthys lonchotus*). 23-acre Ulupa’u WMA is one of only two red-footed booby (*A*, or *Sula sula rubripes*) colonies in the main Hawaiian Islands, with 3,000 birds. About one-half of Nuupia Ponds WMA acreage is delineated wetland. There are also several acres of coastal wetlands along the Kane’ohe bay-facing shoreline and 3 half-acre freshwater wetland ponds on Klipper Golf Course. These ponds attract endangered waterbirds: *Ae’o* (Hawaiian Stilt), as well as *'Alae 'ula*, (Hawaiian gallinule or *Gallinula chloropus sandvicensis*); *'Alae ke'oke'o*, Hawaiian Coot or *Fulica americana alai*, **Koloa** (Hawaiian Duck or Koloa-Mallard hybrids). They also attract native Black-crowned Night Herons (*'Auku'u*, *Nycticorax nycticorax*

*hoactii*), and migratory birds, notably Great Frigatebirds (*'Iwa, Fregata minor palmerstoni*), whose majestic aerial acrobatics include daily dives into these ponds to catch a drink or small fish. MCTAB contains 9 acres of delineated wetlands, mostly along Waimanalo stream, where native waterbirds and aquatic life are also found.

c. **Paleontological/Cultural/Historical Resources** – Fossil shells at Ulupa'u Crater of an extinct marine gastropod (*Conus kahiko*) are 120,000 old. A fossil bird bone deposit here is Hawaii's oldest. Archival and oral histories verify Mokapu as a significant cultural landscape. Historic fishpond walls at **Nu'upia Ponds** are the only remaining remnant of 30 former fishponds in Kane'ohe Bay, helping to make the ponds an eligible national historic property. 125-acre **Mokapu Burial Area** within Mokapu's north shore dunes is in the National Register of Historic Places as a significant native Hawaiian burial ground. A total of 27 pre-/early- contact sites and 45 post-contact sites are on Mokapu and 20 historic sites on MCTAB. Notable WWII historic sites include: 1) **Hangar 101 and Seaplane Ramps** - This national historic landmark supported Navy's PBY Catalina patrol plane fleet bombed minutes before the December 7, 1941 Pearl Harbor attack; and 2) **Battery Pennsylvania at Ulupa'u Crater Head** - This eligible national historic property is a seven-story deep, reinforced concrete gun emplacement, once supporting a 14-inch gun turret from the battleship, USS Arizona. MCTAB also contains important historic structures from WWII, Cold War, and sugar plantation eras.

d. **Diverse Native Flora/Fauna** – Sea cliffs and sand dunes at Mokapu and MCTAB support unique strand vegetation treasured in Hawaiian folklore and gathering traditions. Mokapu's 500-yard marine buffer zone contains diverse organisms (e.g., coral colonies, sponges, bryozoans, sabellid worms, tunicates, 200 fish species, and sea turtles (*Honu*, or *Chelonia mydas*)). We have collected oral histories which document many stories of these marine resources and places. A similar diversity exists offshore MCTAB.

## BACKGROUND

1. **MCBH's Integrated Resources Management Plan** – In November 2001, our Integrated Natural Resources Management Plan was completed as a combined plan and environmental assessment (INRMP/EA), with cooperating agency input and open public review. Our plan guides MCBH's ecosystem-based integrated approach to natural resource management, while supporting “no net loss” in training options. Regulators concurring in this plan are US Fish and Wildlife Service, National Marine Fisheries Service, and Hawaii Department of Land and Natural Resources. An \$8-million budget for implementing this first-edition INRMP supports completion of a minimum 123 specific goal-driven activities over five years (FY02-06). These activities are organized under seven management categories: wildlife, wetland, watershed, coastal and marine resources, grounds maintenance and landscape, quality of life/outdoor recreation, and resource information management. Goals and objectives linked to specific actions under each category provide a tangible basis for measuring progress in plan implementation. It helps meet EPA's requirement that federal agencies implement principles-based environmental management systems (EMS) with performance measures for tracking progress.

## **2. Organization and Staffing**

a. Base natural resources management is coordinated by the Environmental Compliance and Protection Department (ECPD). ECPD comprises a USMC Major as director, 3 additional military, 26 civilian, and 5 contracted staff. The ECPD staff is organized into 5 teams: conservation, compliance, pollution prevention, inspection, sustaining. The conservation team is composed of a GS-12 team leader/senior natural resources management specialist; a GS-11 natural resource manager; a GS-9 wildlife technician; a GS-11 archaeologist/cultural resources manager; and a GS-11 environmental protection specialist who coordinates compliance with the National Environmental Policy Act (NEPA). A GS-11 geographer in the sustaining team provides Geographic Information Services (GIS). The conservation team oversees natural/cultural resources, outreach, integrated resource management, and timely environmental documentation. It works closely with other teams in overlapping areas (e.g., stormwater management, outreach, spill response, recycling, pollution prevention).

b. Base natural resources management assistance also comes from: (1) facilities planners, engineers, and shops personnel; (2) two military police game wardens and a dozen auxiliary wardens; (3) G-3 military trainers; (4) base legal staff; (5) base environmental impact review board; (6) Sikes Act cooperators: Hawaii Department of Land and Natural Resources; US Fish and Wildlife Service, National Marine Fisheries Service; (7) contractors; (8) scientists; (9) agencies such as US Department of Agriculture Wildlife Services; (10) volunteers; and (11) *kupuna* (elders) with traditional knowledge.

### **PROGRAM SUMMARY/MOST OUTSTANDING ACCOMPLISHMENTS** **(FY01-FY03)**

#### **1. INRMP Program/Progress Summary**

a. Our MCBH INRMP/EA was completed in November 2001, on time, with regulator concurrence, and without public controversy. In the two years since, MCBH made steady plan implementation progress. 131 prescribed management actions were completed, 34 (26%) of which were implemented ahead of schedule in the five-year plan. Favorable review of MCBH progress has been received from regulators and the public.

b. Our INRMP is a "living document," continuously improving with completion of each scheduled action. The table below highlights major management actions completed or initiated in each of seven component areas. This table summarizes a broad array of improvements, innovative staffing and design approaches, interagency cooperation, partnering among military operators, natural resource staff and the public to enhance the environment, civil works functions, and "no net less" in military training. The follow-on sections highlight the most significant of these accomplishments.

<b>INRMP Course of Action Management Component</b>	<b>Progress Highlights FY01-FY03</b> (Includes various studies, surveys, inventories, projects (design &/or build phases) monitoring, education & outreach activities)	<b>Value (\$K)</b> (excludes staff salary)
Fish and Wildlife	Completed regional Hawaiian stilt recovery study documenting MCBH's role in assisting overall recovery of this endangered bird; continued bird monitoring confirming consistent high endangered stilt counts & general bird biodiversity; Improved predator trapping records & methods; completed an invasive species mgt. study for MCBH lands & began to implement study recommendations.	408.9
Wetlands	Completed: Invasive mangrove removal from Nu'upia Ponds; EA & removal of 3 acres mangrove from MCBH's costal wetlands; a wetland boundary survey; Golf Course ponds/wetland improvements (sediment removal, native plantings, signage) which attracted stilt nesting/favorable media coverage; EA/Design to replace dysfunctional drainage ditch with a constructed wetland to retain/improve stormwater runoff & attract native birds(to build FY04)	1,606.0
Watershed	Completed native plant riparian garden/watershed education project w/broad community involvement; Design completed for watershed improvements to "naturalize" stream alignments on MCBH and MCTAB in lieu of more expensive conventional projects that would "harden" streambanks; Started a watershed-based erosion assessment of Ulupa'u Crater to determine appropriate mitigations for adverse erosion impacts affecting weapons range sustainability, seabird tree-nest habitat, and our landfill lifespan.	855.0
Coastal and Marine Resources	Completed a coral reef ecosystem mgt study for MCBH waters; started a follow-on interagency marine resources inventory offshore Mokapu & MCTAB involving MCBH, USFWS, NMFS, & DLNR staff; Awarded Puuloa range impact berm/shoreline erosion repair project.	1,006.5
Grounds Maintenance and Landscape Management	Completed an Ulupa'u brush fire mgt. study; completed a project to remove/replace flammable vegetation in key roosting areas of Crater booby seabird colony; installed additional nest-platform trees to lure birds to lower risk areas of Crater; Designed two projects to further reduce brushfire risk at the Crater seabird colony from nearby weapons firing & awarded funds for their construction; Completed a master landscape study & several civil works projects at multiple locations on MCBH following federal guidelines to prefer native plants in landscape schemes & to avoid invasive or maintenance-intensive plants; started vegetation mapping at MCTAB with focus on recommending landscape changes to remove highly flammable invasive species and make the terrain more "trainer-friendly."	1,388.0
Quality of Life/Outdoor Recreation/Outreach	Completed design/EA/opening of a recreational & unit-conditioning access trail at Nu'upia Ponds; Hosted numerous nature tours, cost-savings wildlife service, resource research & monitoring projects; military environmental classes & display booths to provide conservation education & involve the public—both on and off base. Dollars low because Trail EA/Design & outreach done by in-hse staff	2.0 (for EA/FNSI publication)

Resource Information	Began to inventory/archive abundant natural resources data (specimen collections, hard-copy & electronic reports, maps & GIS layers, audio & videotapes, etc.) for ease of trend analysis, compliance reporting, interagency sharing through website linkages, public access (where appropriate), and preservation.	116.0
SubTotal: FY99-00 projects	Subset of above projects started FY99-00 but completed FY01-FY03	\$2.7M
Subtotal: FY01-FY03	Subset of above projects started FY01-FY03; some complete/some still active (i.e. design done, construction to come in follow-on years)	\$2.7K
<b>GRAND TOTAL</b>	<b>PROJECTS STARTED OR COMPLETED FY01 – 03</b>	<b>\$5.4M</b>

## 2. Outstanding Integrated Natural Resources Management Program Features

a. **Sustainable Range/Bird Habitat Management**--MCBH Ulupa'u Crater supports vital combat weapons training and 2,500 federally-protected red-footed boobies. A primary risk to both is brushfires in invasive grasses within the impact area. In addition to wildlife damage and lost training time, brushfire erosive effects on Crater volcanic soils aggravate risk of sediment runoff into surrounding marine waters. In the late 1990s, \$5M-worth of improvements to range operations, fire response, and bird habitat substantially reduced fire risk. In early CY03, risk was raised again by a prolonged drought and a new USMC safety rule prohibiting firefighting crews in impact areas. MCBH proactively mitigated this added risk by implementing recommendations from our CY02 Brushfire Management Study and a CY03 Crater Erosion Assessment Study. Thus, \$350K were secured to install: (a) gravel-anchored geotextile matting around the perimeter of bird habitat tree clusters, to repress weed growth, hold down the soil, and create a secondary "fire break;" and (b) remote-controlled, solar-powered water cannons at 4 strategic locations to "wet down" the area in case of fire. Together, these projects provide defense in depth against fire risk. When completed, they will reduce "down time" at the weapons range and landscape degradation, and sustain training support.

b. **Invasive Species Management** - MCBH is recognized as a leader in Hawai'i for invasive species removal resulting in significant wildlife benefits. For example, the State's CY03 Aquatic Invasive Species Management Plan cites MCBH's early efforts to control mangrove as exemplary. While mangrove is protected in its native habitat elsewhere, it is an invasive plant in Hawai'i. Since its early 1900s introduction, mangrove have degraded wildlife habitat, water quality, flood retention, and recreational values of Hawai'i's wetlands. By FY03, MCBH completed a 20 year, \$2.5M, phased effort, to remove 25 acres of mangrove infestation from Mokapu's wetlands. Volunteer service projects prevent reinfestation. Funds paid for mangrove removal as well as before/after documentation of resulting improvements to native wildlife habitat, water flow, and quality. Stilt numbers in Mokapu's wetlands have grown from 60 to over 130 birds in 20 years. Lessons learned are shared in publications and conferences.

c. **Wetland/Military Training/Quality of Life Enhancement** - In CY02, our 11 wetland area boundaries were delineated by an Army Corps of Engineers survey for MCBH. The data were added to our Environmental Geographic Information System

(EGIS) and a wetland handout now educates military trainers and the public. Most of MCBH's wetland acreage is at Nu'upia Ponds. Integrated program management enables pond use for training, wildlife, and recreation:

(1) ***Military Training/Wildlife Enhancement***—Once annual, supervised assault amphibious vehicle (AAV) “mud ops” training is hosted at the ponds, just before Hawaiian stilt nesting season. This recurring event enhances both AAV operator skills and wildlife habitat. Marines plow their 26-ton AAVs systematically through weed-infested mudflats. This removes invasive alien pickleweed and contours the terrain to attract stilt nesting and feeding. Positive environmental effects are scientifically-documented; presented in a CY02 International Union for the Conservation of Nature (IUCN) publication; and popularized through newspaper and television coverage. A “Saving a Few Good Species” national poster series partnered by US Marine Corps/US Fish and Wildlife Service will commemorate sustained, successful symbiosis between AAVs and Hawaiian stilt with a poster unveiling ceremony on-site in Jan CY04; (2) ***Recreational Use***--In CY02, after in-house completion of a design and environmental assessment, MCBH opened a Recreational Run Trail around Nu'upia Ponds' perimeter for the first time in 20 years. The trail route was carefully designed for joggers, unit conditioning runs, and community "marathon" events in such a manner as to avoid sensitive wildlife, archaeological sites, and noise to neighbors. It includes interpretive signage along the route. Regulators concurred and the trail is popular.

d. **Collaborative, Community-Based, Watershed Management - (1) A *Demonstration Watershed Restoration Project*** completed in FY01 involved 1,000 volunteers to design, plant, and maintain 3 native plant streamside gardens and conduct “walk the watershed” monitoring activities. This and related projects provided over \$300K worth of jobs to local small businesses. Sixteen elementary school teachers received university credits in a customized course on watershed health funded by USMC and taught by MCBH staff. Since then, hundreds of students, military families, retirees, civic and business groups have used the gardens for watershed education, cultural awareness, academic credit and service activities. This project is one of 30 national watershed success stories posted on US Environmental Protection Agency's website: <http://www.cleanwater.gov/success> ; (2) ***Wetland/Watershed Project Improvements***--Over \$1.7M worth of FY01-funded studies/designs were completed in FY02-03 to “naturalize” stream corridors along Mokapu Central Drainage Channel and MCTAB's Waimanalo stream in such manner as to improve natural habitat, restore historic stream contours, relieve flooding, and (at MCTAB) enhance realism in the training terrain. A FY01-funded \$350K design and EA neared completion in FY03, with construction planned in FY04. It will replace a dysfunctional drainage ditch with a constructed wetland, with improved stormwater retention, groundwater recharge, and foraging habitat for native waterbirds.

e. **Native Plant Conservation and Environmentally Beneficial Landscaping -** BY CY03, MCBH addressed a 1999 compliance audit recommendation to better comply with federal directives to prefer native plants in landscaping projects. Our INRMP sets an objective of not less than 50% native plants in landscape projects. A \$200K Master

Landscaping Study completed in CY02 includes prescribed lists of preferred native and prohibited non-native, invasive plants. Following these guidelines, several recently-completed civil works projects successfully integrate native landscaping: a \$236K landscaping initiative includes prominently placed native plants at MCBH-KB's Front Gate; a \$200K grounds improvement project at the Iwa Jima Memorial replica includes native plants; a \$266K Klipper Golf Course pond improvement project includes native plants along pond banks; \$20K-worth of native plants enhance the Navy's Finn Building and P-3 Static Display; \$30K-worth of native plants are included in K-Bay Officer's Club landscaping; landscaping initiatives for two housing and three barracks projects incorporate \$700K-worth of native plants. Our senior natural resources specialist presented on MCBH initiatives at a CY02 "Native Plants in Public Places" conference, and a related article was circulated State-wide in a Hawaii Landscape newspaper.

**f. Conservation Education/Community Relations (FY01-03)**

(1) ***Environmental Education Tours and Service Projects***— We hosted over 1160 individuals in tours or service projects. The following examples show depth and breadth of these events. (a) a Sierra Club High School Hikers' "Ecology Camp" for 150 local youth from ten O'ahu schools. This sustains our long tradition of hosting such camps (1983, '89, '97, and '01); (b) creation of a website on Nu'upia Ponds by elementary students which won awards in an international cyberfaire competition <http://kalaheocomplex.k12.hi.us/NuupiaPonds/nuupiaponds.htm> ; (d) a teachers' workshop co-sponsored by Bishop Museum/US Fish and Wildlife Service at our seabird colony; (e) natural resource case study tours for university biology and law students; (f) a conference field visit by Hawaii Association of Conservation Districts; (g) a university student spending 63 man-hours over five months to maintain MCBH's native plants and create a maintenance manual; (h) bird nest platform maintenance by volunteers at our red-footed booby colony; (i) systematic bird counts involving participants from wildlife agencies and Hawaii Audubon Society; (j) a diving survey in MCBH waters by university scientists to investigate an outbreak of invasive alien soft "snowflake" coral; (k) a mangrove clearing project by Marines and Sierra Club volunteers; (l) a native plant garden/beach cleanup at MCTAB by Hawaiian Electric Company lawyers.

(2) ***Educational Unit Briefs and Brochures*** – Monthly environmental briefs and brochures at "New Arrivals" orientation sessions reached hundreds of base newcomers; from FY01-03, environmental briefs were hosted to 524 individuals from base and tenant units and to 84 officers in a senior environmental leadership course.

(3) ***Interagency, MCBH Staff, and Academic Initiatives*** – (1) In FY03, MCBH's waterfront operations teamed with the State and Hawaii National Guard in a 1.5 month, \$1M effort to eradicate fast-growing *Salvinia molesta*—an invasive weed that overtook Lake Wilson—an important inland water reservoir, recreational fish and boating area on urbanized O'ahu. They received special recognition by Hawaii's governor; (2) Also in FY03, MCBH's natural resources and waterfront staff teamed with USFWS, NMFS, and State to launch a MCBH marine resources survey in our waters and a state survey in adjacent State waters. Sharing staff and equipment will stretch limited dollars to

expand scope of coverage and data sharing. Results of this interagency survey will broaden public awareness of rich biodiversity in security-protected MCBH waters and of our ability to make mission while being careful natural resource stewards; (3) In FY03, MCBH's wildlife technician became the first USMC student to complete a rigorous 3-month Federal law enforcement training course to help launch USMC's conservation resource enforcement program initiative. He is a USMC combat veteran and serves the State as a volunteer commissioned conservation resource enforcement officer; (4) MCBH's senior natural resources management specialist was recognized "2003 Kaneohe Citizen of the Year" by elected representatives on the city's Kaneohe's Neighborhood Board for her public service to the environment and for fostering improved relations between MCBH and the civilian community. She was also appointed an affiliate graduate faculty member of a University of Hawaii's natural resources management program; (5) Another MCBH natural resources manager has been on extended active duty as a Marine Reservist since the 9/11/01 terrorist attack. We have been ably assisted in his absence by a recent graduate of University of Hawaii with a Master's degree in geography/conservation biology. With her help, we have expanded our field monitoring programs and improved our Geographic Information System; (6) Our waterfront operations staff have assisted state and federal enforcement officers to apprehend illegal fishing, net laying, and reef diving activities within surrounding bays, and retrieved abandoned fish nets that would otherwise harm marine life.

**g. Pest Management** – (1) ***Emergency Environmental Workforce (EEWF)***-- After "9/11," we became the first land management agency on O'ahu to host a work crew from the state-subsidized EEWF--created to provide jobs to workers laid off by terrorist attacks. From Dec 01 to June 02, these workers removed invasive plants from wildlife habitat, reduced brush fire risk on training lands, and helped save over \$60K in labor costs; (2) ***Predator Trapping***—In FY02, we expanded USDA Wildlife Services' contract for predator trapping at Camp Smith, Puuloa, and MCTAB to include Nu'upia Ponds. They helped our wildlife technician install more cost effective, labor-saving pest bait stations near wildlife nesting areas; (3) ***Fountain Grass Removal***—We coordinate "search and destroy" missions, with **HIARNG** natural resources staff and O'ahu Invasive Species Council volunteers, to eradicate pioneer invasions of Fountain Grass (one of the "most wanted" invasive, fire-prone grasses in the state), and thus reduce fire risk on training lands.

### **3. Other Land Use Management:**

**a. Erosion Control, Water Quality/Conservation** —In addition to INRMP-funded erosion control projects: (1) a \$1M FY01 compliance project installed landfill drainage controls and a sediment basin to prevent runoff to the ocean; (2) a 2003 stormwater management plan includes rigorous sampling of stormwater runoff—the only Hawai'i military installation required to because of proximity to pristine waters; (3) In FY03, we replaced influent/effluent pumps and emergency generators at sewer lift stations to reduce spill risk; (4) A \$1.6M FY03 project improved stormwater runoff at a maintenance compound by resurfacing the area, installing permeable perimeter cover, and grease rack containment; (5) Over 30 years, the State has permitted us to irrigate base

grounds with recycled treated effluent from our Water Reclamation Facility (WRF). Recent cleanout of the WRF polishing pond led to doubling of daily effluent use for water-conserving irrigation (350K to 750K gallons).

b. **Recreational Resource Management** - (1) **Shoreline Access** - MCBH provides controlled public access to ocean/coastal resources within operational, environmental, and security constraints. A Sunday "open beach" access policy allows off-base civilians to enjoy Mokapu's Pyramid Rock beach and regular weekend public access is provided at MCTAB's Bellows Beach. Marathon running/biking contests are coordinated to include access to scenic coastlines without disturbing native vegetation, wildlife nesting, or Native Hawaiian burial grounds. An annual "Bay Fest" attracts 32,000 people, raising funds for family support activities. A popular marina and a dive club are active, where 500 scuba certificates are issued a year. In recent years, the marina has sponsored an annual "Day on the Docks" event to include a fishing derby for kids and environmental education activities; (2) **Hunting/Fishing Access** - Lack of sufficient area, safety concerns, and presence of protected species preclude on-base hunting. We permit public fishing access at designated locations and allow off-base civilian fishing access within enforceable numbers. 200 permits per quarter are issued on a first-come, first-serve, no fee basis. Permit compliance is enforced by voluntary auxiliary game wardens under the Provost Marshal's office.

## 6. Overall Natural Resources Compliance Program

a. **Interaction with Regulators, Inspectors** – Absence of citations from wildlife agencies and program inspectors indicates positive interaction with regulators. Our ability to obtain permits to haze protected charismatic birds such as Laysan Albatrosses from runways in bird/aircraft strike hazard risk areas; to perform limited AAV maneuvers in sensitive wildlife habitats; and to obtain cultural resource agreements from Native Hawaiian groups are further indicators of good relations with regulators.

b. **Budget Data to Illustrate Adequate Funding** – An \$8M investment implements the five-year INRMP (FY02-FY06). We have been able to implement all "must fund" INRMP projects thus far and funding support is steady (See Table, p. 5)

c. **Natural Resources Damage Assessment** - In FY01, MCBH became the only military associate member of a unique interagency/industry spill response cooperative--Clean Islands Council--enabling our access to their response center, specialist personnel, and the state's largest spill response equipment inventory. US Coast Guard considers MCBH's spill response plan a model and is including it in an update of the Area Contingency Plan. We regularly host interagency spill drills, oiled bird/mammal recovery training exercises, and natural resources monitoring activities. In FY01, MCBH hosted natural resource damage assessment monitoring in conjunction with oiled seabird damage after spills from Navy's accidental-sinking of a Japanese fishing vessel, *Ehime Maru*, off Pearl Harbor. Wildlife scientists tracked number of oiled boobies in their roosting habitat at the Crater as one indicator of extent island-wide natural resources damage.