

FY 2006  
Secretary of Defense  
Environmental Award Submission  
Pollution Prevention  
Non-Industrial Installation



Marine Corps Base Hawaii

**INTRODUCTION-Mission, Population and Acreage.** We provide facilities and services that support combat readiness and promote the well-being and safety of military and civilian personnel that live and work at MCBH. We manage installations on 4500 acres, including Camp Smith, Kaneohe Bay, Marine Corps Training Area Bellows, Waikane Valley, Manana Family Housing, Pearl City Warehouse Annex, and Pu'uloa Range. We support over 25,000 Marines, Sailors, civilian employees and family members working or living aboard MCBH. Over 10,000 retirees also access base facilities.

**BACKGROUND-Environmental Challenges.** The richness and sensitivity of natural resources in Hawaii is reflected by the fact that over 25% of all U.S. endangered species are found here. Cultural resources significant to native Hawaiians are greatly valued by outspoken advocacy groups. MCBH Kaneohe Bay, surrounded by pristine waters that are of tremendous importance to the lives and livelihoods of many Hawaii residents, is the most environmentally sensitive of all our properties with state water quality standards more stringent than federal standards. Living coral reefs and threatened green sea turtles inhabit our waters, along with endangered humpback whales and Hawaiian monk seals. We are subject to many environmental constraints, such as endangered species habitat, historic sites, and erosion-prone coastlines. Aircraft flight paths are governed by noise impacts and accident risks to nearby communities. Our greatest environmental challenge is to steward the rich lands under our control while supporting combat readiness. Our best solutions involve P2, a vital key to mission support and conserving valuable military resources, while strengthening the trust of the local community.

**Organization and Staffing.** The Environmental Compliance & Protection Department was established in 1993 and is staffed by 30 military and civilian environmental professionals. Also, nine contractor personnel operate our Hazardous Material Minimization (HAZMIN) and Hazardous Waste (HW) facility. Our programs are organized by pillar as follows:

TEAM	PROGRAMS	STAFFING
P2	HAZMIN, HW, EPCRA, P2 Initiatives, Oil/Hazardous Substances, Inspectors	1 Marine, 5 civilians, 9 contractors
Compliance	UST, SPCC, Drinking Water, Storm Water, Wastewater, Oil-Water Separator, Air, ODS, Noise, Solid Waste, Green Procurement, Recycling, Landfill, PCB, IR, MRP	10 civilians
Conservation	Cultural and Natural Resources, NEPA, Conservation Law Enforcement	7 civilians
Sustaining	Director, Emergency Response, Training, EMS, Budget, GIS, Info Systems Mgmt	1 Marine, 6 civilians

**Management Approach.** We support a work environment that: capitalizes on innovative ideas for using limited resources; integrates sustainable practices, which meet the needs of the present without compromising the ability of future generations to meet theirs; actively employs a systems approach that considers the environmental effects of all mission-critical decisions; and assumes a leadership role to protect the environment in those decisions. We believe P2 is the solution to compliance issues and continue to expand our sustainability efforts by using fewer resources in a more efficient way.

**Partnering Improves Stakeholder Involvement.** Because P2 Program efforts increase efficiency, decrease waste, and result in enhanced mission capability, P2 initiatives are fully supported and actively promoted by the command and throughout the workforce at MCBH. P2 concepts have been successfully integrated into the daily operations of our base and tenant commands. We regularly publicize success stories via the *Hawaii Marine* to provide our stakeholders with concrete examples of the innovative ideas they helped to create to improve the quality of our environment. The long-standing partnerships and regular meetings held with state and federal regulators, DoD agencies, Department of Homeland Security, community members and MCBH commands have been critical to the extraordinary success of our P2 Program.

**PROGRAM SUMMARY - Objectives.** Our goals are to promote P2 as an integral part of supporting mission readiness; reduce environmental liabilities and protect public health and the environment by eliminating/minimizing the volume and toxicity of hazardous substances used aboard MCBH; while using a comprehensive systems approach to adopt a long-term strategy to ensure environmental stewardship and sustainability for future generations.

With hard work, proactive planning, innovation, and effective partnering, we consistently exceed the objectives established for our P2 Program. Aggressive goals were met by integrating P2 throughout all environmental compliance programs to achieve regulatory compliance at reduced costs, effectively utilizing land/water/air and financial resources, improving mission support and fostering community relations. We assimilated EMS into our environmental programs by identifying priorities, providing training, and working with practice owners to translate environmental requirements into workplace actions. EMS has enhanced P2 opportunities by providing a framework in which projects and funding are prioritized based

on established objectives and targets; along with stakeholder participation, to achieve our primary EMS focus, "Sustain our military operations and access to training areas while protecting the environment."

Compliance evaluations conducted by regulators in FY05-06 yielded no violations. Our inspectors conduct multi-media monthly inspections at all work centers, immediately correcting deficiencies and providing OJT. We updated our P2 Plan, HW Management Plan, HM Management Plan, EMS Plan, Green Procurement Plan, SPCC Plan, CETEP Plan, Storm Water Pollution Management Plan, SW Management Plan, and Pest Management Plan. We submitted permit renewal applications for non-covered air source permit, storm water NPDES permit and water reclamation facility NPDES permit.

**ACCOMPLISHMENTS** - Because we provide services that sustain the readiness of our troops, activities in support of our mission have the potential to impact our air, land and water resources. Seizing upon opportunities that these challenges present, effective program management, orientation to mission, stakeholder involvement, and innovative ideas resulted in improved mission readiness and tremendous cost savings as illustrated by the following outstanding accomplishments.

**Material Substitution →*Toxic Chemical Eliminated.*** Methylene chloride, a hazardous air pollutant and suspected human carcinogen, was used to control aircraft corrosion throughout MCBH. We successfully eliminated this chemical by installing a heated paint stripping system. Aviation personnel now spend less time and effort stripping parts by using safer chemicals in this high-performance system. We completely eliminated methylene chloride by stocking product substitutes at our HAZMIN Center. We installed a Portable Maintenance Facility that utilizes plastic blast media to strip entire aircraft.

#### **Process Modification or Improvement**

→***\$4M Savings by using Non-Toxic Weapons Cleaning Systems.*** We installed weapons cleaning systems at every MCBH armory. The system circulates, filters, and distributes a non-toxic solvent that reduces the time it takes to clean a weapon by 50%. Over 3,000 weapons are cleaned per week at MCBH, equating to an **annual savings of \$4 million, which allows 360,000 Marine hours per year to be redirected towards mission essential duties.**

→***\$3M Savings through Innovative Soil Reuse Strategy.*** At a critical phase of a \$50M construction project to replace 212 junior enlisted homes, extensive testing of soil on site, subsurface soil, and stockpiled soil detected chlordane levels above State Department of Health (DOH) guidance. The cost to remove and dispose of over 15,000 cubic yards of soil and to bring in clean soil was estimated at \$3M and would cause over 6 months of delay. Recognizing that screening cleanup levels were not appropriate for the legal application of chlordane, we initiated a risk assessment to support soil reuse on site, which concluded that all but 60 cubic yards of soil could remain in place. We successfully employed an effective risk assessment strategy to **save over \$3M that was critical to getting new homes turned over for use** to support our Marine families. A risk assessment spreadsheet was developed and shared for use on all future Navy and Marine Corps housing projects, and will continue to save the government tremendous amounts of time and money for years to come.

→***\$255K Savings through Impressive Water Conservation Efforts.*** On the densely populated island of Oahu, water conservation is critical to preserving limited drinking water supplies. **Our Water Reclamation Facility effluent was used to irrigate our golf course, saving 116M gallons of potable water,** which translated into \$255,000 savings achieved.

→***Eliminated Harmful Waste Stream.*** We **completely eliminated Aqueous Film Forming Foam (AFFF) waste** associated with Aircraft Rescue and Firefighting (ARFF) vehicle nozzle discharge testing performed by Marine Corps Air Facility personnel. By using a NoFoam Unit that connects directly to our retrofitted ARFF vehicles, water is used instead of AFFF. The high biological oxygen demand, high chemical oxygen demand, and extreme foaming action of AFFF contribute to water pollution. We eliminated this environmentally harmful waste stream and saved approximately \$12K/year in AFFF purchases. We are working with Naval Facilities Engineering Service Center to connect these units to an existing AFFF system in our Corrosion Control Hangar. The Assistant Secretary of Environment for the Australian Department of Defense sent us a letter of thanks for showing him our No Foam Unit, which he stated would greatly benefit the Australian military.

→***Saving Time and Money to Support Mission Readiness.*** By hiring a local company to recycle antifreeze on-site, spills are minimized and significant time is saved. Our military personnel no longer have to accumulate and properly dispose of

antifreeze; maintain an antifreeze recycler; or prepare turn-in documents for disposal. In addition, we saved our operating forces over \$13,000 in antifreeze purchase and disposal costs during FY05-06.

→**Support Provided to Family Housing Residents.** The Family Housing Reuse Room was established to divert household waste from the local landfill, save money and protect the environment. Housing residents now take useable, but unwanted HM to their Reuse Room. Anyone living or working aboard MCBH can take these materials home for their own use. This is a valuable service for families that are transferring to and from Hawaii.

→**Awareness and Education Reduce Disposal Costs at Auto Skills Center.** New procedures were initiated at the ASC that includes revised Stall Rental Agreements, which describe how customers can minimize and manage wastes generated during vehicle maintenance. Because customers must read and sign this agreement each time they rent a stall, they are more aware of the wastes they generate and the importance of waste minimization practices such as not mixing wastes, not using chlorinated solvents, and using rags to wipe off excess grease before using a parts washer. A used oil AST was eliminated in FY06 as a result of implementing the Oil Eater Box Program. Oil eater boxes, along with other oily wastes generated, are burned for energy recovery at the H-Power City and County incinerator. This minimizes spills associated with storing and pumping oil from a storage tank. These initiatives **reduced ASC waste disposal costs by 77%**.

**Improved Material Management**→**\$1.6M Savings and Improved Readiness.** Our commitment to promote sustainability as an integral part of supporting mission readiness begins with reducing/eliminating HM usage. Our Hazardous Material Minimization (HAZMIN) Center consolidates HM base-wide, improves inventory control, reduces operating costs, and minimizes the generation of HW. Since FY05, **we achieved 100% base-wide participation from our base and tenant commands, saving DoD nearly \$1.6M by diverting over 107,000 lbs. of HM from disposal**, redistributing the excess at no cost to units, and reducing the amount of effort (nearly 96,000 hours) expended by personnel managing HM. By significantly reducing personnel requirements to oversee HM, we have improved combat readiness through increased efficiency. In addition, our HAZMIN Center was instrumental in supporting MAG-24 during a DoD-wide shortage of engine oil and hydraulic fluid. We worked with NAVAIR to identify equivalent products authorized for use and commercially available to support mission readiness for our aviation forces.

**Compliance with EO 13123**→**Phenomenal \$4M Energy Savings.** Energy efficient features were implemented in each construction project at MCBH. Family Housing replacement for 258 new units incorporated solar hot water heating systems, energy efficient lighting, plumbing fixtures and appliances, saving 640,000 kWh of electricity and 18M gallons of water annually. A 150-room Barracks replacement project incorporated waste heat recovery from air conditioning for hot water heating, energy efficient lighting and plumbing fixtures saving 315,000 kWh of electricity and 12M gallons of water annually. Retrofitting Barracks' lamps with 4,200 compact fluorescent light bulbs generates annual electricity savings of 360,000 kWh. Energy conservation measures implement by the MCBH Energy Savings Performance contract generates annual savings of 15 million kWh and 10M gallons of water, **saving over \$2 million annually**. Savings in electricity for these projects reduces air pollution, since 96% of electrical power on Oahu is generated from oil and coal. **Annual emissions are reduced by 15,320 tons of CO<sub>2</sub>, 46 tons of NO<sub>x</sub> and 40 tons of SO<sub>2</sub>.**

**Compliance with EO 13148**→**First to Meet EMS Goals.** MCBH was the **first of 21 Marine Corps installations to complete DoD and USMC EMS Implementation Criteria, successfully meeting the EO 13148 deadline.** Headquarters Marine Corps sent a Marine Corps-wide congratulatory message recognizing our accomplishment. We achieved completion of an Environmental Policy Statement signed by our Commanding General; Self-Assessment Gap Analysis; EMS Implementation Plan; Prioritized Aspects; EMS Training; and an EMS Management Review. We designated an EMS Team, inventoried our Practices and Aspects, established Objectives and Targets, drafted a POAM to Mitigate Risk, wrote an EMS Procedures Manual, established Management Review procedures, and completed an Internal Self-Assessment. Our EMS efforts continue to help MCBH reduce our environmental impacts and increase our operating efficiency.

**Compliance with EO 13149 → *First to Meet 20% Reduction Goal.*** We contributed to the Marine Corps' achievement as the first DoD agency to meet EO 13149 goal to reduce annual petroleum consumption by 20% (1999-2005). We purchased AFVs, downsized our fleet, reduced vehicle sizes, and removed low-usage vehicles, consuming 10% less gasoline each year. We support sustainability by using re-refined oil, re-treaded tires, and bio-based motor vehicle products.

**Recycling Program → *Deforming for all DoD Sustains Program.*** We purchased a brass deformer to process brass shell casings for recycling; relatively expensive and the only machine of this type on Oahu. We worked with the joint-service/State DOH, Hawaii Sustainability & P2 Partnership to explore the possibility of deforming brass shells for all military to avoid duplication of effort and investment. The DOH streamlined the permitting process, which made it possible for us to **successfully form a partnership with DoD recycling programs to process all military shells.** This enabled Army, Navy, Air Force and Coast Guard installations to avoid having to spend funds to purchase expensive equipment; provide facilities for deforming; or train personnel. **Our Recycling Program now generates enough revenue from this initiative alone to sustain its operation and continue to be an environmentally responsible neighbor to the community.**

**Green Procurement → *Achieved Program Expansion.*** We established a team of environmental, procurement, and line personnel to expand our GP Program. Accomplishments include completing our MCBH GP Plan; inclusion of a GP chapter in our Environmental Compliance and Protection Standard Operating Procedures (ECPSOP) manual; hosting classes for all DoD buyers, credit card holders and supply personnel island-wide; incorporating training into our quarterly Environmental SOP course; establishing procedures to verify GP; and distributing GP guides. We continually promote our program during Earth Day, America Recycles Day, and the Commanding General's Aloha Fair. We optimize our performance by instituting an annual monitoring program and evaluating our progress against RCRA and ECE checklists. We developed and implemented a contract specification to ensure our contractors use GP products in all construction projects.

**Green Buildings → *Supports Sustainability Efforts.*** Current projects (\$2M total) include: lining and repairing Water Reclamation Facility sludge-drying beds to improve dewatering efficiency and groundwater protection, building containment and diversionary structures for the flight line and marina areas to prevent fuel spills from reaching Kaneohe Bay's Class AA waters, construction of a CSSG-3 painting enclosure that will not only reduce air emissions, but also improve vehicle maintenance and corrosion control, and upgrading large-capacity cesspools to protect groundwater resources. These projects employ state-of-the-art strategies to enhance and protect our ecosystems, improve air and water quality, conserve natural resources and contribute to the overall quality of life for personnel living and working aboard MCBH.

### **Education, Outreach and Partnering**

→ ***Motivated Children Recycle.*** In a continuing effort to enlist a new generation of recyclers, the Recycling Program held its annual Mokapu Elementary Recycling Challenge on America Recycles Day in November. The school generated 200 lbs of aluminum cans in FY05 and 4656 lbs of white paper in FY06 with the winning class being awarded the coveted prize of a class pizza party and a field trip to the Base Recycling Center to see their recyclables crushed, compacted, and baled.

→ ***Donations to Needy in Our Community.*** Our Recycling Manager worked with DRMO, local non-profit organizations, and the State of Hawaii to donate over 3,000 used blankets to homeless agencies and 60 excess church pews from the old base chapel to several community churches. DRMO waived the waiting period for donation and transferred the items to the State for distribution to programs serving the needy. **MCBH has earned the gratitude of the local community, enabling everyone to win by transforming waste into items of value that are used and appreciated.**

→ ***Committed Partnership Between DoD and Our Regulators.*** Representatives from EPA Region IX, State of Hawaii Department of Health (DOH), Coast Guard, Defense Logistics Agency, DRMS, and DoD installations in Hawaii formed the Hawaii Sustainability & P2 Partnership (HSP3) to develop model P2 initiatives, improve information exchange and protect our unique island environment, while maintaining national defense and community well being. Meetings held every quarter help us develop economical and innovative solutions to environmental compliance and sustainability issues.

→ ***First Installation to Participate in State Regulators' Compliance Assist Program.*** We volunteered to be the first installation to participate in the State Compliance Assist Program in May 2005. This provided us a unique opportunity to share our many successes with our regulators. We received invaluable insight from State DOH personnel that we

continue to use to improve compliance. As a result of a successful on-site evaluation, DOH granted MCBH a six-month RCRA compliance evaluation inspection amnesty. We both achieved our goals of improved compliance and communication. Due to our success, other DoD agencies have since volunteered for this program.

→**DoD Partnership Formed to Improve Contractor Compliance Saves \$25K.** We partnered with Hickam Air Force Base, Schofield/Wheeler Army Base, and Pearl Harbor Naval Base to improve contractor compliance at our installations. A web-based training program, the Environmental Compliance Assessment Tracking and Training System (ECATTS), was adopted as a joint-service initiative, because it could be customized to each installation's needs. We communicated our proactive efforts to State DOH regulators to assure them of our commitment to improve compliance with our contractors. Through this partnership, we realized over \$25K cost savings to implement and maintain ECATTS.

→**Critical Training Conducted for 3,535 Marines, Sailors, and Civilians.** In the classroom and out in the field, monthly New Arrivals Orientation briefs and quarterly Environmental SOP classes raised the awareness and educated over 3,500 base personnel on their role in preventing pollution and our efforts to support them. Topics included P2 and Sustainability, EMS, Natural/Cultural Resources, NEPA, Emergency Spill Response, Hazardous Material and Hazardous Waste, Storm Water Best Management Practices, Oil Water Separators, Solid Waste, Recycling, and Green Procurement.

→**Community Outreach.** We hosted over 700 visitors in outreach events to showcase our sustainability efforts. Visitors included community organizations (Sierra Club, Boy Scouts), State regulators, NOAA, DoD VIPs, scientists, and university students. We actively participated in beach clean-ups, Special Olympics, and community enhancement projects.

→**Published Articles Encourages Stakeholder Involvement.** Our base newspaper, *Hawaii Marine*, helped publicize implemented initiatives (Family Housing Reuse Room and waste minimization procedures being instituted at the Auto Skills Center); efforts of the HAZMIN Center and Recycling Program; upcoming events celebrating Earth Day; and tremendous energy savings associated with our Energy Management Program. Since the *Hawaii Marine* is distributed island-wide at all DoD locations, it informs a large audience of our successes and encourages stakeholder interaction and involvement.

### **Reductions Achieved**

- Weapons cleaning systems utilizing a non-toxic solvent reduces the time it takes to clean a weapon by 50%. Over 3,000 weapons are cleaned per week at MCBH armories, equating to an annual savings of \$4 million, which allows 360,000 Marine hours per year to be redirected towards mission essential duties.
- The MCBH Energy Management Program instituted proactive measures to achieve energy efficiency. Incorporating energy efficient features for construction projects saved over 16M kWh, 40M gallons of water, and over \$2M annually.
- By employing an effective risk assessment soil reuse strategy, we saved over \$3M and prevented a six-month delay to get new homes turned over to our Marine families.
- Our HAZMIN Center saved the Marine Corps \$1.6M by diverting over 107,000 lbs. of HM from disposal, redistributing excess at no cost to units, and reducing military labor required to manage HM.
- Aggressive efforts to target elimination of methylene chloride were achieved through the purchase of a heat paint stripping system, which utilizes non-toxic chemicals, significantly reducing military labor.
- We completely eliminated AFFF waste by using a NoFoam unit for Aircraft Rescue and Firefighting vehicle nozzle discharge testing for Marine Corps Air Facility personnel, saving \$12K annually in AFFF purchases.
- Our Water Reclamation Facility effluent was used to irrigate our golf course, saving 116M gallons of potable water, translating into \$255,000 savings achieved.

**SUMMARY**→**Model Stewardship.** MCBH continues to be a model steward of the naturally and culturally rich lands under its control, while providing responsive support to our operating forces to strengthen global power projection and improve quality of life. We have shown that the best P2 ideas not only achieve compliance with environmental laws and regulations, they also increase combat readiness through increased efficiency, as evidenced by phenomenal cost and labor savings achieved. With effective program management, stakeholder involvement, and innovative ideas, we continue to set the standard for environmental stewardship and sustainability, while providing uncompromising support to our nation's defense.

## Summary Narrative Page (for use in a brochure)

The Marine Corps Base Hawaii (MCBH) Environmental Department successfully developed and implemented sustainable pollution prevention (P2) initiatives, which not only ensured compliance with environmental regulations, but also improved combat readiness through increased efficiency. Our greatest environmental challenge lies in successfully executing these potentially competing tasks. Our best solutions involve P2, recognized at MCBH as a vital key to mission support and essential in conserving valuable military resources, while strengthening the trust of the community.

We support a work environment that: capitalizes on innovative ideas for using limited resources; integrates sustainable practices, which meet the needs of the present without compromising the ability of future generations to meet theirs; actively employs a systems approach that considers the environmental effects of all mission-critical decisions; and assumes a leadership role to protect the environment in those decisions. We believe P2 is the solution to compliance issues and we continue to expand our sustainability efforts by using fewer resources in a more efficient way.

Weapons cleaning systems installed at all our armories utilize a non-toxic solvent and reduced Marine labor by 50%. This initiative saves over \$4M annually and redirects over 360,000 Marine hours per year to mission essential duties. Our Energy Management Program instituted proactive measures to achieve energy efficiency for construction projects, saving over 16M kWh, 40M gallons of water, and over \$2M annually. By employing an effective risk assessment soil reuse strategy, we saved over \$3M and prevented a six-month delay to get new homes turned over to our military families.

Our Hazardous Materials Consolidation Program saved \$1.6 million in FY05-06, diverting over 107,000 lbs. of hazardous materials from disposal. Our Recycling Program diverted over 20,000 tons of solid waste from landfills. We donated used furniture and blankets to charities, earning the gratitude of the local community, enabling everyone to win by transforming waste into items of value that are used and appreciated. Aggressive efforts to target elimination of methylene chloride were achieved through the purchase of a heated paint stripping system, which utilize non-toxic chemicals. We eradicated AFFF waste at Marine Corps Air Facility by using the NoFoam unit, eliminating an environmentally harmful waste stream.

MCBH continues to be a model steward of the naturally and culturally rich lands under its control, while providing responsive support to our operating forces to strengthen global power projection and improve the quality of life for our military personnel and their families. With effective program management, stakeholder involvement, innovation and effectiveness, we continue to set the standard for environmental stewardship and sustainability, while providing uncompromising support to our nation's defense.



The MCBH Environmental Department continues to set the standard for environmental stewardship and sustainability while providing uncompromising support to our nation's defense.