

FY02 Secretary of Defense / Secretary of the Navy
Environmental Award - Pollution Prevention - Non-Industrial Installation
Marine Corps Base, Camp Pendleton

INTRODUCTION

Marine Corps Base (MCB), Camp Pendleton occupies 125,000 acres within northern San Diego County with San Clemente to the north, Oceanside to the south, Fallbrook to the east, and the Pacific Ocean to the west. The Base contains the largest undeveloped portion of coastline in Southern California. A leased portion of the northwestern area of the Base is leased to Southern California Edison for the purpose of operating the San Onofre Nuclear Generating Station. Camp Pendleton also supports the Marine Corps Mountain Warfare Training Center (MWTC), Bridgeport, California. MWTC is located on a portion of the Toiyabe National Forest on the eastern slope of the Sierra Nevada's. The main encampment is in northwestern Mono County, California, approximately 20 miles northwest of Bridgeport, California and 17 miles southwest of Walker. Between Walker and Bridgeport, Highway 108 intersects with Interstate 395, and the MWTC is four miles west along this east-west route through Sonora Pass.



Camp Pendleton supports approximately 24,000 military personnel, 4,650 civilian personnel, and has a population of more than 40,000 Marines and Sailors, with 13,000 family members living on Base and approximately 13,500 living off Base. MWTC Bridgeport provides a family-housing complex located 30 miles north on Interstate 395, in Antelope Valley.

Camp Pendleton is home to: the I Marine Expeditionary Force (I MEF); the 1st Force Service Support Group (1st FSSG); the 1st Marine Division (1st MARDIV); Marine Corps Air Station (MCAS) Camp Pendleton; Marine Air Group-39 (MAG-39); Marine Wing Support Squadron-372 (MWSS-372); U.S. Navy Assault Craft Unit-5 (ACU-5); and other Tenant Organizations such as 3rd LADD Battalion, MACS-1, MASS-3, 4th LAI, U.S. Naval Hospital, and the United States Army Reserve Center (USARC). The mission of Camp Pendleton is to operate an amphibious training base that promotes the combat readiness of operating forces by providing facilities, services, and support responsive to the needs of Marines, Sailors, and their families.

Camp Pendleton is considered one of the busiest Department of Defense (DoD) installations, and is the most complete West Coast military training facility, which includes the Marine Corps' largest amphibious assault training facility. Camp Pendleton controls and supports the training areas, ranges, and buildings within its boundaries. The Base's wide variety of training facilities includes beach and mountainous terrain for troop movement and small arms and artillery firing ranges. The Base conducts specialized schools and training as directed by the Commandant of the Marine Corps.

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BACKGROUND

The Pollution Prevention (P2) Branch is part of the Resource Conservation and Recovery Act (RCRA) Division of the Assistant Chief of Staff, Environmental Security (AC/S ES), MCB, Camp Pendleton. Two civilians and one enlisted Marine staff the P2 Branch. The P2 Branch is responsible for four (4) programs, which are the pollution prevention program, the hazardous waste minimization program, the pest management program, and the solid waste program.

The mission of the P2 Branch is: (1) to reduce hazardous materials use and decrease the release of pollutants into the environment to the minimum amounts achievable; (2) to facilitate cost effective reduction of the volume and toxicity of RCRA and non-RCRA hazardous waste as they relate to federal, state, and local regulations on MCB Camp Pendleton; and, (3) to identify and assist in resolving problem areas in Pollution Prevention and Environmental Management, recommending such actions as may be necessary to ensure compliance with all environmental programs.

Camp Pendleton is located in a state that continues to lead the nation in addressing environmental issues and regulatory enforcement. As a result, Camp Pendleton operates in one of the nation's most rigorous regulatory enforcement environments. Because of the many different commands and branches of the armed forces operating aboard the Base; the strict regulatory enforcement climate; and the various ecosystems about the Base, a successful Pollution Prevention Program requires extensive coordination with stakeholders. Camp Pendleton established the Unit Environmental Coordinator's Board. This board is comprised of representatives from all commands operating aboard the Base as well as all environmental departments. The board meets monthly to evaluate new and existing hazardous waste minimization proposals and their effectiveness; hazardous waste management; hazardous material management; toxic substances; spill response and prevention; environmental training; affirmative procurement; regulatory environmental inspections; as well as the effectiveness of existing environmental projects and programs. The Environmental Coordinator Board is notable for its teamwork, diversity, and integration with the mission.

PROGRAM SUMMARY

A comprehensive pollution prevention strategy requires the development and implementation of a Pollution Prevention Plan. The strategy should meet the requirements of Executive Orders 12856, 13101, and 13148. The Resource Conservation and Recovery Act (RCRA) and Title 22 of the California Code of Regulations require a

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plan/strategy to reduce the volume, quantity and toxicity of hazardous waste. The State of California also requires generators of hazardous waste meet to the requirements of the Hazardous Waste Source Reduction and Management Review Act of 1989, Senate Bill-14 (SB-14).

The P2 Branch meets and exceeds all of the above requirements. The P2 Branch provides Camp Pendleton with an effective strategy for attaining the goals set forth by these requirements. This is accomplished by reducing: (1) the generation of hazardous waste, (2) hazardous material use, and (3) toxic chemical release. Waste disposal will be minimized by source reduction, reuse, recycling, and treatment measures whenever possible, practical, and economical.

Camp Pendleton 2001-2003 Pollution Prevention Goals

GOAL 1. Ensure appropriate Camp Pendleton personnel receive integrated education and training in Pollution Prevention requirements.

GOAL 2. Promote Pollution Prevention awareness through multimedia outreach and awareness programs.

GOAL 3. Integrate Pollution Prevention concerns into entire life cycle on non-tactical, facility acquisitions/maintenance and supply increasing emphasis on internal and external communication.

GOAL 4. Implement Pollution Prevention projects to meet the requirements of federal, state, Department of Defense, and Marine Corps regulations and policies.

Camp Pendleton was one of the first Marine Corps installations to prepare and incorporate a comprehensive pollution prevention plan. The plan was first published in 1995, as required by Executive Order 12856, which mandated the preparation of federal pollution prevention plans. The P2 plan's third edition, published in September 1999, supports planning through an information baseline of material usage and waste generation, a description of management practices, and pollution prevention opportunities.

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Outstanding Program Features

Goal 1. Ensure appropriate Camp Pendleton personnel receive integrated education and training in pollution prevention requirements.

Objectives:

Develop and incorporate P2 modules for environmental seminars and training for supervisors (military and civilian) and MOS 9954.

Develop Integrated Pest Management (IPM) Plan and Base Order for Pesticide Applicator training based on IPM principles.

Develop and incorporate "Affirmative Procurement" training for all military and civilian employees aboard MCB Camp Pendleton, training the trainer.

Goal 2. Promote pollution prevention awareness through multimedia outreach/awareness programs.

Objectives:

Use monthly Environmental Coordinator meetings and seminars to promote and utilize Pollution Prevention ideas.

Develop Integrated Pest Management (IPM) brochures, videos, and handouts.

Integrate pollution prevention concerns into entire life cycle on non-tactical, facility acquisitions/maintenance and supply.

Participate in annual review of construction and maintenance boilerplate specifications from Public Works Department to ensure Pollution Prevention requirements/concerns are addressed in contracts and work orders.

Goal 3. Implement pollution prevention projects to meet the requirements of federal, state, Department of Defense, and Marine Corps regulations and policies.

Objectives:

Develop and maintain SB14, Plan, Hazardous Waste Management Performance Report, and Summary Performance Report.

Develop and maintain a Pollution Prevention Plan.

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ACCOMPLISHMENTS

Hazardous Materials Consolidation Program (HCP) and Hazardous Substance Management System (HSMS):

Camp Pendleton has developed an excellent Hazardous Materials Consolidation Program (HCP) utilizing the Hazardous Substance Management System (HSMS) to support tenant commands across the Base. A survey and analysis of hazardous material operations identified several areas for improvement. Previously, tenant organizations and units were purchasing more materials than they needed. The materials were not being completely used, which resulted in waste. Materials were not being tracked or managed to ensure that proper amounts were on hand. As a result, materials with expired shelf life were disposed of as hazardous waste.

Camp Pendleton has developed an extremely efficient program that addresses the areas of improvement identified above. MCB, Camp Pendleton provides centralized procurement; ensures that the correct type and amount of material is issued to the correct customer in a timely manner; monitors and tracks shelf life of all materials to avoid unnecessary waste; and re-issues unused, non-contaminated materials to tenants at no charge.

The cost savings to customers (cost avoidance, reuse, minimization and reduction of hazardous waste costs) have been enormous. Since the implementation in 1999, Camp Pendleton has realized the following cost savings:

Reuse Hazardous Materials Issued: \$1,005,846
Waste Disposal Avoidance: \$591,665

Hazardous Material Shelf life Extension: \$3,764,775
Waste Disposal Avoidance: \$521,541

More than 1,700 unique products and materials have been re-issued at no charge to customers. In addition, because of the careful monitoring and extension of shelf life, 1.6 million pounds of material have been issued as 'R' stock, which means the material is used rather than disposed of as hazardous waste. Careful monitoring of the shelf life of materials has also resulted in tremendous cost savings because less new materials are purchased and the fees associated with disposal of hazardous waste are reduced.

Energy Program

Camp Pendleton has an outstanding energy conservation program. The Base had an FY 2000 goal of reducing energy use per square foot

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by 20 percent from its FY 1985 baseline and an FY 2005 reduction goal of 30 percent from FY 1985. MCB, Camp Pendleton was further tasked to identify and accomplish all energy and water conservation actions that pay back in 10 years or less by FY 2005, and to improve the efficiency of all industrial facilities energy use by 20 percent by FY 2005.

MCB, Camp Pendleton has accomplished the 20 percent reduction and is well on its way to accomplishing the additional 10 percent by FY 2005. During 2002, Camp Pendleton aggressively reduced energy consumption by 6 percent. The delamping effort disconnected 20,285 lights base wide and installed 1,745 motion detectors/photo cells for an annual savings of 2,311,000-kilowatt hours (kWh). All Base traffic lights were replaced with LED lights for an annual savings of 1,350,000 kWh and Bachelor Enlisted Barracks had more than 20,000 incandescent lights replaced with compact fluorescent lights resulting in an annual savings of 850,000 kWh. Six warehouses were outfitted with solar day-lighting technology, thereby saving 300,000 kWh annually while several hundred electric dryers were replaced with natural gas dryers. An all-hands effort was in place to ensure Base wide energy awareness training was acknowledged. Sixteen solar-powered street lights/flashers were installed in remote hazardous areas, saving both energy and lives, while continuing a Resource Efficiency Manager Program, which has yielded more than a 450 percent return on investment through rebates, incentives, energy program development and financial analysis saving MCB even more.

The Base also qualified for more than \$200,000 in energy rebates. The Federal Energy Management Program, a program of the Department of Energy, highlighted the year when they honored MCB Camp Pendleton in October 2002, for utilizing its Utility Energy Service Contract with San Diego Gas & Electric to finance \$5.9 million in energy efficiency projects.

[Antifreeze \(Ethylene Glycol\) Recycling Program](#)

Camp Pendleton is currently recycling antifreeze on site through a service contract written by the Procurement and Contracting Division at Camp Pendleton.

A contractor uses a mobile antifreeze service that purifies and fortifies used antifreeze from non-tactical and tactical vehicles. Recycling services are provided within the confines of Camp Pendleton. Contractor's vehicle is mobile and the process is self contained which carries all necessary equipment and supplies to include chemicals necessary to perform the recycling services.

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The contractor performs a field test (pre-testing) to determine eligibility for recycling by first measuring the antifreeze for Ethylene Glycol content. Antifreeze with a minimum Ethylene Glycol content of 25% or greater is approved for recycling. The antifreeze is purified removing all contaminants except Ethylene Glycol and water. Chemical additives are introduced as required to ensure antifreeze meets or exceeds industry standards. The contractor will add new virgin Ethylene Glycol to the recycled product as required to achieve the requested ratio of antifreeze and water to complete the recycling process. An outside laboratory at approximately every 1000 gallons will perform periodic product evaluation.

Total Antifreeze Recycled During FY01 and FY02

FY 01	Recycled	10,175 GL	95,238 LB
FY 02	Recycled	11,947 GL	111,226 LB
TOTAL		22,122 GL	206,464 LB

Oil/Water Separator Program

In late FY 1999, Camp Pendleton contracted out the cleaning/maintenance of 100 plus Oil Water Separators. Using this process, the contractor has rendered all liquids and sludge contained in the OWS as "Non-Federally or state regulated." The processed water is recycled and replaced back into the existing OWS for further use. The treated water returned to the existing OWS is recycled until it contains less than 5 ppm Total Petroleum Hydrocarbons (TPH) and less than 30 ppm suspended solids. The treated water is then suitable for reuse in cleaning the oily sediments from the bottom of the OWS & or Lift Stations. The chemical solutions used for washing the sediments are then recycled on site. The sediments once treated will contain less than 2000 ppm (TPH) and contain less than 50% moisture content. Once this process is complete, the treated sediments are then taken to the Base's Class 3 landfill and used as cap.

Camp Pendleton currently has a 97.2% Waste Minimization credit.

Solvent Degreaser Program

Aqueous Based Parts Washers

Since the program started in 1996, Camp Pendleton has removed and replaced all permitted petroleum based parts washers in all motor transportation repair units, gasoline service stations, and industrial repair facilities. Each parts washer was replaced with state-of the-art aqueous based parts washers. Chemicals used in the parts washer are aqueous surfactants with POL microbes necessary for the process to work on the washed off POL's.

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Status of Aqueous Parts Washers

FY 01	72 PARTS WASHERS	3 AUTOMATIC WASHER
FY 02	120 PARTS WASHERS	11 AUTOMATIC WASHER
FY 03	120 PARTS WASHERS	11 AUTOMATIC WASHER
FY 04	(Increase) 135 WASHERS	(Increase) 15 AUTOMATIC WASHER
FY 05	(Increase) 145 WASHERS	(Increase) 20 AUTOMATIC WASHER
FY 06	(Increase) 150 WASHERS	(Increase) 25 AUTOMATIC WASHER

Solvent Based Parts Washers

The remaining permitted Petroleum Based Parts Washers on MCB, Camp Pendleton are located at the Base Armories. Camp Pendleton has removed more than 75 solvent parts washers from the Base since 1995. What remain are a total of 42 solvent based machines, a decrease of over 75% since 1995, saving more than \$25,000.00 per year. Camp Pendleton has also reduced the amount of cleaning services on these Petroleum Based Units from a monthly service to a quarterly service contract again saving more than \$18,000.00 per year. Camp Pendleton also saves more than \$4,000.00 per year, for permits not purchased.

Status of Solvent Parts Washers

PRESENTLY		42 PARTS WASHERS
FY 03	REDUCE NUMBER TO	38 PARTS WASHERS
FY 04	REDUCE NUMBER TO	30 PARTS WASHERS
FY 05	REDUCE NUMBER TO	0 PARTS WASHERS

Where we're going: Investigating new technology for weapons cleaning, reducing the need/requirement for petroleum based solvent, converting the remainder of our solvent parts washer to aqueous, as well as eliminating the air permits presently required.

Batteries Substitution & Recycling Program

In FY 2002, Camp Pendleton began shipping its waste batteries out as a "Universal Waste" for recycling, thereby eliminating several waste streams from its hazardous waste inventories. Camp Pendleton now receives certificates of recycling for each of its shipments of used batteries. One hundred percent of Camp Pendleton's used batteries are shipped as universal waste, excluding lead acid batteries. Intact lead acid batteries are shipped as a "recyclable material" and a certificate of recycling is provided for each shipment. By removing the lead acid batteries as a "Recycled Material" Camp Pendleton's lead acid battery waste stream has been reduced by over 75%.

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Transferred off site for Recycling (Pounds) to Date

Fiscal Year	LEAD ACID	LITHIUM	ALKALINE	NI-CAD
FY 01	47,122	51,302	55,773	6,057
FY 02	46,677	31,216	15,892	13,394

Off-site Recycling Goals

Fiscal Year	LEAD ACID	LITHIUM	ALKALINE	NI-CAD
FY 03	50,000	55,000	60,000	65,000
FY 04	35,000	40,000	45,000	50,000

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Summary of Achievements

Camp Pendleton plans and executes an extremely efficient Pollution Prevention Program and Hazardous Waste Minimization Program. Combined, these programs consist of hazardous materials consolidation; energy; antifreeze recycling; oil water separators; solvent degreasing; battery substitution; recycled rags, and the re-refined oil program. During the period FY01-02, the Pollution Prevention Program was successful in recycling over 206,000 pounds of waste antifreeze; recycling over 15 million pounds of waste Oil Water Separator Sludge, recycling over 260,000 pounds of batteries; and converting approximately 80 petroleum solvent automotive parts washers to aqueous solvent automotive parts washers. Camp Pendleton's pollution prevention strategy is implemented through a comprehensive pollution prevention plan. The strategy as well as the implementation of pollution prevention project meets the requirements of federal, state, Department of Defense, and Marine Corps regulations and policies. The execution of the strategy not only prevents pollution and protects the environment, but also is in direct support of the Base Commanding General's priorities, which support the Marine Corps' Strategic Goals.

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