

Naval Weapons Station Seal Beach

Sustainability, Industrial Installation Award Nomination 2011

INTRODUCTION – Naval Weapons Station (NAVWPNSTA) Seal Beach, California and its Detachments - located in Fallbrook and Norco, California - provide weapons storage, loading of ready-for-use ordnance, missile maintenance, weapons systems assessment, and support to ships of the United States Pacific Fleet, Coast Guard and international ships. The three locations, which are approximately 50 to 80 miles apart, are managed predominantly from Seal Beach. Environmental management challenges include operating within an intensely developed megalopolis which places high demands upon energy and water usage, creates pressure on remaining natural areas, and causes tight regulation due to air and water pollution impacts to both human health and the environment.



Location of Naval Weapons Station Seal Beach and Detachments Fallbrook and Norco.

SEAL BEACH



NAVWPNSTA Seal Beach is a key munitions supply point for the Pacific Fleet headquartered in San Diego. The base is host to Navy Munitions Command CONUS West Division (NMC CWD) and a component of NSWC Corona, as well as several other Navy and USMC commands.

One-fifth of the facility's land area, predominantly wetlands, has been designated as a National Wildlife Refuge and is home to several endangered and threatened species. The community is extremely active in the care of the refuge through numerous volunteer opportunities and outreach programs. The station is also home to the nation's West Coast WWII Submarine Memorial. Acres: 5,000 - Population: 1366

FALLBROOK



Detachment Fallbrook is home to the only West Coast air-launched missile maintenance facility. A unique component of the mission is to load amphibious assault ships with munitions via "vertical replenishment" pictured here. Fallbrook also provides support to USMC Camp Pendleton.

The Detachment is home to a variety of endangered or threatened species that share the base with their Navy neighbors in one of the few remaining open spaces in the region. Fire management poses a unique challenge in this dry southern California habitat. Acres: 8,852 - Population: 320

NORCO



Detachment Norco is home to the Naval Surface Warfare Center (NSWC), Corona Division. NSWC Corona performs weapons assessment and research work. The installation encompasses Lake Norconian which is part of a historic district dating back to the heydays of early Hollywood.

The man-made lake poses challenges for water conservation and historic preservation. Community interest is high in the historic properties as well as the natural resources potential of the lake. This has created opportunities for volunteer programs and engagement with local historical groups. Acres: 247 Population: 1,408

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Program Summary

The Sustainability Program is managed using the installation command Environmental Management System (EMS) as the overarching framework for continual improvement and for sustainability goal setting. The EMS encompasses all three installations and all tenants in order to employ an integrated and cross-functional approach.

Environmental Policy Statement

“We commit to... operate sustainably by implementing practices to reduce consumptions of resources and minimizing our environmental footprint.”

--Captain T. Auberry
Commanding Officer

Leadership is provided by the Environmental Top Management Council (ETMC) which is chaired by the Commanding Officer and includes the heads of each installation, major tenants and key organizational components. The ETMC is the **top-level “cross-functional team”** for developing and achieving sustainability goals and implementing Executive Order (E.O.) 13423 and 13514 at the installation level. Sustainability goal setting is integrated into the Installation, and fully aligned with the regional and CNIC, Strategic Plan. The Installation Environmental Manager and the Strategic and Future Requirements Manager collaborate and provide support to the ETMC. A management review of the EMS is performed annually by the ETMC to evaluate progress towards goals, program effectiveness and to provide direction to continuous improvement.

Cross-Functional Team Approach: The Naval Facilities Engineering Command (NAVFAC) Public Works Department (PWD) is the primary leader regarding facilities sustainment and transportation. The PWD has assigned a Utilities and Energy Manager to support the cross-functional-team effort and provides fleet transportation management.

A collaborative partnership between the Commander Navy Region Southwest (CNRSW) Sustainable Solid Waste (SSW) Program Manager and PWD Seal Beach is led locally by the on-site SSW / Recycling Manager.

Other key members on the ETMC:

- Public Affairs Officer
- Navy Safety Director
- Emergency Management Officer
- Federal Fire Chief
- Trip Reduction Coordinator
- Hazardous Materials Center Manager
- Security Officer
- Port Operations
- Training Officer (N7)

Supervisors and Environmental Coordinators across all work centers aboard the installations are engaged in support of the EMS and achievement of the sustainability goals. Technical support and guidance is provided by Installation Environmental Media Managers.

Environmental Aspects and Requirements Review (EARR): Installation policy instruction 5090.5A requires an EARR be performed for all new facilities / operations and for all substantial changes to existing processes, business practices and operations. The EARR process was refined during FY10 and 11 to incorporate evaluation of environmental aspects during project planning. Consideration of the installation sustainability goals as well as E.O. 13423 and 13514 objectives were also integrated into the project development and design. This best management practice has improved effectiveness of project reviews and improved achievement of energy and water conservation goals, as well as solid waste diversion and recycling targets. The EARR is the means by which the organization plans for sustainability and environmental readiness.

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Accomplishments in support of E.O. 13423

NAVWPNSTA Seal Beach has made significant progress in implementing sustainable practices, as defined in E.O. 13423. Significant achievements have been made to reduce energy and water usage, increase recycling, advance green buildings, and enhance education and outreach.

For example, progress toward achieving Executive Order water conservation goals to reduce the installations footprint has already exceeded the 2015 goal by more than 200%. Total annual cost savings in FY11 from energy and water reductions and from the recycling programs are estimated to be over \$1,300,000.

EMS OBJECTIVES & TARGETS as listed in the Installation Execution Plan

Installation Goal	Baseline	FY10	FY11	E.O. 13423 GOAL	Progress 2010-2011	Total Progress
Electricity (utility provided) is reduced by 30% in 2015 from a 2003 baseline. Seal Beach and Det. Fallbrook Only. (MBtu/KSF)	44.24	32.56	31.10	18% by 2012 and 30% by 2015	-9.8%	-29.7%
Electricity (utility provided) is reduced by 30% in 2015 from a 2003 baseline. Seal Beach, Det. Fallbrook with Det Norco added. (MBtu/KSF)	59.43	51.28	48.63	18% by 2012 and 30% by 2015	-9.5%	-18.2%
Renewable Energy is increased from a zero baseline by 5% in 2012 and 7.5% in 2015 Seal Beach and Det. Fallbrook. (Mbtu/KSF)	0.00	1013.00	2400.00	5% by 2012 and 7.5% by 2015	+2.5%	+4.3%
Water consumption (utility provided) is reduced by 5% per yr, and 40% by 2015 from a 2007 baseline. (KGAL/KSF)	67.01	46.81	43.61	10% by 2012 and 16% by 2015	-14.5%	-34.9%
Golf Course well water use is reduced by 2% annually (2010 baseline). (Acre-Ft)	652.70	549.30	394.81	E.O. 13514 Goal	-28.1%	-39.5%
Solid waste diversion rate is increased by 6% annually over 2008 baseline to a 50% diversion rate by 2015.	22.78%	47.36%	63.10%	50% by 2012	-	Exceeds Goal
Construction and Demolition waste diversion rate to exceed 50%.	72.62%	98.04%	98.59%	50% by 2012	-	Exceeds Goal

Energy Reductions Achieved – An overall reduction to energy consumption of over 25% has been achieved at Seal Beach and Fallbrook. This exceeds the E.O. 13423 based FY11 target of 18%. Throughout FY10 and 11, **energy reductions have saved \$370,000**. The recent success in energy reduction is due greatly to the installation of several roof top photovoltaic systems and other large energy efficiency projects. The installation is incorporating energy efficiency reviews into all maintenance and new construction projects.

The Energy and Water Reduction Plan (E&WRP) is at the center of these achievements and was completed in 2010 and uses a proactive approach toward achieving the long term E.O. 13423 and E.O. 13514 energy and water reduction goals. The E&WRP identifies specific energy savings projects and actions and projects the reductions against the goals through FY15. The Plan incorporates projected performance data to prioritize projects, determine if additional projects are needed, and serves as a project management tool to ensure timely execution of projects.

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Renewable Energy Photovoltaic (PV) Systems went online in FY11 and now total about 400 kiloWatts. The PV systems create an annual savings of over \$90,000 and now generate 4.3% of energy needs, which is over half way to the E.O. goal.



Rooftop photovoltaic system at Seal Beach.

Utility Energy Service Contract was completed in FY11 at NAVWPNSTA Seal Beach. The project focused on energy efficient lighting, heating, ventilation, and air conditioning (HVAC) systems throughout the base. Annual savings of \$125,000.

Advanced Meter Infrastructure (AMI) Project was designed and awarded. Installation at all 3



Advanced Meter

installations is in progress and includes electric, gas, and water meters to record energy consumption data in 15 minute intervals. The data collected will enable detailed analysis of usage

and more importantly, the AMI will be able to pinpoint usage by tenant and building and support implementation of the E&WR Plan.

Beginning with FY11, the **energy consumption goal for the host installation was expanded** to include the major tenant command at Detachment Norco (NSWC Corona Division.) The tenant's mission entails maintaining tightly controlled laboratory environments; an intensive energy consumer. The adjusted overall energy reduction achieved through FY11 is 18.2% and is still on track to meet E.O.

13423 goals. The E&W Reduction Plan addresses NSWC's needs and reduction targets.

Water Conservation: 35% Reductions Achieved as of end of FY11, well ahead of the 8% target based upon E.O. 13514. Water reductions have lowered utility bills by \$68,000 per year in FY10 and 11. Reductions have been realized through a number of system upgrades, monitoring, and awareness initiatives. Highlights include:

Use of Central Weather Smart Irrigation Systems which analyze weather data and soil moisture conditions to regulate irrigation automatically. Phase three of five planned systems was installed in FY11. The systems also track usage by irrigation zones.

Water Distribution System Upgrade at Fallbrook began in FY11 and includes major system repairs to prevent line breaks and reduce line loss. Estimated annual reductions exceeded 1,000,000 gallons.

Well Water Use Reductions - The Navy Golf Course, run by Morale Welfare and Recreation (MWR), uses well water for irrigation. Well water is pumped into landscape ponds and then to the irrigation system.

During FY11, the primary water conservation focus was on reduction of the irrigation footprint. Approximately 700 sprinkler heads (out of a total of 2,762 heads) were either capped or replaced with half-heads to confine watering patterns to in-play areas. Additionally, an 18 acre footprint reduction of out-of-play areas was implemented which resulted in a 17,000 kgal reduction of water use from wells.

To complement the footprint reduction, a full system audit was conducted to identify opportunities for further improvements. A fine-tuning of individual sprinkler heads and reprogramming of the irrigation system with more than twice the number of original control programs was implemented. Results include better system control and elimination of numerous over-watered areas which will further contribute to water use reductions in the future.

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SUSTAINABLE SOLID WASTE PROGRAMS

The Sustainable Solid Waste (SSW) Program (SSW) is a Qualified Recycling Program (QRP) The overarching goal is to divert solid waste from going to landfills, reduce waste streams, prevent pollution, decrease solid waste disposal costs and conserve material resources. Program components include: Municipal Solid Waste (MSW), Construction and Demolition (C&D) debris, Class III Property (C3P) reuse, and universal waste management.

Municipal Solid Waste Management (MSW) achieved a 63% diversion rate in FY11. Methods employed include techniques to make recycling easy, such as through the use of desk-side recycling bins and by providing separate containers for scrap metal, cardboards, paper, plastics, glass and cans. Extensive awareness programs for all employees and contractors, including improved signs, such as a front gate Awareness Banner, have further encouraged recycling. Continuous monitoring of municipal waste dumpsters and construction sites has been integrated into the Public Works service and construction contract oversight. In FY11 alone, the MSW disposal cost avoidance was \$406,694. In addition to these formal program components, the SSW also supports the recycling of green waste and composting. In projects involving vegetation trimming, clearing and grubbing, program management provides direction and assistance in developing specifications in the scope of work to ensure green waste recycling.



Awareness banner posted at the NAVWPNSTA Seal Beach Front Gate.

The Construction and Demolition (C&D) Debris Recycling Program requires all significant construction projects provide a solid waste management plan or waste assessment form. Monthly reports during construction track in detail materials recycled and diverted from landfill disposal. Diversion rates for C&D debris for FY10 and 11 and been well over the 50% goal.

The SSW Program Coordinators have researched the recycling market regionally and have provided awareness to contractors who may have previously been unaware of the availability of construction debris re-use / recycling avenues. Local re-use / recycling has proven to lower costs, reduce transportation costs and preserve limited natural resources. For example, last year 745.5 tons of asphalt and gravel were recycled for reuse on-board the installation thereby avoiding transportation costs and reducing the "footprint" while also saving \$75 per ton in landfill disposal fees. The C&D Recycling Program achieved a disposal cost avoidance of \$141,214 in FY11.

The Class III Property (C3P) Reuse Program provides a market for reuse of Class III property, such as office furniture and government owned audio-visual equipment. In addition to boosting diversion rates and lowering disposal costs, the C3P Program yielded \$270,278 procurement cost avoidance in FY11 and contributed to solid waste diversion rates of over 70% and 90% for FY10-11.

Through the C3P Program, the materials identified and classified as reusable are made available to Navy organizations throughout the region. At the heart of the C3P Program is the on-line catalogue of reusable items that is accessible on the Navy Region Southwest "Gateway" intranet. Items may be picked up by customers from either a central warehouse, or from "in-place" locations. Another innovative approach is the development of partnerships with local charitable organizations to provide another avenue for the reuse of Class III Property.

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MASTER PLANNING & GREEN BUILDINGS

A multi-disciplinary approach is taken with **Master Planning and Green Buildings** during the planning process. Leadership in Energy and Environmental Design (LEED) requirements were incorporated into Request for Proposals (RFP) for construction and major renovation projects at NAVWPNSTA Seal Beach. Furthermore, the RFPs also encouraged contractors to develop a design that obtains a maximum number of points from criteria to directly support the installation sustainability goals for water and energy conservation. Project designs that were completed in FY10 and 11 and are currently under construction include:

The Marine Corps Reserve Training Center military construction project (MILCON) will achieve LEED Gold Certification. Low impact development design features have been implemented for management of storm water runoff in support of the Energy Independence and Security Act of 2007 requirements. The landscape design follows the Installation Landscaping Plan which emphasizes the use of drought tolerant native species to reduce the irrigation needs.

Most notably, the building design will produce a **net-zero electric facility**—the building will only consume as much electricity as is generated by roof mounted photovoltaic panels; parking lot lighting will also be solar powered.



Artist rendering of the LEED Gold Marine Corps Reserve Training Center at Seal Beach

Fire Station Renovation will produce a Certified LEED Silver building. The design includes features to reduce water consumption by 20% or more. The heating, ventilation and air conditioning system, lighting, and other electrical components will optimize energy performance to achieve a 30% use reduction below the 2003 baseline.

LED used for Perimeter Security Lighting rather than using traditional high pressure sodium light fixtures. Through the integrated design process in FY11, the project team selected LED fixtures which consume 75% less energy and contain no mercury, unlike traditional lighting fixtures.

Facilities Footprint Reduction and Space Consolidation at Detachment Fallbrook was a key installation goal for FY10 and 11. The initiative comprised of both space consolidation among three tenants and demolition of excess and antiquated facilities.

Demolition reduced the total facility area by 50,000 square feet, much of which was 1940's era construction. Included in the demolition was Fallbrook's former housing area with an approximate gross square footage of 18,234. Demolition of these buildings reduced overall facilities sustainment costs and resulted in an overall reduction in energy and water usage. For example, the demolition of the sub-standard housing eliminated the maintenance and irrigation needs for 9 acres of improved grounds.

A **space consolidation initiative** was executed during FY10 and 11 that analyzed administrative office needs of three tenants and the host command. Reconfiguration to create shared facilities eliminated redundant training and conference rooms and eliminated the need for 16,636 square feet of building space. An existing building was renovated with energy saving lighting controls and energy efficient mechanical equipment to further energy reductions.

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Spaces were outfitted with either reused furniture from the C3P Program or new sustainable products.

EDUCATION, OUTREACH & PARTNERING

The centerpiece of the awareness and engagement program is the annual **Sustainability FairE** held at Seal Beach. The overarching theme of the FairE is to inform participants of the Installation's sustainability goals and to educate people in a fun way to promote sustainable living. The event's objective is to help individuals create a positive change in their lives to support sustainability, at home and in their communities as well as in the Navy work place.



Booth at the 2011 Sustainability FairE

The 4th Annual Sustainability FairE May 26, 2011

The FairE (The "E" stands for "Environment") emphasized the multi-faceted nature of sustainability and therefore draws active participation from multiple organizations, both on and off base.

Navy organizations collaborate to create the event and include: Occupational Safety, Fire Safety, MWR Health and Fitness Program, Recycling, Trip Reduction, Energy Manager and mission tenants.

External participants include regulatory and resource agencies and community organizations: Southern California Edison, The Gas Company, South Coast Air Quality Management District, Orange County Water District, Orange County Sustainability Collaborative, Save Our Beach and the US Fish & Wildlife Service, National Wildlife Refuge and "Friends of the Seal Beach National Wildlife Refuge."

The neighboring McGraugh Elementary School 3rd and 5th grade classes developed educational booths and taught participants how to make "square foot gardens." The recycling interactive exhibit was supported by the Navy Recycling Program and QRP funds and included benefits of recycling and consequences of landfill waste. The participants were encouraged to learn about each of the Installation's Sustainability Goals and answer sustainably related questions. Participants who successfully completed the "Sustainability Passport" were rewarded with eco-friendly products to take home, courtesy of the FairE vendors.

Seal Beach National Wildlife Refuge (NWR) –The Navy, U.S. Fish and Wildlife Service, "Friends of the Seal Beach NWR," and community volunteers work side-by-side to ensure the protection of a number of endangered and threatened species and the long-term health of the ecosystem.

National Public Lands Day Annual Events - National Public Lands Day events were hosted at all three installations. Events focused on sustainability through clean-up and native planting to restore habitat area. Funding for these events have come from the Department of Defense Legacy Awards allowing, on average, over 200 volunteers from scout groups, local businesses and the community to participate in these successful events that showcase the Navy's ongoing commitment to environmental stewardship.



Volunteers celebrate the completion of a clean-up day at Detachment Fallbrook.