



**FY 2017 SECRETARY OF DEFENSE ENVIRONMENTAL AWARD
JOINT EXPEDITIONARY BASE LITTLE CREEK-FORT STORY
ENVIRONMENTAL QUALITY, NON-INDUSTRIAL INSTALLATION**



Fig. 1: JEB Little Creek-Fort Story

Introduction On 1 October 2009, Hampton Roads' first Joint Base, Joint Expeditionary Base Little Creek-Fort Story (JEBLCFS), was established (*Fig. 1*). As the major east coast operating base supporting Overseas Contingency Operations, the mission of the base is to “contribute to maximum military readiness by providing sustained superior service.”

JEBLCFS provides support services to 100 shore-based resident commands, 25 home ported Navy and Auxiliary ships. Consisting of 3,838 acres with seven-and-a-half miles of beachfront training area, 1,203 facilities, and 61 piers, the base employs 23,031 military and civilian

personnel. It is the only bare-beach Joint Logistics Over-The-Shore training site within DOD; the only east coast Advanced Explosive Ordnance Disposal Training facility; and supports nearly all Navy Special Warfare training requirements.

Located in Virginia Beach, Virginia, JEBLCFS lies within the Chesapeake Bay watershed (*Fig. 2*). Little Creek Harbor is a 470-acre tidal estuary of the bay, serving as a wildlife habitat and pollutant filter. Riparian forest and dune systems, critical to coastal ecosystems, are found on JEBLCFS. The base and surrounding community area are used for industrial, recreational, commercial, and residential purposes. Terrain within and adjacent to the facility is low-lying and relatively flat, containing freshwater lakes and saltwater bodies.

JEBLCFS is adjacent to the Atlantic Ocean and Chesapeake Bay, substantial sources of recreational opportunities and commercial industry. Chesapeake Bay is North America's largest and most biologically diverse estuary. Commercial and recreational fishing are vital activities in the area.

Environmental Management Environmental protection is an integrated, ongoing, critical part of the installation's mission; environmental staff ensures protection of resources and compliance with regulatory permits to keep training sites and facilities fully operational at all times. The need to stay in compliance is accentuated by the installation's location in an environmentally-sensitive area.

The Environmental (EV) Division is part of JEBLCFS Public Works Department; the Director works directly for the Public Works Officer (PWO). The EV Division Director communicates routinely with senior leadership, including the Base Commander, on critical environmental issues. EV Division staff consists of a Director; one Environmental Protection Specialist (EPS), Team Leader; three EPS team members; and one Natural Resources Specialist (NRS). Environmental permits are centrally managed by the Hampton Roads' EV Core staff (located in Norfolk), while the EV Division interfaces with resident commands' operational process owners, and inspects those processes.

The base has a fully-conforming Environmental Management System (EMS). With 11 positive observations and 8 minor findings after our 1 – 5 May 2017 External Audit, the base was able to immediately re-declare ISO 14001:2004 conformance.

In FY16 and FY17 the installation has enjoyed many **partnerships with the community** and resident commands:

- Coordinated Construction Battalion Maintenance Unit (CBMU) 202, Port Operations, Safety, Morale Welfare and Recreation (MWR), Training Department volunteers, base residents and employees to install 3,500 feet of fencing and relocate 721 Christmas trees to collect sand and stabilize dunes in Jan 2016 and 2017 (*Fig. 3*).



Fig. 2: JEBLCFS location

- Conducted Earth Day celebrations, attended by over 100 children at the Child Development Centers, through efforts of MWR, and Recycling staff volunteers.
- Executed annual Clean the (Chesapeake) Bay Day with base staff and community volunteers collecting in excess of 3,841 lbs of trash by 395 volunteers.
- In partnership with the National Environmental Education Foundation (NEEF) 41 Military and Civilian volunteers celebrated National Public Lands Day by planting 15,900 native dune grasses on JEBLCFS primary dune systems covering 1.2 acres.
- Continued US Fish and Wildlife Service MOU for cost-free endangered sea turtle beach patrolling.
- Received four Hampton Roads Sanitation District (HRSD) Pollution Prevention Partner Awards.
- Partnered with Shelton Park Elementary School allowing students to grow oysters in floats on our oyster reef, and monitor oyster growth monthly throughout the school year.
- Partnered with Virginia Game and Inland fisheries to establish bass habitat in Lake Bradford by sinking 91 Christmas trees in three different locations. Juvenile bass utilize the trees as protection from larger fish, providing them an opportunity to grow and re-establish the game fish population.
- With University of Maryland (UoM) and Low Impact Development (LID) Center of Beltsville, MD, partners, special filters were designed, developed and installed in the drydock's storm drain system.
- Worked with Virginia Department of Forestry and Arbor Day Foundation for 20th Tree City Award.
- With partners EPA and Virginia Department of Environmental Quality (VDEQ), our Restoration Advisory Board (RAB) is fortunate to have two community members serving for over 22 years.



Fig. 3: Volunteers off-loading Christmas Trees for use in dune restoration

Significant plans and agreements:

- Drinking Water Bacteriological Plan, Jul 2016
- Disinfectant By-Product Plan, Apr 2016
- Environmental Management System (EMS) Document Library, continually updated
- Hazardous Material, Hazardous Waste, Minimization & Disposal Guide, Revised May 2016
- Hazardous Waste (HW) Contingency Plan, Mar 2017
- HRSD Pretreatment Device Management Plan, JEBLC Revised Aug 2015; JEBFS Revised Jul 2013
- Integrated Natural Resources Management Plans (INRMP), Apr 2017, Updated in 2017
- Internal Audit Plan (IAP), Feb 2017
- Oil Discharge Contingency Plan/Facility Response Plan, Sep 2016
- Integrated Pest Management Plan, Revised Apr 2016
- Regional Clean Air Compliance Guide, Dec 2010
- Regional Spill SOP, Revised Sep 2016
- Regional Tennant Spill SOP, Oct 2016
- Spill Prevention Control and Countermeasure (SPCC) Plan, JEBLC Sep 2013; JEBFS Aug 2013
- Storm Water Management Phase II Plan, Revised Aug 2016
- Storm Water Pollution Prevention Plan (SWPPP), JEBLC Revised Jun 2017; JEBFS Dec 2016
- 5-Year Environmental Restoration Plan, JEBLC Mar 2014; JEBFS Oct 2013

Awards:

- 2015 JEBLCFS Secretary of the Navy Energy and Water Management Gold Award
- 2016 JEBLC HRSD Outstanding Environmental Compliance Gold Award
- 2016 JEBLC HRSD Pollution Prevention Partner Award
- 2016 JEBFS HRSD Outstanding Environmental Compliance Platinum Award
- 2016 JEBFS HRSD Pollution Prevention Partner Award
- 2016 JEBLCFS Secretary of the Navy Energy Achievement Platinum Award
- 2016 DoD National Public Lands Day Legacy Award (\$3,591)

- 2017 JEBLC HRSD Outstanding Environmental Compliance Gold Award
- 2017 JEBLC HRSD Pollution Prevention Partner Award
- 2017 JEBFS HRSD Outstanding Environmental Compliance Platinum Award
- 2017 JEBFS HRSD Pollution Prevention Partner Award
- 2017 DoD National Public Lands Day Legacy Award (\$4,283)

Program Summary JEBLCFS’s program consists of an active ISO 14001:2004-compliant EMS program, with a complete and accurate Internal Audit Plan (IAP), use of an installation cross-functional team to meet sustainment goals, and Natural Resource conservation.

The program was **initiated** to meet Navy and Executive Order (EO) goals and improve regulatory compliance. The EV Division’s **mission statement** is: “Ensure compliance, with little or no impact to the military mission, while protecting our environment for future generations.” Our **strategy** is to execute the IAP in an accurate and timely manner; maximize communications within and outside the command; and exercise proficiency and professionalism in the execution of our duties. Our **goals** are to have zero findings in all regulatory inspections; zero findings in External Audits; and achieve significant aspect objectives on time.



Fig. 4: “CARE” logo

EMS indoctrination training is required for all personnel working on base and a wallet-size EMS “green card” with our Environmental Policy Statement (*Fig. 4*), Significant Aspects, and Objectives is carried by all base personnel. As members of the EMS Cross-Functional Team, we work toward improvements in recycling, building construction, and green purchasing while protecting natural resources and reducing toxic chemical use, energy, and resource consumption.

The **primary benefits** of the program are that we continue to have a successful environmental compliance inspection program while protecting human health and the environment and reducing our carbon footprint and operational costs.

The **keys to our success** are leadership focused on environmental protection and goal attainment; effective educational programs; use of a sustainment study; and incorporation of sustainment goals into future construction and training plans.



Fig. 5: Supervisor provides CARE card

Command emphasis: The Commanding Officer (CO), Executive Officer (XO), and Deputy Commander have directly engaged with resident commands/operators to ensure they understand that EV compliance is a priority. The CO personally visited hazardous waste sites and industrial areas to ensure all excess equipment and material was properly disposed and to verify all areas on the installation were in tip-top shape for our External Audit. Additionally, the CO, XO, and Deputy conduct weekly zone inspections to ensure areas are properly maintained.

Our EMS provides us with a tool to incorporate risk management in daily work and focus on our significant aspects and objectives.

Significant aspects and respective objectives are Hazardous Waste:

Reduce internal compliance findings by 10%; Tank Management: Reduce internal audit findings by 20%; and Construction Storm Water: Reduce oversight inspection repeat findings by 3%. During award period, each goal was exceeded by 4%, 28%, and 97%, respectively.

JEBLCFS had **8** federal, state and local agency inspections during the award period; **all inspection reports had zero discrepancies.**

Accomplishments:

EMS Our EMS is reviewed and updated on a bi-monthly basis for all Hampton Roads installations through a regional Environmental Quality Management Board (EQMB). The EQMB sets objectives and targets which are discussed and approved by environmental managers. Success is tracked and published for EQMB members and chain of command use.

Using a Plan of Action and Milestones (POAM) to correct Internal Audit (IA) findings, these findings were communicated to the EQMB as lessons learned for other installations and changes were made to IAPs to ensure specific inspections were carried out in the Hampton Roads area to correct deficiencies before they became findings during regional regulatory inspections and IAs. Following our External Audit, JEBLCFS authored “Lessons Learned” briefing for Commander Navy Region Mid-Atlantic to assist installations in improving their EMS. This brief has been exported to other Navy installations.

Stakeholders at all levels are involved in the EMS process to address significant aspects (Fig. 5). In addition to soliciting improvement ideas from the PWO and base front office during monthly meetings, we meet with resident commands to receive recommendations for program improvements. Our Transportation Group is incorporating energy efficient vehicles and fuels into the fleet; we currently have 40 ethanol, 302 flex fuel, and 15 hybrid vehicles in use. EO 13693, signed Mar 2015, requires installations to implement the use of alternative fuels; E85 accounts for 22,111 gallons or 30% of gasoline used annually. Additionally, we work closely with the Recycling office to maximize recycling opportunities. Feedback from classroom and on-the-job training is incorporated for process improvement. The installation environmental policy and EMS goals are distributed on a weekly basis, published in the Plan of the Week, and are “advertised” on electronic reader boards at the entrances to our properties.



Fig. 6: EMS “Green Card”

mammal strandings, are readily reported as personnel know why they are required to report and how such data can help us improve our program.

The EV staff manages a total of 11 permits from VDEQ and HRSD and conducts over 6,000 oversight inspections annually of resident commands to ensure permit compliance. All inspections are entered and tracked utilizing EMSWeb for immediate review by Core and installation EV staff for problem identification, root cause and trend analysis. Our inspection records are kept for a period of 5 years; backup hardcopies of inspections are meticulously maintained and organized by media for regulator viewing.

Waste and Pollution Reduction Efforts JEBLC invested \$3.9M to improve 13 waste water facilities; work consisted of upgrades, lift station repairs, sanitary sewer line replacements, and lining 4,500 linear feet of sanitary piping. JEBFS is contractor owned, however it is expected that the entire sanitary sewer system will either be replaced or lined by the end of 2018. Overall, 67% of 122,161 linear feet of piping at JEBLC has been lined in an effort to meet infiltration and inflow elimination goals for a region-wide HRSD order expected in 2018.

The steam plant uses reverse osmosis (RO) technology; the RO system purifies potable water to reduce tube fouling, increase boiler efficiency, and decrease boiler run time. Routine RO filter cleaning results in a measurable economic savings by reducing filter replacement frequency. As a result, the steam plant had zero numerical effluent violations, zero inspection violations and improved

quality wastewater discharges that have been very consistent and in compliance with permit limits. Waste water disposal costs are lower since feed water demineralization and associated chemicals are eliminated. Water reuse and other new steam plant efficiencies reduce consumption by as much as 1 million gallons per year. Steam distribution system improvements account for a 172 billion BTU reduction in annual energy requirements.

EO 13693, requires energy reduction of 2.5% per year for 10 years or 25% by 2025. To meet the goal JEBLCFS has executed 2 major projects: a Utility Energy Service Contract; and a retro-commissioning project

Using a business card template, 20,000 “Green Cards” containing EMS “CARE” slogan, significant aspects, objectives, targets, spill, and EMS training information were disseminated base-wide (Fig. 6). CARE brochures and posters are posted at pass offices and work areas. 4,140 personnel received classroom training on EMS, SPCC, spill reporting, and our SWPPP with 16,950 additional personnel completing EMS training online.

The positive impact of our EMS is demonstrated by an outstanding compliance record and increased awareness. Spills, regardless of size, and other environmental issues, such as marine

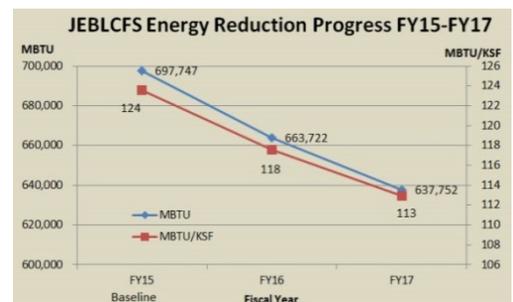


Fig. 7: Energy Reduction Progress

which will fine tune HVAC systems to their most energy efficient setting. These two projects have a combined estimated savings greater than \$800K/year for the next 20 years. JEBLCFS has also implemented additional energy conservation projects and obtained a reduction of more than 4% a year for the past 2 years, exceeding the 2.5% goal (Fig. 7). Overall thus far, base energy reduction since 2015 (baseline) is 8.5% surpassing EO 13693 requirements. Also during this award period JEBLCFS received the Secretary of the Navy Gold and Platinum Level Energy Management Awards.

Although JEBLCFS's growth continues in both the number of facilities and personnel, during this award period we have seen a 14.5% reduction in potable water usage; currently, JEBLCFS consumes 174,233,000 gallons annually. Since 2007, the base has seen an overall reduction of 54% in potable water usage.

We continue to recycle waste amalgam from dental work. Amalgam consists of 50% mercury with the remaining 50% comprised of silver, copper and tin. This program avoids disposal costs of \$35,000 per year while reducing solid waste generation. Our Recycling Program consists of the collection, segregation and sale of scrap metal, aluminum cans, cardboard, paper, antifreeze, concrete and construction debris, lead-acid batteries and other commonly recyclable items. JEBLCFS has an average diversion rate of 33% for the past two years, with a total cost savings of \$330,075.

Navy policy directed storm water LID be incorporated into new construction projects by 2011; JEBLCFS exceeded this goal by creating 9 LID sites prior to 2008. During FY 2016 and 2017, eight sites were added for a total of 138 sites collecting 95 acres of runoff.

During this award period 6 newly-constructed facilities were Leadership in Energy and Environmental Design (LEED) certified by the Green Building Council. LEED certification is a globally recognized symbol of sustainability achievement. All facilities were constructed utilizing recyclables, energy efficient equipment, low – emitting adhesives, sealants, paints, and carpets and the construction of LIDs.

Our Storm Water Pollution Prevention Committee meets monthly to discuss Best Management Practices and to address resolutions of newly-identified pollution issues. In an effort to educate the public and maintain correct permit compliance, all regulated outfalls were marked with numbered reflective markers, and 400 storm drain medallions stating “No dumping; drains to waterway” were installed at high priority drain inlets. Additionally, a new and innovative product called “Myclex” was installed in a wash rack storm drain system. This product absorbs oil sheens; thus, preventing oil from reaching the Chesapeake Bay. We implemented a policy to purchase drain inserts and absorbent socks; these items are strategically placed around the installation to reduce non-point source discharges in high-pollution areas. Newly innovated heavy metal collecting drain inserts have been installed at nine locations. After installation of heavy metal collecting drain inserts, the average concentration of zinc in the discharge decreased to 130 ug/l, with a high concentration of 303 ug/l. This represents an average decrease of 75% and a ten-fold decrease in the maximum concentration of zinc discharged. There have been no illicit discharges since their installation.



Fig. 8: Sailor Changes Stormwater filter

A drydock feasibility study was conducted to determine the source of elevated copper and zinc levels in storm water discharges; it is believed that the source of the elevated metals is caused by antifouling paints, chains, bolts, welded areas, and other typical metal parts and equipment inherent to a drydock along with the constant exposure to salt water which promotes corrosion and increases the leaching of metals. While identifying these possible sources we partnered with UoM and the LID center of Beltsville, to fabricate and install special metal absorbing filters in discharge points to reduce heavy metal discharges. Early sampling has indicated a general decrease in copper and zinc. These efforts are playing a key role in keeping the drydock in service which is critical for operational vessel maintenance support (Fig. 8).

Protecting human health and the environment is at the forefront of all decision making when remediating our 14 environmental restoration (ER) sites. Routine assessment of vapor intrusion at Site 11 and Site 13 demonstrates JEBLCFS's commitment to ensuring employees of buildings within and adjacent to the sites are not exposed to contaminants associated with the underlying groundwater plume. Vacuum canisters collected air samples in offices, classrooms, and shop areas. The data proved employees were not at risk.

Environmental Compliance Assessment and Management Program

The EV staff utilizes 41 media-specific checklists to cover requirements of federal, state, and local regulations. Four EPSs are responsible for overseeing permits pertaining to day-to-day operations; the staff consistently conducts and documents all compliance inspections into EMSWeb, which total over 6,000 inspections annually, as prescribed by our IAP. Related findings are discussed weekly to prevent recurrence. JEBLCFS resolves 98% of all findings quarterly and has a less than 1 percent repeat finding rate. During our last External Audit, auditors recognized 11 outstanding practices; most significant was all personnel interviewed had knowledge of the base's EMS. To foster environmental excellence throughout the base we have incorporated methods such as hands-on training; consistent and concise communications; weekly site visits; and 20,000 EMS "Green Cards". We provide solutions to overcome problems that may impact the installation's permits and compliance. Regulated compliance points, such as HW Accumulation Areas, wash racks, oil water separators, paint spray booths, firing ranges, solvent tanks, and fuel storage tanks are routine inspection areas. These inspections allow the identification and resolution of compliance issues prior to an inspection by a regulatory agency; thus, preserving the ability of the commands on base to perform their respective missions.

As a result of its outstanding compliance record, JEBLCFS enjoys a positive relationship with its regulators. Working closely with VDEQ, we have negotiated JEBFS's storm water permit from an individual to a general permit by removing operations not discharging to "waters of the state"; thereby, reducing laboratory and permit fees by \$6K annually.

Range residue issues were identified by personnel at our base. The explosive nature of range residue on ranges was seen as a health and safety impact which needed immediate attention. We took a hard stand on the issue and repeatedly called Navy Region Mid-Atlantic to insist they research the problem. We would not take "no" for an answer. Our suspicions were correct: For a time all indoor ranges in the Navy were closed until an effective, safe, and environmentally sound way to deal with the explosive debris was initiated. As a result new cleanup procedures have been finalized using explosive proof vacuums and a sweeping compound, at all Navy ranges. All indoor ranges are now operating in a manner that is safe for human health and the environment – this benefits all military personnel.

To provide a "how to" for our customers, Air, HW, and Explosive HW Guidebooks are in use to define local environmental policies, guidance, and operational procedures, including standardized compliance procedures and recordkeeping forms for air equipment and HW Accumulation Area operators. To prevent storm water pollution, control nuisance animals, and keep the base litter free, we have designed and installed decals on all trash dumpsters instructing personnel to "Keep critters out and litter in" (Fig. 9). The 600 signs reinforce our EMS Program while serving a practical purpose to meet program goals.

Classroom and on-the-job training is conducted for commands and ships, covering general and media specific subjects. We have conducted training for 4,140 sailors, marines, and soldiers. Training is also completed online through the Environmental Compliance Assessment, Training, and Tracking System (ECATTS).

We manage 36 oil water separators and numerous sanitary sewer pretreatment devices. To ensure proper operation, Pretreatment Device Management Plans and self-assessment inspection checklists were developed. Based on a sound compliance record, we negotiated monitoring frequency reduction at all waste water sampling locations resulting in annual analytical savings of \$9K.

In support of the construction program, environmental staff reviewed 36 construction designs for environmental compliance criteria, attended 404 preconstruction meetings, and held two training sessions for Construction Managers and Engineering Technicians. We created a Pre-Construction Conference Checklist to provide contractors with work site environmental requirements; this checklist was exported for regional use. Storm water instructions were developed to define requirements relating to erosion and sediment control, construction permitting, and post construction Best Management Practices (BMPs). This increased communication reduces the potential for illicit discharges to sanitary and storm systems. Construction site inspections are conducted bi-weekly to minimize pollutants entering state waters.



Fig. 9: Marines discussing EMS dumpster policy

Effective Use of Funds The EV Division partnered with US Fish and Wildlife Service to develop a MOU for cost-free patrolling of JEBFS beaches for endangered sea turtles. Approximately \$30K annually in Navy labor dollars is saved and turtles are removed without costly military training mission disruption.

We have partnered with the Virginia Institute of Marine Science for a Legacy grant to install additional oyster reefs to extend the base's waterfront fence line boundaries. These oyster reefs will serve 3 purposes; first and foremost, it will increase the effectiveness of the base's Anti-Terrorism Force Protection posture; secondly, it will increase the natural oyster population as part of the Chesapeake Bay restoration; and thirdly, it will reduce fence repair costs. This project will save the Navy thousands in labor and project cost.

Partnering with volunteers saved over \$50K in labor and equipment for dune planting and Christmas tree recycling. Consumer Confidence Reports and Bacteriological Sampling Plans were completed in-house saving \$35K annually.

Budgeting is done through EPRWeb exhibit submittals. In FY16, in addition to regional projects, the base invested \$903K in labor, compliance, and natural resources projects; in FY17, \$1.2M was invested. These funding amounts are adequate to meet Common Output Levels.

To protect the health of our most precious residents, our children, Lead in Priority Area (LIPA) sampling at the 3 Child Development and 2 Youth Centers was completed; no results exceeded EPA screening levels.

Community Relations As described above, in our partnership section on pages 1 and 2, JEBLCFS participates in many local and regional outreach initiatives.



Fig. 10: Shelton Park students measuring oysters

As a 2010 Natural Resources project, with a cost of only \$10K, the base installed shells to act as habitat for the naturally-occurring Virginia Oysters in Little Creek Cove. The reef has been monitored and has grown in size substantially. This reef supports the Chesapeake Bay 2014 Agreement to increase oysters - which serve as filters - and improve water quality and is used annually by a local elementary school for a science club experiment (Fig. 10); thus, the reef was a sound investment paying immeasurable dividends in positive public relations.

In partnership with NEEF 41 Military and Civilian volunteers celebrated National Public Lands Day by planting 15,900 native dune grasses on JEBLC and JEBFS primary sand dune systems covering 1.2 acres. Planting native dune grasses on the primary dunes increases stability and size of dune structures; thereby, protecting the installation infrastructure and beaches used for critical military training events.

We renamed one of our nature trails to the "Heroes Circle Nature Trail". This trail will honor and memorialize our 94 heroes who have made the ultimate sacrifice since 9/11. Partnering with all the Chief Petty Officers Associations on the installation, we are revitalizing a nature trail and placing plaques honoring the fallen throughout.

Each plaque captures the hero's life and military service.

NEPA NEPA must be completed before site approval and contract award can be granted. As part of the planning process an Environmental Checklist (EC) is prepared for each proposed action. The EC is routed to all media and NEPA experts to determine permits and NEPA needed. During the award period, 286 ECs were completed and 254 Records of Categorical Exclusion were signed. The EC process provides compliance media and natural and cultural resources managers the opportunity to preview an action, perform a site visit and look for options to avoid environmental impacts while the project is in planning stages. Looking for ways to become a sustainable installation, as directed in EO 13693, JEBLCFS uses a pilot program which has been exported to benefit other DOD installations. Energy, Green Building, Socioeconomics, Water, Ecosystem Services and Transportation were focus areas. This study is being used to incorporate conservation of resources and pollution prevention into current and future base construction and operations.

After construction completion, facilities become part of the installation IAP and inspections for new equipment are carried out in frequencies prescribed in applicable permits. Any natural resources mitigation sites, such as wetland areas, are added to the INRMP and monitored for success as prescribed in our permits.

Through EMS our attention to detail driven environmental management, waste and pollution reduction efforts, effective use of funds, sound community relations and employment of NEPA, JEBLCFS's environmental program is one of the finest in the DOD. We are committed to excellence to protect the environment for future generations.