



2020 Secretary of Defense
Environmental Award Program
USAG Fort Leonard Wood
Environmental Quality – Non-industrial Installation

INTRODUCTION

US Army Garrison Fort Leonard Wood (FLW) is a 62,000-acre Installation Management Command training installation located in the heart of the Missouri Ozarks. Home to the Maneuver Support Center of Excellence, FLW has three gender-integrated initial military training brigades, and it serves as one of four reception stations for the US Army. Among the training institutions on the installation are the Non-commissioned Officers' Academy (the largest in the Army), the US Army Engineer School, the US Army Military Police School and the US Army Chemical, Biological, Radiological and Nuclear School. FLW is known for its environment; its heavily forested areas, rugged hills, deep ravines, karst geology, caves, sinkholes and springs, provide an ideal, natural setting for military training. In 1940, FLW was sited in south-central Missouri because of the abundance of clean drinking water. Today, clean water continues to be one of FLW's most significant environmental aspects and preventing impacts to it is

On an average day, FLW has over 11,000 service members in training, employs or hosts more than 13,000 military and civilian employees and contractors and supports over 10,800 Family members and about 60,200 retirees. Annually, FLW trains more than 80,000 service members and civilians—across all military services and all components. FLW provides 245 different courses for 26 different technical military occupational specialties.

one of our most important and challenging environmental goals.

BACKGROUND

The installation has an outstanding record of environmental excellence and has not received any enforcement actions in the last decade. This is a remarkable achievement given its size and complexity. With an environmental staff authorization of 12 Army civilians (45% of the modeled manpower requirement), cost containment, risk management, innovation, continuous improvement, partnerships and outreach are critical to our success. The foundation of FLW's environmental strategy is conformance with ISO 14001, the international standard for an effective environmental management system (EMS). Notwithstanding staffing challenges, FLW continues to achieve its EMS and other goals.

With this nomination, we are proud to validate our commitment to exceptional, cost-effective environmental performance by presenting our most important environmental accomplishments for FY18

and FY19—none of which would have been possible without the dedication and support of the FLW Team of Teams: the garrison, tenants, military units, our higher headquarters and the local community.



ACCOMPLISHMENTS

National Environmental Policy Act (NEPA)

FLW's NEPA program is the first and most important step to protecting FLW's environment.



Each NEPA review looks at all environmental aspects and results in a tailored set of environmental controls for each undertaking. The process has been streamlined using a Microsoft SharePoint site that allows project proponents to submit checklists and project information online. This reduces paperwork, improves record keeping and reduces the time



required to conduct project reviews. In FY18, FLW completed a Programmatic Environmental Assessment (PEA) for the ongoing mission that reduced the NEPA workload for activities covered by the scope of the PEA. In FY18 and FY19, the review of



multiple construction, renovation, demolition, training, equipment fielding, stationing actions and real estate actions resulted in 237 Records of Environmental Consideration (RECs) and three environmental assessments (EAs). Two Initial Scope of Work Project Planning (ISOWPP) meetings were held, one initiating an EA for the repair of a weir critical to FLW's drinking water and one initiating a PEA for Integrated Training Area Management (ITAM) activities. The ISOWPP process is invaluable for collecting and understanding stakeholder requirements early in the project planning process.



Clean Water

FLW's stormwater and waste water flow to the Roubidoux Creek and the Big Piney River watersheds. The Big Piney River is the source of FLW's drinking water and is home to two endangered species, the Spectaclecase mussel and the Eastern Hellbender. Consequently, the water quality of these two streams is paramount to the sustainability of FLW. Conducting more thorough inspections and improving education and outreach are two of the environmental goals in this area.



Eastern Hellbender



Industrial Stormwater

The FLW Industrial Stormwater Permit encompasses six sub-watersheds. The permit requires monitoring of 16 outfalls and four receiving water locations. Water quality samples are tested for 15 effluent parameters on a quarterly or bi-annual basis depending on the outfall. In FY18 and FY19, FLW made improvements in the inspection of industrial operations covered by the permit. Now, in addition to outfall sampling, more than 40 industrial facilities are routinely inspected to ensure compliance and keep FLW's watersheds clean.



Municipal Stormwater (MS4)

In 2018, the Missouri Department of Natural Resources (MDNR) approved the Stormwater Management Plan (SWMP) and in August of 2019, MDNR performed an inspection of the MS4 program. The inspection included a thorough review of annual reports, educational material, outreach plans, and the FLW Best Management Practice Manual. MDNR praised FLW's stormwater program and invited staff to a speak at a state conference on how to implement a successful education/outreach program.



"It was difficult to put into one report the impressiveness of the Education and Participation program. Fort Leonard Wood should be proud of their work, and show it off as a strong example."

Joe Stoops, MS4 Inspector
Missouri Department of Natural Resources
Excerpt from an MS4 Inspection Report

Point Source Discharges

In 2019, FLW's drinking water and sewer systems were privatized. A life-cycle cost analysis (LCCA) conducted by the Defense Logistics Agency (DLA) indicated that the cost of privatization when compared to the Government Should Cost Estimate (GSCE) would reduce the cumulative net present value (NPV) cost of potable water and wastewater services by \$206 million, or 28.9 % over the next 50 years. The Environmental Division provided technical support to the conveyance, completed NEPA documentation, published an environmental baseline survey, completed permit transfers, and performed National Historic Preservation Act (NHPA) consultations. The privatization contract



includes several major upgrades to these systems that will reduce water consumption and decrease sanitary sewer overflows (SSOs).

Solid Waste



COL Towns presents CPT Herron and SSG Mendonez, of the 43rd Adjutant General Battalion (Reception) with the Recycling Excellence Award for 1st Quarter, FY19.

FLW is a military community that supports a population of more than 15,000 people (2010 Census). The generation of solid waste is another significant environmental aspect of FLW’s mission. In order to minimize the impact of solid waste on the environment, FLW has focused on waste reduction and meeting the DoD solid waste diversion rate goals.

These goals have been met for the last eight consecutive years. While at the same time, the Qualified Recycling Program (QRP) has maintained a positive revenue stream. To meet ever-increasing diversion rate goals, FLW’s QRP has made continuous improvements by expanding education and outreach and increasing the number of commodities that are accepted at the recycle center. FLW’s diversion rates, revenue and cost avoidance are shown below.

	FY18	FY19
MSW	50.2%	50.3%
C&D	76.1%	78.7%

Municipal Solid Waste (MSW) and Construction and Demolition Waste (C&D) Diversion Rates.

	FY18	FY19
Revenue	\$1,022,000	\$954,000
Cost Avoidance	\$1,560,000	\$1,450,000

Recycle Revenue and Cost Avoidance.

In FY19, the QRP became the installation’s principal outlet for used lead-acid batteries. In the first year of

providing this service (FY19), 128,030 pounds of lead-acid batteries were recycled, producing \$36,244 in new revenue. It also eliminated the potential for hazardous waste violations by improving storage and handling methods. As of FY19, the QRP accepts 18 different commodities for recycling. Source separation is the primary means to collect recyclables. This method keeps costs low and greatly reduces contamination. FLW collects and diverts an average of 269,000 pounds of high-quality recyclables each month.

In FY18, the QRP executed an innovative plan for the direct sale of expended small arms cartridge cases (brass). Existing recycle methods using a middleman had become cost prohibitive. FLW cleared the

regulatory hurdles to deforming and selling brass directly to a metal recycler without the added cost of the middleman. This action restored a vital source of program funding, and, in FY18 and FY19, the QRP sold 384,100 and 381,140 pounds of brass for \$406,437 and \$409,199, respectively. FLW’s recycle efforts and methods were shared and coordinated with other QRP managers across IMCOM through active participation in the QRP Community of Practice (COP).

The QRP supports the service men and women with twice-yearly electronics recycling events held in conjunction with Earth Day (April) and America Recycles Day (November). These events provide opportunities for residents to recycle their privately-owned consumer electronics and small appliances.



A portion of the record 197 unwanted televisions recycled during FLW’s two E-waste events in FY19.

Items are collected by an electronics recycler recognized by the state of Missouri and recycled off-site. In FY18 and FY19, this initiative collected 23,366 and 27,553 pounds of e-waste, respectively. Participation, especially when measured by the tons diverted, has grown every year.

During FY18, the QRP initiated an award program to recognize excellence in recycling while fostering friendly competition between participants and encouraging creativity. Since its launch in 2018, the program has awarded \$6,000 to the quarterly winners. The cash award has increased interest and participation in recycling significantly.

Clean-up Spills but Just the Spill, Please

✖ Hydraulic oil leaks are an unavoidable result of teaching trainees how to operate heavy equipment. An environmental review of the problem revealed that Soldiers can be very, very environmentally conscious—cleaning up not just the oil contaminated soil, but cleaning up an extra volume of clean soil just for good measure. With training and the presence of environmental staff required at every spill, appropriately sized equipment is now used to limit the clean-up effort to just the contamination. FLW has cut the amount of oil contaminated soil waste in half, a reduction from 60,000 pounds per year on average to an estimated 30,000 pounds in 2019.

Earth Day

To celebrate Earth Day in April 2018, the Environmental Division participated in the “Family Fun Day” event held at the FLW Child Development Center. Clean Water Casey (a staff member dressed in a big turtle costume) was on hand to greet children and their families. In addition, a booth was set up to fish “litter” out of the “river” (a swimming pool), and to place it in the proper recycling bin. Staff provided educational materials and talks concerning endangered species and displayed cultural resource artifacts. The event was extremely successful, educating participants about the importance of stormwater pollution prevention, recycling, the protection of endangered species, and cultural resource management.

For Earth Day 2019, the Environmental Division “grew” the event significantly by partnering with the FLW Public Affairs Office. What was a “day” turned into a month of events. April began with Clean Water

Casey greeting runners and walkers at a 5K run, reading to students at the library and attending the Annual Family Fun Day. The month ended with the Earth Day Fair, which included 18 educational booths and games staffed by the FLW Environmental Division, Missouri Department of Conservation, Missouri Master Naturalists, Outdoor Adventure Center, Raptor Rehab, Master Gardeners, Missouri State Parks, local stream teams and many others. The booths and games were geared towards environmental awareness, conservation, and sustainability. More than 1,100 people were in attendance, including local schools, civilians, Soldiers, and their Families.

Clean Air Act

The Air Program obtained a National Security Exemption for several reciprocating internal combustion engines (RICE) on Fort Leonard Wood. RICE engines subject to NSPS 40 CFR Part 60, Subpart IIII, and NESHAPS 40 CFR Part 63, Subpart



Clean Water Casey and two Marine volunteers greet visitors on Earth Day.

ZZZZ are required to be emissions performance tested if they are not certified by the manufacturer. These engines are used for military training purposes at the Prime Power School (26 engines) and the Quarrying Specialist Course (4 engines). Without the exemption, a considerable cost would have been incurred for periodic performance testing—approximately \$10,000 for each of 30 engines for every 8,760 hours of operation. In addition, the engines would have had to be taken offline for performance testing and, therefore, not available for training purposes.

Prepare for the Boom!

In FY18, the Environmental Division worked closely with the 1st Engineer Brigade to review the possibility of conducting live fire training with a munition known as the Mine Clearing Line Charge (MICLIC). The MICLIC produces a much larger detonation than other munitions used on FLW. An environmental assessment (EA), a biological assessment (BA), and a noise assessment were completed in coordination with various organizations such as the US Fish and Wildlife Service. As part of the assessments, the brigade was able to conduct four live fire events in FY19 while being monitored by the Environmental Division for the munition's impact on endangered species of bats in nearby caves. The testing showed no impact and the munition has been added to FLW's mission training portfolio. Trainees no longer have to travel out-of-state to accomplish this segment of required training.

Feral Swine Elimination Partnership

In FY18, multiagency cooperation resulted in the first aerial operation for the removal of feral swine (via helicopter) on a military installation. US Department of Agriculture (USDA) personnel from across Missouri and Tennessee joined FLW personnel to accomplish this mission. Range Operations, Forney Army Airfield and conservation law enforcement personnel played integral roles in this first-of-its-kind endeavor and were vital to the success of the operation. FLW has been a key member of a statewide task force for the elimination of feral swine in Missouri since 1997 and has worked toward eliminating these invasive animals using integrated approaches encompassing all available methods. Significant population reductions were made in FY18 and FY19 in partnership with the USDA. During this period, the partnership eliminated 1,540 feral hogs on FLW, preventing irreparable harm to endangered species, cultural resource sites, water quality, and mission accomplishment on ranges and training areas.

Save the Trees

In FY18 and FY19, FLW continued efforts to control the Emerald Ash Borer (EAB). This invasive species is well on its way to killing all Ash



Emerald Ash Borer

trees in North America. The EAB was discovered in 2016 in a remote location on FLW. In 2017 and 2018, FLW released parasitoid wasps at several test sites. In 2019, FLW placed pheromone traps designed to capture the wasps. The capture of the parasitoid wasps will be a first indicator of whether or not the biological control program was successful. Results are expected to be published in 2020.

Invasive Plants

In 2019, four large invasive plant control projects were implemented on FLW. Three of the projects were pilot projects to determine the effectiveness of new control methods. These projects included 1) spraying of approximately 200 acres of grassland to control non-native sericea lespedeza (*Lespedeza cuneata*), 2) mechanical clearing, masticating and spraying 70 acres of training areas, 3) spraying and planting to reduce infestations and spread of non-native johnsongrass, and 4) removal of invasive Eastern Red Cedars from extremely sensitive glade areas (one of the most threatened habitat types in Missouri), habitat that contains many rare and sensitive plant and animal species.

I ♥ iSportsman

In 2018, FLW reached full operational status with the implementation of the FLW iSportsman Portal. The iSportsman system facilitates check-in and check-out of hunters online or by smart phone, significantly reducing the work load on the Range Operations Team. The system has made it easier to purchase permits and provides easy access to hunting and fishing maps for the installation. In 2019, Environmental added geo-referenced hunting and fishing maps. The maps allow hunters with a GPS-enabled smart phone to know their position at all times. iSportsman accepts payments for permits on-line and automatically deposits the funds into the appropriate US Treasury account, vastly improving the internal management controls of conservation reimbursable funds. iSportsman has improved the hunter experience, provides invaluable data to installation personnel and makes hunting safer for everyone.

Cantonment Archery Hunt

In FY18, FLW planned and implemented a pilot program for urban archery hunting within the FLW cantonment area to reduce deer/vehicle collisions, deer damage to landscaping and gardens, potential human disease issues through reduction of tick populations and to provide additional hunting opportunities. The new hunting program required extensive planning and outreach to ensure the hunt was publicly acceptable and could be safely conducted. Rules and safety procedures were developed and all hunters were required to complete a face-to-face safety briefing. Outreach for the hunt was conducted through flyers, newspaper articles, meetings, and iSportsman website notifications. The pilot program proved to be very successful and was re-authorized with lessons learned for the 2019 hunting season.



Environmental staff members were on hand at Kid's Trout Fishing Derby to bait hooks, and to teach the importance of natural resources and clean water.

Teach a Kid to Fish

In FY18 and FY19, FLW hosted the ever-popular Annual Kid's Trout Fishing Derby. Each year, trout are stocked by the Missouri Department of Conservation and over 100 young anglers are given an exclusive opportunity to catch them. For the young anglers and their parents, the environmental mascot, Clean Water Casey was on hand to teach everyone about the importance of clean water. For the environmental staff and other organizations, it was an opportunity to partner in a fun way. The US Forest Service and the Missouri Department of Conservation teamed with FLW to sponsor the event.

Keeping Kids Safe

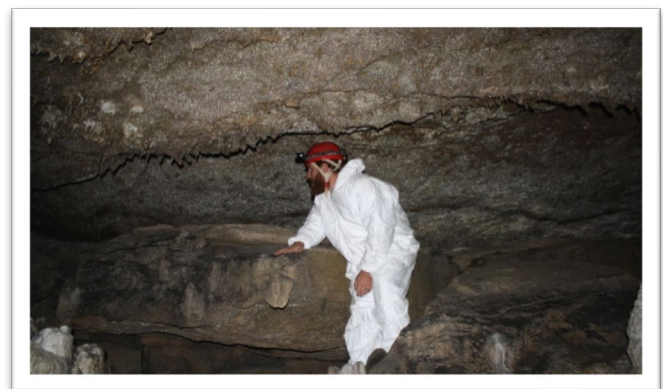
In 2018, FLW initiated a 5-year sampling plan to reduce children's risk from lead in drinking water. Two Child Development Centers were sampled in FY18 and two in FY19 (20% per year). The sampling resulted in two faucets requiring replacement after determining they exceeded the Army action levels for lead (15 ppb). As part of the sampling program, community members were briefed on the issue and provided simple actions that everyone can take to lower their risk of lead exposure.

Testing for Emerging Contaminants

In 2016, FLW sampled 19 locations where fire-fighting foams potentially containing polyfluorinated compounds were used for fire-fighting or training. Sampling locations consisted of 18 wells and one surface water source. No contamination was found to be above established regulatory limits. In 2019, FLW conducted a second review of potential areas of concern and conducted another round of sampling for these compounds at the same 19 locations. The results of this sampling effort were consistent with the results obtained in 2016.

Protecting Endangered Bats

FLW is home to 13 species of bats including three species that are federally listed as endangered or threatened. FLW conducted a BA for the ongoing mission and entered into consultation with the US Fish and Wildlife regarding the endangered Indiana bat (*Myotis sodalists*) and the threatened northern long-eared bat (*Myotis septentrionalis*). The BA addresses the potential impacts of FLW's on-going mission activities including prescribed burns, the use of military smokes and obscurants, forest



Natural Resources personnel survey for endangered species of bats.

management, and tree removal. The BA and the on-going consultation may provide relief from some of the existing conservation measures if approved.

Environmental Force Multipliers

The FLW Environmental Compliance Officers (ECO) are a very important part of FLW’s environmental management program. ECOs are required to be officially appointed by each unit or tenant and must attend training provided by the Environmental Division. Training is conducted quarterly for ECOs and other employees. Each member of the environmental staff provides training for the environmental program areas they manage. An ECO SharePoint site was created to provide points of contact, information, checklists, regulations, and materials for unit-level training. Additionally, a discussion board was developed to allow ECOs to ask questions, collaborate with ideas and provide lessons learned.

Because of environmental staffing challenges, increasing the number of appointed and trained ECOs is an on-going environmental goal. As of the last two quarters of FY19, 94 ECOs have been appointed. While that is a big improvement from the average of 72 for FY18, the count does not yet meet our goal of 120. Growth of the installation and frequent turnover of military ECO appointees remain a challenge. Additional actions are being planned and implemented to improve the ECO appointment rate.

Environmental Training and Doctrine

As a part of FLW’s environmental efforts, the US Army Engineer School, Directorate of Environmental Integration (DEI), the Army’s proponent for integrating environmental considerations into military operations, provides training used by Active, Reserve, and Guard components throughout the Army for Environmental Officer Certification for CONUS and OCONUS operations, ensuring Army operations incorporate environmental stewardship and protection into activities both at home and overseas. In March 2019, DEI updated Technical Manual 3-34.56, Waste Management for Deployed Operations, to help commanders, planners, and Soldiers understand current procedures for integrated waste management. DEI worked with Engineer captains and warrant officers to develop a “training motor pool” for students to find motor pool compliance issues and determine remedies in a realistic environment. In 2018-2019, DEI worked with

military environmentalists from Sweden and Finland to develop environmental planning guidance, checklists and field card templates for multi-national military exercises. These planning tools are being shared with NATO partners to help improve environmental protection efforts across Europe. Through these efforts, environmental procedures and practices developed locally at FLW are shared and impact the Army and allied partners across the globe.

Environmental Quality Control Committee

FLW synchronizes environmental concerns and



DEI instructs a class of captains and warrant officers on environmental laws.

efforts through the Environmental Quality Control Committee (EQCC). Composed of leaders from all organizations and tenants on the installation, the committee is convened quarterly and chaired by the Garrison Commander. The EQCC meetings are open to all installation personnel. Environmental staff members brief EMS management review topics (e.g., results of previous audits, status of corrective actions, key communications, status of goals) and specific focus topics (new and emerging requirements) each quarter. Attendance in FY18 and FY19 averaged 60-70 personnel present each quarter.

SUMMARY

Every day, FLW earns its designation as the Maneuver Support Center of Excellence by accomplishing an ever-growing training mission and exceeding environmental goals and objectives while keeping costs and staffing requirements low. This nomination presented some of FLW’s significant environmental accomplishments over the last two years and, looking to the future, FLW’s Team of Teams will certainly continue to be an environmental quality leader for the US Army and the Department of Defense.

