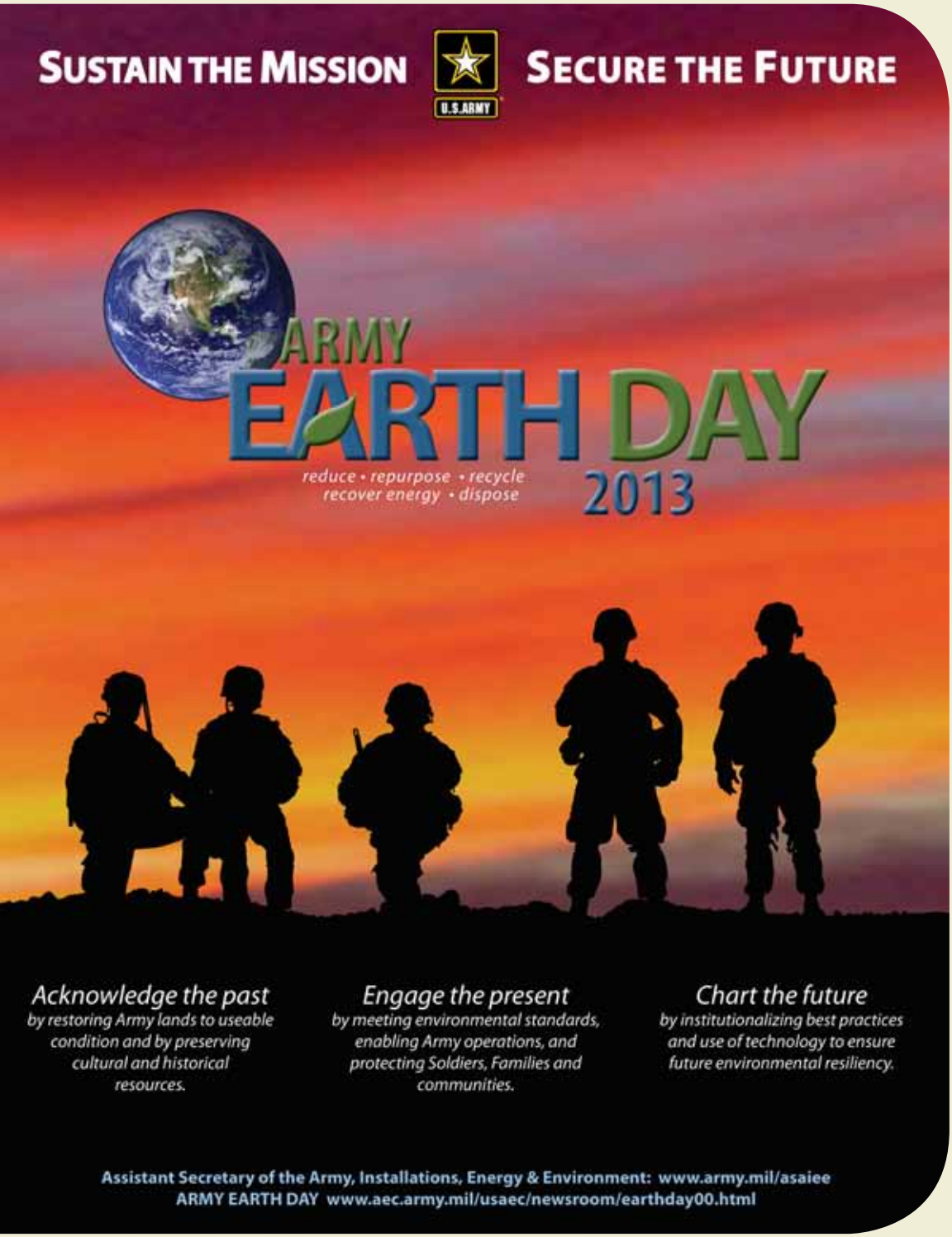
Public Works DIGEST

Volume XXV, No. 2
April/May/June 2013



This Issue:
Environment and Sustainability

The U.S. Army will observe Earth Day throughout April with events at approximately 200 Army facilities worldwide. Participation in the annual Earth Day celebration, which began April 22, 1970 to create environmental awareness, emphasizes the important role Army training lands play in Soldier readiness and the overall part the Army plays in sustaining the environment.

Public Works DIGEST

Volume XXV, No. 2
APRIL/MAY/JUNE 2013

U.S. Army Installation
Management Command
2405 Gun Shed Road
Fort Sam Houston, TX 78234-1223

Public Works Digest is an unofficial publication of the U.S. Army Installation Management Command, under AR 360-1, The Army Public Affairs Program. Method of reproduction: photo-offset; press run: 1,600; estimated readership: 5,000. Editorial views and opinions expressed are not necessarily those of the Department of the Army. Mention of specific vendors does not constitute endorsement by the Department of the Army or any element thereof.

Gregg Chislett
Chief, Public Works Division
Installation Management Command
U.S. Army Installation Management Command
2405 Gun Shed Road
Fort Sam Houston, TX 78234-1223
Attn: Editor, *Public Works Digest*

Kathye Gerrity-Milihram
Managing Editor,
U.S. Army Corps of Engineers
Headquarters, USACE
441 G Street, NW
Washington, DC 20314-1000
202-761-0022 DSN 763
editor.pwdigest@usace.army.mil

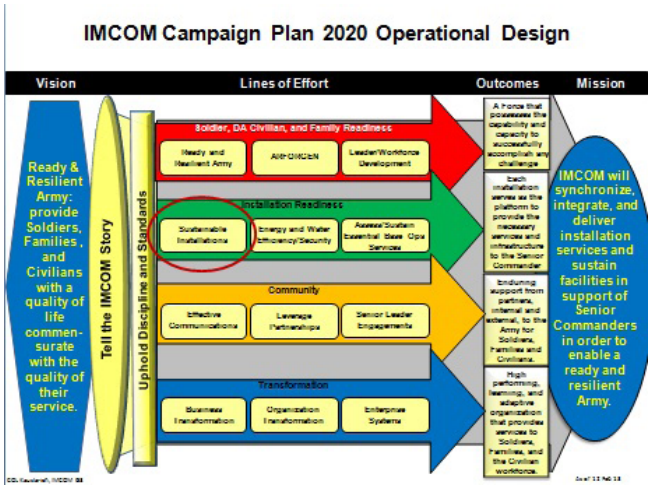
Printed on recycled paper.

The IMCOM Sustainability Ethos

by S. Lynn Odom, Ph.D.

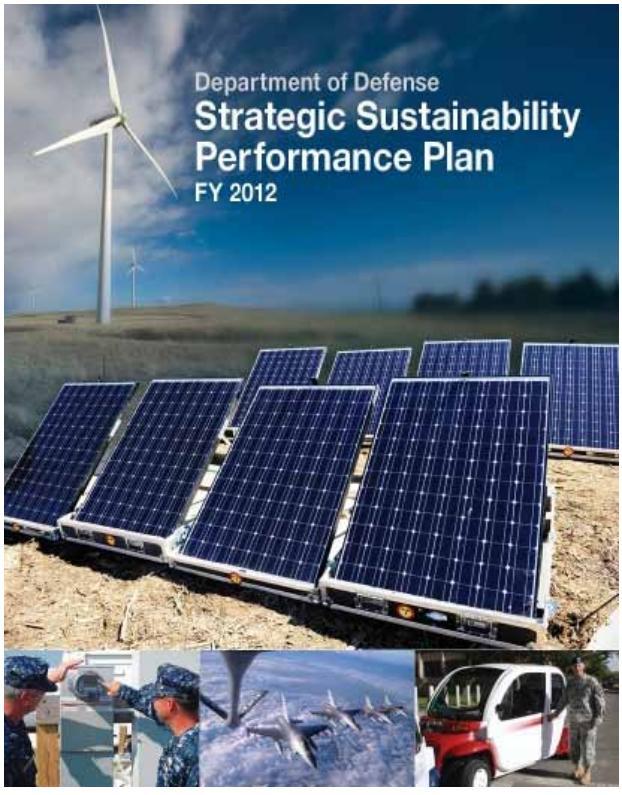
Sustainability is typically associated with energy, water, and environmental aspects and impacts in isolation. Is a structure sustainable if it has a 'green roof' or solar water heater? Is an installation sustainable if it operates with alternative fuel vehicles or composts its food waste or has metered buildings? While it is easy to compartmentalize and implement sub-components of a larger sustainable system, in the long-range, enhancement of the Army mission must be defended.

One may find it beneficial to discuss "sustainability" within the context of what it is not. For example, it is not 'sustainable' to send a Soldier down-range with high-tech equipment that he or she cannot operate and maintain. What is to be made of the invested resources? Is it truly sustainable to build high-performance structures if the investment strategy has not built-in the required resource of having knowledgeable personnel with appropriate tools to operate and maintain them? Within the IMCOM organization, building structures is in the Public Works (PW) or US Army Corps of Engineers (USACE) "lane" while hiring knowledgeable/ training civilian personnel is HR – each not fully cognizant of the impacts of fulfilling their individual missions on the other.



IMCOM Campaign Plan 2020 Operational Design.

Despite well-intentioned policy, objectives and several successful, yet compartmentalized initiatives since 2001, sustainability has become a buzzword. The Global Language Monitor named it the #1 buzzword of 2006 and the # 22 buzzword for the 2000-2009 decade. There is a need to reclaim the term "sustainability" from its current buzzword status and institute an effective, more-formalized way to define, capture, and leverage the link between a specific sustainability project and mission performance.



Department of Defense, FY 2012, Strategic Sustainability Performance Plan.

With Installation Management –sustainability is an ethos represented as a set of guiding principles, requiring critical thinking, from which a systems thinking approach to managing and organizing complex systems is derived. It is striving to make decisions today while cognizant of future resourcing impacts on mission, community, environment and financial investment strategy an integrated collaborative approach to mission execution. IMCOM mission critical resources include human capital, natural capital, infrastructure, information technology, information technology, and energy. In this time of severe fiscal constraint, IMCOM is compelled to institute integrated, cross-functional, resource astute means of implementing its mission – discern systems interactions – adopt an attitude of "I don't want to hear what we can't do; I want to hear what ➤

Acronyms and Abbreviations	
ACP	Army Campaign Plan
DoDI	Department of Defense Instruction
DoD SSPP	Department of Defense Strategic Sustainability Performance Plan
HQ	Headquarters
IMCOM	Installation Management Command
IMCOM CP	IMCOM Campaign Plan 2020
IMSWG	Installation Management Sustainability Working Group
LOE	Line of Effort
OMB	Office of Management and Budget
PAIO	Plans, Analysis, and Integration Office
USACE	US Army Corps of Engineers
USAEC	US Army Environmental Command

Hard Work Fuels USACE Drive to Sustainability

by Antonia Giardina and John Coho

If it is true that nothing worthwhile is ever easily accomplished, that it takes hard work and perseverance, then the U.S. Army Corps of Engineers is on the right track when it comes to becoming sustainable.

For the past few years, it can definitely be said that USACE has been working hard in the sustainability arena – we are making strides in reducing our energy use, increasing energy efficiency and adopting renewable and alternative energy sources at both USACE-owned facilities and those we build for others.

Our Strategic Sustainability Committee, co-chaired by Jo-Ellen Darcy, the Assistant Secretary of the Army (Civil Works), and Maj. Gen. Todd Semonite, the USACE Deputy Commanding General, conducts quarterly meetings with all division commanders, senior staff, and sustainability officers, to ensure that everyone is moving ahead with their sustainability commitments.

"We've begun to lead by example," Darcy said at the last meeting on Feb. 28. "I've been very encouraged by all the work that you've done. About $16.6 million has been saved in facility energy and non-tactical vehicle fleet costs between FY11 and FY12, and that's something that we need to be proud of."

She encouraged USACE employees to embrace a culture of sustainability and to modify their behaviors, pointing out that "behavioral changes don't cost money."

Semonite stressed the need to continue to focus on sustainability, despite the tight fiscal times. He noted that being sustainable can help save USACE and the government money.

"This is the time to invest, the best time to transform and reform. We need to be looking to see where the Corps can be more sustainable," Semonite said. "It requires constant attention. We have to embrace a culture that says sustainability is important and then carve out the appropriate amount of money to ensure that we are making smart investments in tough fiscal times."

The Wall Street Journal recently reported that American carbon emissions have fallen almost 13 percent since 2007 and total energy use has fallen about 5 percent in the past five years. ➤

Acronyms and Abbreviations	
FY	Fiscal Year
OMB	Office of Management and Budget
USACE	U.S. Army Corps of Engineers

(continued from previous page)

can we do."

What is ahead of us? The Department of Defense signed its Strategic Sustainability Performance Plan (DoD SSPP) FY 2012 on 20 Sep 2012. Therein the DoD mission and four mission-oriented objectives are outlined. This document was officially released by Office of Management and Budget (OMB) in Feb 2013. Concurrently, sustainability-related objectives have been incorporated into the Army Campaign Plan (ACP) 2012 Strategy Map. Thus continuing to weave a sustainability ethos into the execution of base operations enables the IMCOM mission to support the current DoD SSPP and ACP objectives and goals, and the forthcoming DoDI on Sustainability.

An IMCOM Decision Paper signed on 2 Aug 12, reorganized the responsibility for integration and primary execution of sustainability-related objectives from HQ_IMCOM G5 to HQ_IMCOM G4, and affirmed that strategic planning aspects of sustainability remains a core competency of G5. The decision to realign responsibilities at the HQ_IMCOM level does not change Garrison personnel structures and responsibilities. IMCOM sustainability policy and guidance remains in effect, to include IMCOM Installation Strategic Planning Guidebook dated 26 Apr 12 and IMCOM Plans, Analysis, and Integration Office (PAIO) Guide Book dated 15 Mar 12.

IMCOM's commitment to a sustainability ethos is woven into its mission of improving the ability of installations to "synchronize, integrate, and deliver installation services and sustain facilities in support of Senior Commanders in order to enable a ready and resilient Army." The IMCOM Campaign Plan 2020 (IMCOM CP) was released in Feb 2013. "Sustainable Installations" is the first of three major objectives under IMCOM CP Line of Effort (LOE) 2 "Installation Readiness". LOE sub-objective 2.1.3 is "Sustainability in Practice". The 2.1.3 sub-objective Working Group held a kickoff meeting on 28 February 2013 adopting the Installation Management Sustainability Working Group (IMSWG) name and several members from the initial IMSWG team. The IMSWG consists of members from Garrisons, Regions, USAEC, and across HQ Directorates.

The IMSWG presently has a dual purpose of (1) updating IMCOM Memorandum, 25 May 11, Subject: Policy Memorandum 11-32-1 — Operationalizing Sustainability and any subsequent guidance; and (2) integrating the sustainability ethos into practice by supporting installations with complex efforts that enhance their ability to meet Base Operations requirements while shrinking the depletion of resources within the organization.

With integrity, a sustainability ethos will allow defense of resourcing decisions now that support an overall future Installation Management investment strategy.

POC is S. Lynn Odom, Ph.D, 210-466-0542, sonja.l.odom.civ@mail.mil

S. Lynn Odom, Ph.D. is the sustainability coordinator at HQ IMCOM (G4.)

(continued from previous page)

USACE is proud to be contributing to that national trend. We are using biofuels in some of our vessels, reducing the amount of energy used at some of our larger facilities like the Washington Aqueduct, and right-sizing our vehicle fleet by reducing the number of vehicles in our inventory and switching out when possible to hybrids and electrical vehicles, or simply more fuel-efficient vehicles. So progress is being made, but there is still so much more to be done.

The recently published USACE Campaign Plan organizes the Command's sustainability efforts into three lines of operation under the objective "Support the Nation and the Army in achieving our energy security and sustainability goals:" (1) Achieve Federal targets within USACE operations; (2) Support Army energy and sustainability programs; and (3) Deliver solutions for contingency bases and operations.

Related to the first line of operation, we put a great deal of effort into cleaning-up our facility-level energy and water data during the past year to get a better idea of what we really look like as a consumer of these resources with facilities in virtually all states across our nation. As a result of our USACE-wide data cleanup, managers and leaders across USACE now have higher confidence in, and increased awareness of, their energy and water consumption. The data clean-up initiative also had the added benefit of training managers in the field in use of USACE data visualization capabilities to support data quality assurance and to inform decision making and budget development. Putting good information in the hands of leaders and managers is a leading indicator of programmatic health and advancement toward USACE goals. In fiscal year 12, we've begun to see indications of progress toward our goals at the agency level. We'll know more about how much progress we've made when we receive our FY12 year-end scorecard from the Office of Management and Budget.

This is just the beginning. We are building on the momentum we've gained in the past few years to put the USACE on track to achieve our 2020 goals within our internal operations and infrastructure. The USACE Sustainability Plan lays out the overall path forward and is updated each year. The plan, publicly released by OMB in February, addresses all of the goals in Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance.

Jim Franz, natural resource manager for Melvern Lake in Melvern, Kan., shows off a solar panel installed to provide energy for LED lights that light the large entrance sign to the lake. Installing solar panel at USACE recreation facilities help USACE cut energy costs. (Photo by Diana McCoy).

Through the Army Campaign Plan and the USACE Campaign Plan, we are focusing on improving performance on the four top-priority goals: facility energy intensity, facility water intensity, non-tactical vehicle fleet petroleum consumption, and greenhouse gas scope 1&2 emissions. To accomplish this, we've established a set of leading metrics related to completing energy and water audits, implementing energy and water conservation measures, leveraging alternative financing tools, and reducing our non-tactical fleet size.

Our divisions currently are finalizing their first sustainability plans, with focus on the priority goals and the leading metrics, which will, in turn, help USACE continue to show improvement on the OMB Sustainability and Energy Scorecard. As these efforts take hold throughout the command, USACE will expand its focus to advanced metering, and acquisition of sustainable products and services.

The goals are set, the work continues.

POC is Antonia Giardina, 202-761-5233, Antonia.r.giardina@usace.army.mil

Antonia Giardina is the USACE sustainability program manager and John Coho is the USACE energy coordinator, U.S. Army Corps of Engineers.

Secretary of the Army Environmental Awards

This year's Secretary of the Army Environmental Awards recognize the efforts of Army installations, teams and individuals to sustain and restore the natural and cultural resources found on training lands throughout the United States and in Europe.

The six installations, two teams and one individual selected as this year's winners represent the best of the Army's ongoing commitment to sustain its training lands through sound environmental stewardship.

This year's winners include:

- Kentucky ARNG - Wendell H. Ford Regional Training Center (Natural Resources Conservation - Large Installation)
- Fort Stewart, Ga. (Cultural Resources Management - Installation)
- Tobyhanna Army Depot, Penn. (Environmental Quality - Industrial Installation)
- Fort Hood, Texas (Sustainability - Non Industrial Installation)
- USAG Aberdeen Proving Ground, Md. (Environmental Restoration - Installation)
- USAG Vicenza, Italy (Environmental Quality - Overseas)
- Fort Bragg, N.C. (Cultural Resource Management - Team or Individual)
- Arizona ARNG – Dorenda Coleman (Sustainability - Individual)
- TARDEC- Counterfeit Refrigerant Impact Team, Mich. (Environmental Excellence in Weapon System Acquisition-Small Program)

These nominations will go on to represent the Army in the Secretary of Defense Environmental Awards Program. Winners of that competition will receive their awards at a Pentagon ceremony on July 10 at 1 p.m. in the auditorium.

POC is Cathy Kropp, 210-466-1590, Cathryn.L.Kropp.civ@mail.mil

Ms. Kropp is an environmental public affairs specialist for the U.S. Army Environmental Command at Fort Sam Houston, Joint Base San Antonio, Texas.

Partnerships reap rewards

by Cathy Kropp

A panel of judges awarded the Natural Resources Conservation (NRC) large installation award to the Wendell H. Ford Regional Training Center in Greenville, Ky., for the 2012 Secretary of the Army Environmental Awards Program.

The Kentucky Army National Guard (ARNG) nomination cited partnerships and relationships as the reasons for their natural resources conservation successes. By developing relationships with the installation's Environmental Quality Control Committee, the trainers, range control, master planning staff and Integrated Training Army Management department, the NRC staff is able to ensure the work they do supports and enhances the installation mission.

The installation is a critical resource for the region, providing maneuver, weapons, convoy, urban assault, MEDEVAC and virtual simulation training. Long-term sustainability of these training capabilities is dependent on long-term sustainability of the training site's lands.

The training center's relationship with regulators, like the Kentucky Department of Fish and Wildlife Resources (DFWR), has allowed cooperative exchanges that have benefitted both the ARNG and the state. Since the Kentucky DFWR manages conservation areas adjacent to the training center, the state and ARNG NRC staff frequently work cooperatively on habitat improvement, surveys and other land management efforts.

Partnering on prescribed fire efforts has also helped the installation generate cost savings and avoid contract costs. More than 3,000 of the installation's 11,512 acres are managed with prescribed fire to control invasive species and restore native grasses and trees at virtually no cost. The US Fish and Wildlife Service and the Kentucky DFWR staff use the training center lands to conduct training for their staff to help meet installation NRC goals.

A contract through the U.S. Army Corps of Engineers (USACE) is providing a comprehensive state- and federally-listed threatened and endangered species study for flora and fauna on the installation. The installation's relationship with the Corps is allowing ARNG NRC staff to shadow the USACE contractors so future surveys can be conducted in-house with ARNG staff, avoiding future contracting costs. ➤

Acronyms and Abbreviations	
ARNG	Army National Guard
DFWR	Department of Fish and Wildlife Resources
MEDEVAC	Medical Evaluation
NRC.	Natural Resources Conservation
U.S.	United States
USACE	US Army Corps of Engineers

Wild quail are just one species now increasing in numbers on the Wendell H. Ford Regional Training Center in Greenville, Ky. Fire and vegetation management has had tremendous benefits to wildlife populations, diversity, and habitat quality.

Preserving historic legacies and artifacts wins FS/HAAF the Army's Cultural Resources Management Award

by Barry R. Napp

Fort Stewart and Hunter Army Air Field (FS/HAAF) won the Secretary of the Army Environmental Award for cultural resources management in the installation category for fiscal year 2012.

The installation Cultural Resources Management (CRM) program staff are very close to completing an archaeological survey of 284,000 acres at FS/HAAF; only 45,000 acres of prime training land are left to survey in southeast Georgia. This means the CRM program is shifting from a survey to an evaluation posture. The staff is also surveying more than 4,000 archaeological sites and 309 historic buildings. The next step is to review all potential National Register-eligible sites to more efficiently and effectively reduce training land encumbrances.

To date, 49 of 4,000 known sites have been identified as eligible for the National Register of Historic Places, while 379 need further evaluation. This has reduced training lands encumbered by protected CRM sites to only 0.27% of FS and 0.03% of HAAF.

Acronyms and Abbreviations	
CRM	Cultural Resources Management
FS/HAAF	Fort Stewart and Hunter Army Air Field
HAAF	Hunter Army Air Field

Fort Argyle, an early 18th century outpost protecting the new colony of Georgia, is the only NRHP-listed property on FS/HAAF. Another significant cultural resource is a Native American burial site called the Lewis Mound, which is a potential sacred site so its location is protected by CRM staff.

Training land sustainability is the key component of the CRM mission and directly supports FS/HAAF capability as one of the Army's premier training and power projection platforms on the Atlantic Coast, ready to deploy Soldiers to any area of operation in the world within 24 hours.

According to Thomas Fry, the chief of the Environmental Division, the central emphasis of the CRM program is to allow Soldiers to maximize training opportunities while supporting conservation efforts (such as maintaining Red Cockaded Woodpecker habitat) and enhance range sustainment through archaeological surveys.

Through in situ investigation of a 19th century burial located at Hunter Army Airfield, the team was able to accurately identify the cemetery boundaries and encouraged project proponents to avoid the cemetery resulting in a cost avoidance of $525K.

FS/HAAF was recognized for their close academic ties to cultural resource programs at both Georgia Southern University and the University of Georgia, and CRM staff hold memberships in such

➤

(continued from previous page)

The NRC staff is also assisting the Kentucky Ornithological Society who is developing a species list of the area as surveys are conducted. More than 90 species have been recorded. Another survey effort on the Green River, which is located on the northern boundary of the installation, is targeting mussels. Eight federally listed mussel species are present in the river.

The installation works with area universities to support fieldwork and education opportunities. Students from Western Kentucky University and Murray State University partner with the installation NRC staff to conduct studies on lake topography and contouring.

Western Kentucky University students are also completing a herpetology inventory and an aquatic study of six lakes on the installation for water quality, fish population and ecological condition.

In partnership with the American Chestnut Foundation, the training center is replacing non-native Loblolly pine trees with a blight-resistant variety of the American Chestnut, a tree that was once prevalent across 60 percent of the eastern U.S., but was decimated by blight in the 1940s.

The NRC program at Wendell H. Ford Regional Training Center is an ideal situation for blending the needs of training with the stewardship of the land. The installation is able to use Kentucky ARNG helicopters for survey requirements and deer tracking. This allows the aviation group to support NRC goals, while logging necessary flight training hours and avoiding additional contract costs.

Outreach efforts with boy scouts, local elementary and high schools, and at-risk youth have helped establish the installation as an environmental leader. These efforts also raised awareness of the importance of environmental conservation and improved the Army's reputation as a good steward of our nation's natural resources.

POC is CPT Christopher Hettinger, 502-607-1860, Chris.P.Hettinger@us.army.mil

Mrs. Kropp is an environmental public affairs specialist for the U.S. Army Environmental Command at Fort Sam Houston, Joint Base San Antonio, Texas.

Comprehensive management program receives recognition

by Bill Bradner

Tobyhanna Army Depot recently won the 2012 Secretary of the Army Environmental Award for Environmental Quality at an Industrial Installation for their comprehensive environmental management program that covers air quality to groundwater and everything in-between. The depot, located in Monroe County in Northeast Penn., is the largest full-service electronics maintenance facility in the Department of Defense.

The Tobyhanna Environmental Management Division, Directorate of Industrial Risk Management, is responsible for ensuring the facility is compliant with all environmental regulations, and works to reduce the footprint of the facility through pollution prevention, energy efficiency, and resource conservation. "We establish cross-functional environmental objective and target teams to bring in ideas and contributions from across the depot to tackle the environmental challenges," said Nathan Edwards, chief of the Environmental Management Division.

Recent teams have focused on the areas of wastewater discharge, hazardous material management and energy conservation. One example of their efforts to reduce their environmental impact is their participation as a Net Zero Water Pilot Facility, which includes the goal of reducing potable water use 50 percent by fiscal year 2020.

Acronyms and Abbreviations	
BTUs	British thermal units
Penn.	Pennsylvania

In the past two years they've initiated a number of conservation projects including acoustic leak detection, water system pressure monitoring, drinking-water-system leak detection surveys, increased water metering, water recycling and reuse in industrial operations, rain water harvesting, and public awareness campaigns. The projects have already resulted in a 38 percent reduction in water use, saving more than 20 million gallons of potable water each year.

The acoustic leak sensor project was such a success it recently was awarded the 2012 Department of Energy Federal Energy and Water Management award. "The over-all improvement to the environment—less pollution, less chemicals, less impact on the watershed—is really incalculable," Wildoner added.

The environmental projects continue inside the buildings on post. Building 30, the newest facility, contains a number of innovative environmental controls and technologies. The building includes a large paint booth and two blast booths that feature variable frequency drives to conserve electricity in fan motors and air compressors. It also uses a heat recovery system to reduce natural gas consumption and captures thermal energy in exhaust systems. These systems save more than 10 million BTUs annually, for a cost savings of more than $100,000. "Construction has already begun to roll this technology ➤

Tobyhanna's Environmental Management Division personnel install an acoustic leak detection sensor, used to monitor water lines for leaks using sound waves. This innovative approach has applicability across DoD and has been shared across the Army as a best management practice.

(continued from previous page)

organizations as the Historic Savannah Foundation and the Society for Georgia Archaeology. CRM personnel volunteer with Georgia Southern University's excavations of the recently discovered Camp Lawton, a Civil War prisoner of war camp, and they played a central role in coordinating cemetery tours for the Fort Stewart Cemetery Council.

Part of the CRM mission is to instruct Soldiers and civilians on each unit's cultural resource compliance and stewardship requirements.

"We accomplish this through quarterly Environmental Compliance Officer courses, Environmental Quality Control Committee meetings and newspaper articles," said Tressa Rutland, chief of the Compliance and Pollution Prevention Branch. "Fort Stewart and Hunter Army Airfield staff also developed a cultural resource protection poster which was disseminated widely on the installation. Twice each year this poster, along with an article in the Fort Stewart Patch newspaper, spreads the protection of historic resources message. CRM also gives classes and educational talks at local schools and state historical sites."

As the winner of this Secretary of the Army environmental award category, Fort Stewart/Hunter Army Airfield will go on this spring to represent the Army and compete at the Secretary of Defense Cultural Resource Management Environmental Awards Program. The competition recognizes individuals, teams and installations for their outstanding achievements to conserve and sustain the natural and cultural resources entrusted to the Department of Defense.

POC is Thomas Fry, 912-767-2010, Thomas.C.Fry10.civ@mail.mil

Mr. Napp is an environmental public affairs Ssecialist for the U.S. Army Environmental Command, Joint Base San Antonio, Texas.

Fort Hood is no stranger to winning environmental awards

by Cathy Kropp

Last year Fort Hood won both an installation and team award at both the Secretary of Army and Secretary of Defense Environmental Awards competitions. This year it was no surprise when they captured the Sustainability award for a non-industrial installation in the fiscal year 2012 Secretary of the Army Environmental Awards competition.

Some credit the installation environmental management system with their success. Used to identify environmental vulnerabilities, document procedures in place, and examine how to improve processes related to the environment, there is no doubt this systematic approach to identifying and managing environmental vulnerabilities works at this installation.

Still others say it's the sustainability culture that is promoted throughout the installation that caused this most recent recognition. Hood's Environmental Compliance Assessment Team doesn't just conduct assessment and assistance visits, they keep installation tenants informed of installation environmental regulations and policies and provide training to ensure each organization knows how to identify deficiencies, get the help they need in taking corrective action, and formalize procedures and policies to prevent future occurrences

The Fort Hood Recycle Center is the largest recycle facility in the Army. Through education and outreach, the Recycle Center increases the amount of materials recycled each year. Photos by Christine Luciano, Fort Hood DPW Environmental

"If we can do our part, we can set examples and demonstrate that we can be a sustainable installation by 2020," said Lt. Gen. Mark A. Milley, commander of III Corps and Fort Hood.

Each year in April, Fort Hood hosts an Earth Day event to promote environmental stewardship to the Soldiers and civilians who work on the installation, but also to the families and schoolchildren in the area. It is an environmental education event with an eye to the future.

Their successes are evident throughout the installation. They boast the Army's first Leadership in Energy and Environmental Design (LEED) gold-certified chapel and the largest LEED silver-certified community in Texas.

Successful pollution prevention projects are collocated in an area of the installation referred to as the Environmental Corner. Here you can find a mobile kitchen trailer/compact kitchen wash bay that is a closed loop pretreatment system with no water entering the sanitary sewer or storm water systems. During the award period approximately 1.4 million gallons of polluted water was prevented from entering the sanitary sewer.

Also found in the Environmental Corner is a Tanker Purge facility that skims off fuel residue and recycles both so that the water and fuel can both be used. During the award period, this closed loop system saved more than 1,500 manhours and almost 3.5 million gallons of water.

The Environmental corner also ➤

Acronyms and Abbreviations	
LEED	Leadership in Energy and Environmental Design

(continued from previous page)

out to another 10 paint booths on the depot," Edwards said, "which will result in a total savings of nearly a half-million dollars annually in utility costs."

On a smaller scale, the depot has begun using laser stripping technology to reduce electricity costs association with traditional large-scale blast booths. This also reduces the hazardous waste associated with blast media. To ensure they have a handle on air-borne waste, 31 manometer alarms were installed to provide real-time monitoring of paint and blast filters, which ensures emission controls are followed, and cleanliness and serviceability of the equipment can be maintained.

The depot also has developed an extremely effective recycling program involving all organizations and tenants on the installation. In 2012, more than 80,000 cubic yards of debris was recycled rather than sent to landfills. The recycling rate averages 60 percent, well ahead of the Department of Defense's 2015 goal of 50 percent. Recycling sales brought in more than $1 million and have a cost-avoidance figure of another $270,000.

Also in 2012, the depot diverted almost 65 tons of useable scrap wood pallets to a program that turns them into birdhouses and sanctuaries, saving nearly $7,500 in recycling costs and benefitting the local community and wildlife. "Employees at all levels are engaged, empowered and encouraged to take an active part in the environmental program," Edwards said.

POC is Nathaniel W. Edwards, (570) 615-7090, nathaniel.w.edwards@us.army.mil

Mr. Bradner is a public affairs specialist detailed to the U.S. Army Environmental Command at Fort Sam Houston, Joint Base San Antonio, Texas.

Partnerships, Innovation Equal Award Winning Remediation at APG

by Kristina S. Curley

It was a combination of accomplishments rather than a single achievement that distinguished the U.S. Army Garrison Aberdeen Proving Ground (APG); as 2012 winner of the Secretary of the Army Environmental Award for Environmental Restoration in the installation category.

"Once considered an 'environmental disaster,' Public and regulator distrust abounded." said Vance Hobbs, Department of Public Works Environmental Division Chief. "Since then, a complete transformation has taken place. APG is proud of the restoration program's accomplishments."

According to Hobbs, the APG Installation Restoration Program's success result from strong partnerships with regulators and the public, innovative strategies and dynamic program management. The program focuses on supporting the APG mission while executing a cost-effective environmental cleanup program.

"APG plays a key role in national defense," said Terri Kaltenbacher, APG Community Relations Officer. "For the past 95 years APG has been the center for Army research, development, and testing of weapons, vehicles, and equipment."

Past practices resulted in numerous contaminated sites. APG has taken appropriate responses ranging from standard excavation and removal to innovative technologies.

Activated carbon pellets are applied to an upper creek wetland at APG as part as part of a study utilizing activated carbon as a means of sequestering or isolating harmful contaminants from being stored in the organs or body tissues of aquatic organisms and animals. hoto courtesy APG Public Affairs Office.

"Our objectives are ensuring prompt action to address imminent and substantial threats to human health, safety and the environment; conducting appropriate, cost effective efforts to identify, evaluate, and conduct response actions, and promoting and supporting public stakeholder participation in the cleanup process," said Cindy Smith, Environmental Planning and Sustainability Branch Chief.

"I would like to give special thanks and recognition to the Installation Restoration Program team members: Rurik Loder; Allison O'Brien; Jeffrey Aichroth; Teresa Deshong, Ruth Golding (retired); and Karen Jobes. Without the core group's expertise and hard work, we would not be in the position to win this award."

Improved stakeholder relations ➤

Acronyms and Abbreviations	
APG	U.S. Army Garrison Aberdeen Proving Ground
EPA	U.S. Environmental Protection Agency
DoD	Department of Defence

(continued from previous page)

has a JP-8/oil/antifreeze center that prevents petroleum, oil and lubricants from entering the environment. During the award period, Fort Hood collected more than 140,000 gallons of JP-8 fuel and more than 245,000 gallons of used oil, generating more than $250,000 and avoiding disposal costs, while recycling valuable resources. Thanks to the recycling center, the installation sent more than 43,000 gallons of antifreeze for recycling instead of disposal as a hazardous waste.

They also have the largest recycle facility in the Army. During the award period, they sold 15,315 tons of recycle material and generated approximately 2.89 million with Defense Reutilization and Marketing service sales assistance. Approximately $332,000 was returned to support installation pollution prevention projects and $370,000 for family and morale, welfare and recreation events.

Always looking to the future, Fort Hood representatives are working together to reduce waste and eliminate landfill use by 2020 -- they have been designated as a Net Zero Waste installation. In December 2011, Soldiers, Airmen, civilians and contractors got together for a kickoff workshop to discuss ideas and establish work groups to focus on reducing, repurposing, recycling, marketing and outreach. The work group leaders have developed targets, objectives and action plans, and brief their progress quarterly.

Whether the task is material substitution, hazardous material management, utility management, alternative energy solution, green product procurement, sustainable landscaping or fleet performance, teams at Fort Hood are always looking for ways to do things smarter and create a more sustainable installation.

"It's important people understand about the environment, conservation and recycling because our children's and grandchildren's future rest on the decisions we make today," Milley said.

POC is Christine Luciano, 254-291-3257, christine.a.luciano.civ@mail.mil

Mrs. Kropp is an environmental public affairs specialist for the U.S. Army Environmental Command at Fort Sam Houston, Joint Base San Antonio, Texas.

USAG-Vicenza, Italy Recognized for Environmental Quality

by Kristina Curley

Focusing on the triple bottom line of sustainability - mission, community and the environment, recently won U.S. Army Garrison (USAG) Vicenza the Fiscal Year 2012 Secretary of the Army Environmental Award for Environmental Quality - Overseas.

USAG Vicenza provides base support operations and installation management services for 11,000 soldiers, families, and civilian employees. The garrison manages 540 buildings on 460 acres scattered over six separate locations around Vicenza, Italy.

" While rapid growth has strained resources, we proudly continue providing exceptional service to our tenant and unit commands, and the community at large," said Jim Lessard, Department of Public Works (DPW) Environmental Chief. "We also maintaining the highest environmental standards and sponsoring initiatives to make environmental programs even more effective."

Mr. Greg Vallery, DPW Engineering Division Chief, explains the operation of the Cogeneration Central Energy Plan to DoDDS school students. A recent $6 million upgrade, completed with an Energy Savings Performance Contract, not only provides more energy security for the post, but is also projected to save $800,000 in energy bills annually. A number ofclasses took part in this tour as part of 2012 Earth Day activities.

Sustainability is ingrained into Vicenza's daily operations. Recycling is a legal requirement In Italy, and the installation's program recycles all the usual items along with organic waste, toner cartridges, batteries, and expired medicine. The garrison also operates an Eco-Center that accepts all recyclables and including scrap metal. Eco-Center personnel serve as liaisons to assure the U.S. Army meets host nation recycling requirements. "Due to constant community efforts, the garrison tripled the amount of urban waste recycled from ➤

Acronyms and Abbreviations	
DPW	Directorate of Public Works
USAG	U.S. Army Garrison

(continued from previous page)

and community outreach transformed an outraged public to positive and supportive partners. Faced with negative pre-existing community opinions, the APG team worked diligently to restore trust and change public opinion through educational briefings, site tours, open public meetings, and aggressive community outreach.

"Our aggressive and proactive approach forged an open, strong, and lasting alliance with the community resulting in an overall sense of trust and respect, "said Kaltenbacher.

"The long-term benefits go beyond the restoration program to APG as a whole."

APG also fostered a successful partnership with the U.S. Environmental Protection Agency (EPA) that lead to their selection as a pilot installation for a successful initiative to resolve discrepancies between the Department of Defense (DoD) and EPA in reports to minimize environmental impacts..

Positive regulatory relationships also led APG approval to test the concept that the sun's energy could be used to make the white phosphorous discovered during a soil remediation self ignite when heated in a slightly moist environment. The treated soil was cleared for landfill disposal, saving the Army $3.8 million.

"APG has a long history of alternative remedy study and development," said Rurik Loder, Restoration Program Team Lead. "We host DoD Environmental Security Certification Technology Program scientists, whose proven innovative technologies may be incorporated into APG site remedies and potentially be applied Army-wide."

Two such studies are testing activated carbon's ability to isolating harmful contaminants in wetland environments at APG.. Traditional sediment cleanup methods are expensive and harm the ecosystem. With over 200 acres of contaminated wetlands, this technology could save APG millions of dollars and

APG also hosted the Army's first phytoremediation demonstration to determine if trees could capture and treat a shallow groundwater plume contaminated with volatile organic compounds. The pilot study's success resulted in its becoming part of the final site remedy and being accepted Army-wide.

"Many of APG's remaining sites are among the most complex and challenging due to the nature and extent of contamination," Smith said. "Our challenge is to continue the actions recognized by the Secretary of the Army to find innovative technologies that protect the environment for reuse while demonstrating fiscal efficiency."

POC is Vance Hobbs, 410-306-2250, Vance.G.Hobbs.civ@mail.mil

Ms. Curley is an environmental risk communications specialist for the U.S. Army Environmental Command, Joint Base San Antonio (Fort Sam Houston), Texas.

Preserving history wins Fort Bragg Secretary of the Army award

by Barry R. Napp

The Fort Bragg Cultural Resources Management Team recently won Army-level recognition for their work in preserving historical and archeological artifacts on the installation. They were awarded first place in the Secretary of the Army Environmental Awards, in the "Cultural Resources Conservation, Team Award, Installation" category for fiscal year 2012.

The 12-person group of archaeologists and historical preservation experts inventoried 4,500 acres on Fort Bragg to ensure compliance with federal laws. In addition, the team documented the finding and location of two important archaeological discoveries, made by others, in the installation's training areas.

Linda F. Carnes-McNaughton, installation archaeologist and curator at Fort Bragg, said the discoveries included a tool dating to 12,000 B.C. and stone slabs from approximately 2,000 years ago. These are the latest prehistoric items found on Fort Bragg. "The one find was slabs of raw quarried stone used for weapons ➤

The William McArthur head stone was one of 104 grave markers in 16 historic cemeteries on Fort Bragg which was damaged and restored following a tornado in April 2011.
(U.S. Army Photo courtesy of Fort Bragg Cultural Resources Team)

The Williamj McArthur head stone restored.
(U.S. Army Photo courtesy of Fort Bragg Cultural Resources Team)

(continued from previous page)

15 to 52 percent in less than 10 years," Lessard said.

USAG Vicenza also is developing programs to implement environmentally preferable technologies, such producing a reusable by-product from dehydrated compostable waste, shop towel recycling and ultrasonic parts cleaning to elminate solvent use, that promote more efficient and sustainable resource utilization. "The garrison also has an aggressive energy management program," said Greg Vallery, Department of Public Works Engineering Chief. "Our photovoltaic projects will produce 1.5MW of electricity each day and installation of a high efficiency centralized chiller uses low/no cost steam and hot water to make chilled water."

Vicenza developed a "Green Council" to provide Executive-Level leadership and guidance on achieving federally-mandated environmental, energy, and economic requirements of Executive Order (EO) 13514. The cross-functional team concept ensures the right people are at the table making decision and ensuring they align with local compliance requirements. The Green Council concept and Pollution Prevention technology initiatives were shared with other Army Garrisons and other Federal Agencies can benefit from these initiatives.

"We also take pride in integrating innovation and sustainability into construction and rehabilitation," said Kambiz Razzaghi, Department of Public Works Director. "We've integrated 'Smart Growth' Principles into installation Master Planning and U.S. Green Building Council design into new facility construction and renovation." The 151-acre, $400 million Dal Molin Multiple Facilities Complex being built to house four battalions and their brigade headquarters will set a new standard for sustainable base development, with, at minimum, a LEED Silver certification.

USAG Vicenza also plays an active role in educating the community on environmental issues. The Eco-Center serves coordinates and schedules training classes to educate students and the USAG Vicenza community about the procedures and importance of recycling and waste minimization. Eco-Center personnel also assist tenant facilities by assessing and recommending options to comply with host nation environmental laws and requirements. "Vicenza attaches a great value on information, education and awareness as a way to stress the importance of good environmental stewardship," Lessard said. "We host outreach activities for Earth Day, and National Pollution Prevention and Energy Awareness Month to spread awareness and share knowledge."

USAG Vincenza's robust sustainability program helps the garrison, tenants and the community evaluate current environmental practices and operations to find opportunities to reduce waste, save Army dollars and improve work performance. These types of efforts keep Vicenza well positioned to manage the increased demand on energy, water and raw materials resulting from expansion.

POC is Jim Lessard, DISN 314-634-8941, james.a.lessard4.civ@mail.mil

Ms. Curley is an environmental risk communications specialist for the U.S. Army Environmental Command, Joint Base San Antonio (Fort Sam Houston), Texas.

One person makes a sustainable difference

by Cathy Kropp

Sustainability looks at managing your impact on everything, according Ms. Dorenda Coleman, winner of the 2012 Secretary of the Army Environmental Award for Sustainability - Team or Individual.

Judges selected the Arizona Army National Guard (ARNG) sustainability manager over 11 teams and one other individual nomination from across the Army for her efforts in integrating sustainability concepts throughout the Arizona ARNG in fiscal year 2012.

Acronyms and Abbreviations	
ARNG	Army National Guard
ASU	Arizona State University
EMS	Environmental Management System
ISO	International Standards Organisation

Coleman started working in the Arizona ARNG environmental department in 2005 as the person responsible for implementing ISO 14001, Environmental Management System (EMS). When she heard about sustainability, she said it sounded like EMS on steroids.

"Like EMS, sustainability is about supporting the mission and ensuring we can continue into the future, short term and long term," said Coleman. "However, sustainability looks beyond managing the impact of operations on the environment, to determine how to manage impacts on everything."

Realizing that sustainability had to be integrated throughout ARNG operations to be successful, Coleman established ➤

In 2012 the Arizona ARNG opened up a pilot program solar parking lot. The 20-car site provides covered parking for vehicles, and the top of the parking structure is covered in solar panels. The solar array has a capacity of 44.5 kW DC peak, expected to produce 75,000kWh/Year.

(continued from previous page)

and other tools, while the other was an ancient Clovis point used for a spear or other cutting tools," she said.

The Paraglide, Fort Bragg's installation newspaper, reported the Wilmore cache of stone quarry slabs and an ancient Clovis point enhanced the knowledge of the earliest people to inhabit the Fort Bragg region. The Wilmore cache was named after Jim Wilmore, the forester grader operator who found it in the fall of 2011. It is an Archaic-period collection of pre-forms, or blanks, for creating weapons. It was buried more than 2,000 years before being uncovered in grading operations. The cache contains about 180 pieces of stone that are hand-size or smaller. It weighs close to 30 pounds, about what one person could comfortably carry overland, on foot.

The Fayetteville Observer earlier reported the Clovis point was found during a combat engineering training event near Sicily Drop Zone by Sgt. Mark Shannon and Pfc. Matthew Johnson, 3rd Brigade Combat Team, 82nd Airborne Division. They reported the find, and the Cultural Reserves Team documented the find and its location. The point is made of rhyolite, a material from the Slate Belt region of North Carolina. It is the most complete one of these points found on Fort Bragg lands. "The receipt of this award validates long-overdue recognition of the staff's long-held commitment to Fort Bragg's sustainability goal: 'the right way, the green way, all the way,'" said Charles Heath, archaeologist.

Other archaeological sites on Fort Bragg include an ancient American Indian campsite, a family homestead dating to the 18th century, and the site of a minor Civil War battle, officials said. Carnes-McNaughton said archaeologists have been working at Fort Bragg since at least 1995 documenting and preserving its historic legacy and her team is delighted to have won the award. According to Carnes-McNaughton, the preservation oversight includes 27 historic cemeteries and 388 buildings more that 50 years old, with two of those buildings, the Longstreet and Sandy Grove Chapels, dating back to the 19th century.

While Fort Bragg is not home to a museum that displays all of the artifacts found and protected, they are loaned to other museums and other units. The surveys and preservation efforts help reduce restrictions on training lands while maintaining compliance with the National Historic Preservation Act. "One of our biggest challenges is ensuring the historical sites, structures and landscapes, along with Native American sites, are preserved for future generations while reaching a sustainable balance between that preservation effort and new missions," said Carnes-McNaughton.

As the winner of this Secretary of the Army environmental award category, the Fort Bragg Cultural Management Team will go on to represent the Army and compete at the next level at the Secretary of Defense Environmental Awards this spring. The competition recognizes individuals, teams and installations for their outstanding achievements to conserve and sustain the natural and cultural resources entrusted to the entire Department of Defense.

POC is Paul Humphrey, 910-396-6518, Paul.G.Humphrey2.civ@mail.mil

Mr. Napp is an environmental public affairs specialist for the U.S. Army Environmental Command, Joint Base San Antonio, Texas.

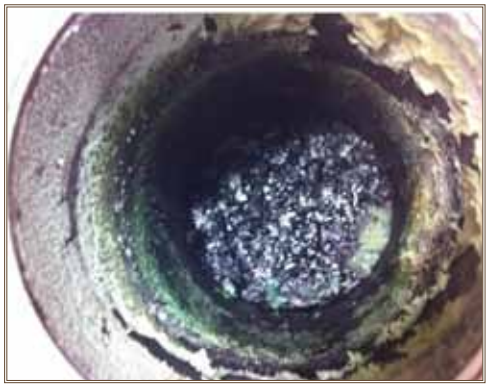
Counterfeit investigation wins TARDEC an environmental award

by Bill Bradner

The Tank Automotive Research, Development and Engineering Center (TARDEC) recently won the 2012 Secretary of the Army Environmental Award for Excellence in Weapon System Acquisition for their work in detecting and mitigating the effects of counterfeit refrigerant in Army vehicles.

TARDEC is part of the U.S. Army Research, Development and Engineering Command, located in Warren, Mich. The Center formed an integrated process team (IPT) in response to an All Army Activities (ALARACT) Message sent March 2, 2012, that alerted the Army that they may have been provided with contaminated of counterfeit refrigerant. The ALARACT indicated that contaminated refrigerant had been found in the Middle East and Europe and had caused cooling system fires when technicians serviced systems that contained R-40, and not the safer R-134a. R-40 is also a suspected carcinogen, contains a deadly chemical called methyl chloride, and is flammable when exposed to aluminum.

Acronyms and Abbreviations	
ALARACT	All Army Activities
IPT	Integrated Process Team
TARDEC	Tank Automotive Research, Development and Engineering Center
U.S.	United States



Corroded laboratory vessel from reactions of counterfeit refrigerant with AC system materials

At the time of the ALARACT, the U.S. Army had not received any reported incidents involving counterfeit ➤

(continued from previous page)

four interdepartmental teams and a cross-functional network of support dedicated to infrastructure and utilities; materials management; community outreach, and readiness.

The teams incorporate members from ARNG sites and facilities throughout Arizona. Members come from the environmental department, but also include representation from the property and fiscal office, purchasing, engineering, information technology, human resources, fleet management, procurement and custodial departments. The teams are focused on the Strategic Sustainability Performance Plan and the goals laid out in that plan.

Coleman has been expanding sustainability education and training across the Arizona ARNG. To better educate existing Army and Army Guard Soldiers and personnel, as well as prepare the next generation of sustainability professionals, Coleman worked closely with Arizona State University (ASU) to develop and launch a Sustainability Leadership Graduate Certificate program.

This certificate program is the first of its kind, bringing together the unique viewpoints and requirements of the military and the Army National Guard with the academic community in the field. Though the courses are tailored to the National Guard and its operations, the class is open to civilian students as well, demonstrating the cross-compatibility of the military's sustainability practices, techniques and approaches.

"Culture change is a huge part of any shift in thinking and these courses really will help initiate that culture change in the Army and the Army National Guard," Coleman said. "It took about three years to develop and get off of the ground. I'm truly thankful I had the opportunity to work on this program," she said.

In addition to the ASU partnership, Coleman has established strong collaborative relationships with Northern Arizona University, the Arizona Air and Water Trust, the Arizona Water Association, the Pinal County Partnership, the Western Regional Partnership, a coalition of federal, state, and defense agencies involved in sustainability issues, and others.

The Arizona Air and Water Trust is another ARNG valuable partner that assists with purchasing and managing easements and the associated administrative work, through the Army Compatible Use Buffer program. This helps further conservation goals for both organizations, while saving tens of thousands of dollars each year.

As the Sustainability Manager of the Arizona ARNG, Dorenda Coleman is at the core of all sustainability undertakings across the Arizona ARNG's training sites, readiness centers and mission facilities, and is deeply integrated into operations at every level. Coleman's leadership and management of the many facets of sustainability, from encroachment protection to green construction to recycling to energy and resource conservation has been key to integrating sustainable practices and awareness into the Arizona ARNG culture.

POC is Dorenda Coleman, 602-629-4261, Dorenda.Coleman@fmo.azdema.gov

Mrs. Kropp is an environmental public affairs specialist for the U.S. Army Environmental Command at Fort Sam Houston, Joint Base San Antonio, Texas.

Fort Carson Steps up Raptor Protection Effort

by Michelle Blake

Miles of power lines crisscross Fort Carson, a 137,000-acre training base nestled at the foot of Cheyenne Mountain in Colorado Springs, Colorado. And while these lines are essential to the functioning of the garrison, many poles present a deadly threat to wildlife, especially raptors.

Raptors are at greater risk, in part because of their wide wingspan, but also because of their predatory nature. Although most raptors hunt from the air, some species prefer to engage in a "still hunting" technique from a high vantage point, thereby avoiding expending the valuable energy required for flight. Power poles provide ideal perching, hunting and nesting opportunities, especially in open areas where the availability of natural perches is limited.

Nationally, from 1960-1995, more than 4,300 eagle deaths from power lines were reported (LaPoe et al. 1995), and the greatest number of fatalities occurred in open prairie type landscapes, similar to those found around Fort Carson. Since these numbers only account for the deaths that were both noted and reported, the actual number killed are likely much ➤

Acronyms and Abbreviations	
APP	Avian Protection Plan
DPW	Division of Public Works
PCMS	Pinon Canyon Maneuver Site

What is a raptor?

The word raptor is derived from the Latin word, rapere, which specifically means to "take or seize" by force. As their name implies, most raptor species share distinct characteristics including strong talons for catching and holding prey, sharp beaks for tearing flesh, keen eyesight and acute hearing for hunting. On Fort Carson and Pinon Canyon Maneuver Site, 30 species of raptors have been documented, including bald and golden eagles.

(continued from previous page)

refrigerant. However, since many Army vehicles use aluminum in their coolant/refrigerant systems, and existing unit recovery/refill equipment did not identify whether or not refrigerant contained R-40, the IPT needed to act quickly to prevent damage to property or injury to personnel.

"There were environmental impacts, as well," said Andrew Schultz, Lead Engineer in the TARDEC division, "due to refrigerants leaking out of contaminated systems. Their plan called for determining if Army vehicles or containers contained counterfeit refrigerants, determining the impact and contamination risk if R-40 was present, determining the risks involved in servicing equipment with R-40 and how to mitigate those risks, developing a field testing unit to allow Soldiers to test refrigerant prior to use, and developing disposal procedures for contaminated refrigerants.

The IPT worked with industry and academia subject matter experts, members of the Society of Automotive Engineers and the Defense Logistics Agency, and numerous other Departments of the Army and Defense logistics, safety, maintenance and depot representatives to develop solutions for the identification, containment and mitigation of contaminated refrigerants. The TARDEC-Industry collaboration was instrumental in being able to quickly develop, test and field information products, solutions and testing and mitigation equipment. "Without industry, it may have taken 21 to 24 months to duplicate the required characteristics," said Jeffrey Marcinok, a TARDEC Mechanical Engineer, "but there had already been years of technological development in industry." Marcinok added, "The goal of the IPT was to leverage that technology already in place, by modifying it to fit Army and Department of Defense needs."

Through extensive Army-wide integrated vehicle screening initiatives, more than 18 different refrigerants were found in military vehicles, including the toxic and reactive R-40 which initiated the formation of the IPT.

To allow the field to safely and effectively detect counterfeit refrigerants, TARDEC leveraged their automotive industry relationships to develop an electronic tester for R-134a. Via a Cooperative Research and Development Agreement with Neutronics, Inc., existing testers were modified and updated to identify vehicle systems contaminated with counterfeit refrigerants. TACOM performed initial field tests in Kuwait, and stationed testers at several Army Depots to increase the number of vehicles tested, the initial data collection and user feedback on the testing devices.

In less than a year, the technology was transferred to the field in the form of an electronic test kit and instructions for use. To date, there have been no reports of injury to personnel or major loss of equipment in the Army due to contaminated refrigerants… though approximately 25 percent of the vehicles tested have contained some level of refrigerant contamination, Shultz said.

POC is Dr. Paul Rogers, 586-282-5684, Paul.D.Rogers14.civ@mail.mil

Mr. Bradner is a public affairs specialist detailed to the U.S. Army Environmental Command at Fort Sam Houston, Joint Base San Antonio, Texas.

(continued from previous page)

higher. In addition to the negative impact that these fatalities have on the raptor population, wildfires can be ignited when an electrocuted bird catches on fire and falls to the ground and power companies are inconvenienced by the temporary power outages and line trips. These Planning Support Centers provide technical support to both USACE HQ as well as the field.

Power lines on Fort Carson have been evaluated for potential raptor electrocution risk, based primarily on evidence (quantity of white wash, bones from prey and visual observations) that indicate high raptor use and on pole configuration. A second inventory is currently underway at Fort Carson's Pinon Canyon Maneuver Site, a 236,000-acre, non-contiguous maneuver site located 150 miles southeast of Fort Carson. Although the landscapes and levels of military use are different, the same criteria are being used for both evaluations. Of the 1,113 poles evaluated to date at Fort Carson, 59 demonstrated heavy use, and of those, 13 were deemed critical and in need of immediate attention.

"Fort Carson is dedicated to preventing raptor fatalities from power lines," said Carlos Rivero-deAguilar, Fort Carson DPW Environmental Division chief. "Since funding is not available to retrofit every single power line, the first phase in the raptor protection effort is to evaluate and prioritize the existing poles within the garrison boundary."

Fort Carson Directorate of Public Works biologists are partnering with local electric companies to implement some of the avian protection techniques outlined in Avian Protection Plan, a document which power companies and U.S. Fish and Wildlife Service partnered to prepare. Understanding raptor behavior and the mechanics of how raptor electrocution occurs are essential steps in the implementation of effective protection techniques.

Birds are not injured by voltage alone. They must simultaneously complete the circuit between two energized points (lines or conductors) or between an energized line and a ground. Many raptors have a substantial wing span and may accidentally hit both energized lines with their wings during landing and takeoff. Tall water birds, like great blue herons, are also at risk because of their vertical height and the

(continued from previous page)

probability that their feathers are wet and therefore more conductive. Although the raptors' wingspan and the spacing of live wires are the primary electrocution risk factors, high-use poles with complicated configurations (multiple energized and grounded metal parts), proximity to a food source, age of the bird, availability of alternative perches, inclement weather, breeding seasons and nearness to a migratory pathway play a role.

A bald eagle (Haliaeetus leucocephalus) perches atop a power line along Highway 350 near the boundary of Fort Carson's Pinon Canyon Maneuver Site in southeastern Colorado. Bald eagles and other raptors frequently use power poles to scan for prey, which can put them at risk for electrocution because of their wide wing span. (Michelle Blake, photographer)

Remedial actions outlined in the APP include expanding the horizontal length of the cross arm from 8 to 10 feet or providing at least 60 inches of clearance between live wire/points to decrease the likelihood that large raptors can contact both lines/points simultaneously when they flap their wings. Other protection measures include increasing the vertical spacing between energized and ground wires, and placing insulating rubber covers over exposed wires, jumpers and conductors to protect a bird in the event of accidental contact. Another effective and simple retrofit is to erect an alternate perch several feet above the live wires.

In February 2013, Fort Carson opted to install protective rubber covers over the exposed wires and components on 13 of the highest risk poles. "What we have worked on to date at Fort Carson is 13 critical poles owned by the government," said Alan Davis, DPW Operations and Maintenance Division electrical engineer and technician. The DPW coordinated with its operations and maintenance ➤

USAEC maps environmental cleanup sites and land use controls

by James Russ

The U.S. Army Environmental Command has been working with installation subject matter experts (SMEs) to map the location of environmental cleanup sites and land use controls (LUCs) on Army installations nationwide. Authority for the data collection project comes from EXORD 08-024, which describes the Army's Centralized Geospatial Data Collection Effort (CGDCE), and FRAGO 5 to EXORD 08-024, which initiated data collection activities for environmental cleanup sites and LUCs.

Both data layers being collected have a corresponding feature class in the Spatial Data Standard for Infrastructure and Environment (SDSFIE) v 2.61.

The environmental restoration area layer represents the locations of restoration cleanup activities included in the Army Environmental Cleanup Strategy and represents sites in all phases of the cleanup process.

The land restriction area (LUC) layer represents the location of any type of physical, legal, or administrative mechanism that restricts the use of, or limits access to, real property to prevent or reduce risks to human health, safety, and the environment.

Geospatial data from the project is used to identify property parcels associated with specific cleanup sites and is used in other spatial analyses at the installation and command level. Additionally, mapping the locations of cleanup sites and LUCs can also prevent the siting of Military Construction (MILCON) projects in areas with known contaminants and can help prevent Soldiers from accidental exposure to harmful substances while training.

Significant progress has been made in the last few years to collect the geographic extent of those sites included in the Army's Environmental Cleanup Strategy and listed in the Army Environmental Database-Restoration (AEDB-R). Once the Headquarters Army Environmental System (HQAES) goes online, it will replace AEDB-R as the database of record for the sites being collected.

Not all sites were included in the initial data collection process, and additional sites have been added to AEDB-R since the project began. USAEC will continue to collect the geographic boundaries of cleanup sites and LUCs as the cleanup program moves forward. As data is collected and validated by installation SMEs, it is loaded into Army Mapper for use by all Common Access Card (CAC) card holders.

Acronyms and Abbreviations	
AEDB-R	Army Environmental Database-Restoration
CAC	Common Access Card
CGDCE	Centralized Geospatial Data Collection Effort
EXORD	Execute Order
FRAGO	Fragmentary Order
HQAES	Headquarters Army Environmental System
LUC	Land Use Control
MILCON	Military Construction
SDSFIE	Spatial Data Standard for Infrastructure and Environment
SME	Subject Matter Expert

POC is James Russ, Geographer, 210-466-1791, james.a.russ14.civ@mail.mil

James Russ is a geographer, Cycle Four CGDCE Project Manager with the U.S. Army Environmental Command.

(continued from previous page)

contractor, Fort Carson Support Services, to have the work done. Additional frequently used poles may be modified in future but funding is essential.

The Bald Eagle Protection Act, enacted in 1940, and later amended to include golden eagles, applies criminal and civil penalties to any person who knowingly or unintentionally "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald [or golden eagle], alive or dead, or any part, nest, or egg thereof." The word "take" is defined as to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

Penalties for violations are severe and can result in fines of $100,000 ($200,000 for an organization), a year in jail, or both. Electrocution of golden or bald eagles falls under the definition of a "take" and is therefore illegal.

In addition to reducing mortality risks from power lines, Fort Carson biologists have initiated several projects to enhance raptor habitat, support raptor protection and monitor raptor populations. They have coordinated with local Boy Scouts to build raptor nest boxes which are installed throughout the garrison, (with the exception of air fields and high traffic areas, where raptor activity is intentionally discouraged to prevent accidental collisions).

Biologists are collaborating with San Isabel Electric, a Colorado utility company, which has indicated willingness to install several alternate perch poles in critical areas at PCMS. During the winter, surveys for migratory raptor species are conducted and golden eagle nests are monitored so that buffers can be placed around active nests to ensure the eagles are not disturbed while nesting.

All these efforts are being supported by Fort Carson to preserve and protect these important species for the health of the environment and the enjoyment of future generations.

POC is Richard Bunn, 719-524-5393, richard.l.bunn12.civ@mail.mil.

Michelle Blake is a Fort Carson wildlife biologist consultant at the Pinon Canyon Maneuver Site, 719-503-6538, michelle1colorado@gmail.com.

Getting their goats: Earth Terminal pilots sustainable landscaping program

by Jonelle Kimbrough

Usually, a hearty appetite is not a characteristic that one would include on a résumé, but when the 578th Signal Company and 302nd Signal Battalion were in search of landscapers for their compound, "voracious feeder" was a desirable trait. The new grounds maintenance specialists at the Earth Terminal on Fort Bragg do not have mowers, rakes, loppers or shovels. They have cloven hooves, shaggy coats, tufted tails and indiscriminate palates. They are goats.

According to Earth Terminal facility manager Robert Robbins, the addition of goats to the ranks evolved from a need for both security and sustainable landscaping. As an additional fence was installed around the perimeter of the compound, the maintenance of the terrain between the new fence and the existing boundary was a concern. "The fence line was filled with woods and brush," Robbins explained. "The brush obscured our lines of sight and presented a security issue, so we had to find a way to keep it controlled."

At first, the removal of the trees and the planting of grass in the area appeared to be the only ways to achieve the goal, but Robbins and the wildlife biologists at the Directorate of Public Works were reluctant to eradicate so many mature pines. Instead, they developed a plan to control the natural vegetation, preserve the boundary and minimize the environmental impacts. Goats were a logical solution.

The Earth Terminal is an ideal location for goats. Generally, goats can and will eat most forms of vegetation – about 2 percent to 4 percent of their body weights daily, depending on their stature and breed. The sea of straw, scrub trees and duff at the Earth Terminal is a veritable buffet for the creatures.

Robbins and the biologists obtained the Earth Terminal's first trip of three goats in April of 2011. Now, there are several goats in the menagerie.

One of several goats that serve as grounds maintenance specialists at the Earth Terminal on Fort Bragg. Photo by Jonelle Kimbrough.

For the goats, life at the Earth Terminal is Shangri-La by any bearded ruminant's standard. They spend their days munching on the thicket and resting in the shade. They especially enjoy frequent visits from Robbins and the Soldiers, who bear treats including banana peels and cups of sweet feed.

"The goats are outstanding at their task," Robbins said. "They control the brush, and feeding them is cheaper than hiring a landscaping contractor to clear the fence line and mow the grass."

In addition, an estimated 350 longleaf pines were spared as a result of the goats. The Soldiers at the Earth Terminal can spend their hours focusing on the mission rather than grounds maintenance. And, the goats reduce the need for mowers, thereby reducing the associated emissions and air pollutants.

The goats are even beneficial to other agencies on Fort Bragg. The Fort Bragg Veterinary Clinic tended matriarch goat Bella when she fell ill following the birth of two kids last spring. Veterinarian Captain Andrea Winkel of the 83rd Civil Affairs Battalion said that the presence of goats at the clinic was unusual but rewarding. "It was a great learning opportunity for all that were involved in Bella's care because we don't often get to work on small ruminants," remarked Winkle. "The goats are a great training opportunity for the medics since small ruminants are the predominant animals with which we are in contact when we deploy."

For company commander Captain Vincent Duenas, the novelty gardeners are an educational opportunity and a morale booster. "The goats set a great example for our Soldiers and encourage them to protect the environment," said Duenas. "They present a unique opportunity to save money and save natural resources, but they are also fun. By interacting with them, ➤

Fort Bragg reaches another milestone in Woodpecker recovery

by Jonelle Kimbrough

What can halt training and maneuvers at one of the world's most strategically crucial military installations? Neither foreign threats nor civil unrest have disrupted the mission at Fort Bragg.

Rather, a bird holds that infamous distinction.

Over twenty years ago, the United States Fish and Wildlife Service imposed stringent training restrictions on Fort Bragg due to the degradation of habitat of the endangered red cockaded woodpecker.

Since then, Fort Bragg has achieved significant successes in the recovery of its red cockaded woodpecker populations and has recently removed additional training restrictions.

The red cockaded woodpecker is one of five federally endangered species on the installation. The destruction of its old growth pine forest habitat through deforestation, development and suppression of beneficial fire has contributed to its decline. Fort Bragg is required to protect the bird under the Endangered Species Act, so the installation must also manage its unique environment.

Initially, the scope and duration of military training activities within the red cockaded woodpecker habitat areas were subject to restrictions in accordance with Installation Range Regulation 350-6 and the Army Red Cockaded Woodpecker Management Guidelines.

"When we were in full training restrictions, Soldiers could do nothing," said Michael Lynch, the director of Plans, Training, Mobilization and Security. "If you entered a woodpecker cluster, you could only walk through it. You could not dig. You could not use a generator. You could not be in the middle of a fire fight with blanks. You could not use pyrotechnics or smoke. You physically had to stop training."

Wildlife biologist Rod Fleming removes signs designating former red cockaded woodpecker buffer zones on training lands at Fort Bragg. Photo by Jonelle Kimbrough.

Through regional partnerships, habitat management and population management, the presence of red cockaded woodpeckers on the installation has increased, and the Soldiers and the birds have learned to live in harmony. Fort Bragg Forestry conducts prescribed burns, thins pines and removes mid-story hardwoods to maintain the health of the forests and to open the canopy, thereby improving thousands of acres of land for peak military maneuver capability. The Fort Bragg Endangered Species program installs artificial cavities to provide roost and nest habitat as the forest ages and documents success through population monitoring.

"This has been a long journey of learning, but one that has paid multiple benefits to Fort Bragg, the Army and the nation," said Lynch. "When we started down this road, all we had was a blank slate and a need to find a solution that would bring the community and its resources to the table. The work that was done since then has far exceeded anything we could have imagined."

In 2005, Fort Bragg became the first Army installation to reach a major population recovery milestone. As a result, training limitations were lifted from approximately 50 percent of the red cockaded woodpecker habitat areas to restore about 3,000 acres of land to unrestricted inventory.

Fort Bragg recently completed a four-year comparative analysis between protected and unprotected sites in two sample areas with similar habitat types and levels of training exposure. Biologists determined the productivity of the birds by a variety of factors such as survivorship and fledgling success. Results indicated that the productivity of protected sites did not significantly differ from that of unprotected sites. Therefore, training restrictions have been removed from an additional 4,000 ➤

(continued from previous page)

we can enjoy a break from the average day."

At Fort Bragg, sustainability is an integral aspect of operations, but certain units and organizations reach beyond mere requirements to truly achieve the Army Triple Bottom Line of Mission, Environment and Community. Robbins and the Soldiers at the Earth Terminal prove that innovative environmental projects such as their unusual landscapers really do separate the sheep from the goats.

POC is Jonelle Kimbrough, 910-396-3341, jonelle.k.thompson.ctr@mail.mil

Jonelle Kimbrough is the media relations manager, Environmental Management, Environmental Division, DPW, Fort Bragg

Environmental Communities of Practice

by Michael Dette

Have you ever wondered what the best management practice is for treating waste water, or how do I implement the Environmental Protection Agency's new boiler rule? To find the answer it often meant that someone at an installation would spend hours searching the internet or digging through trade articles to interpret the information and hopefully coming to the correct solution.

The U.S. Army Environmental Command (USAEC) is implementing a process called Communities of Practice (CoP) that speed up this time consuming process. USAEC has established CoPs for the following environmental areas: Clean Air Act, Water Quality, Resource Conservation and Recovery Act, Integrated Pest Management, Environmental Management Systems, Cultural Resources, Natural Resources, and Resilient Sustainability.

A Community of Practice as defined in AR 25-1, is a group of people who regularly interact to collectively learn, solve problems, build skills and competencies, and develop best practices around a shared concern, goal, mission, set of problems, or work practice. CoPs cut across formal organizational structures and increase individual and organizational agility and responsiveness by enabling faster learning, problem solving, and competence building; greater reach to expertise across the force; and quicker development and diffusion of best practices.

USAEC formed the CoPs originally to aid in the development and cross training of its staff as it transitioned from Aberdeen Proving Ground to Fort Sam Houston. Each CoP has a lead (see below.) The lead identifies training needs and opportunities in their area, reviews all Environmental Performance Assessment System (EPAS) findings and identifies trends, reviews emerging or new regulatory rulemaking, and distributes this information to the rest of the community.

Some of the benefits realized by active, engaged, and effective CoPs are listed below:

- Flow of high-quality information from both inside and outside the community
- Prevent loss of knowledge
- Less "reinventing the wheel"
- Time and cost savings
- Improve creativity and promote innovation
- Promote Personal Development and individual learning

If you have questions, problems, solutions, or just need to bounce an idea off of someone contact the USAEC CoP leads at:

Clean Air Act - Mr. Paul Josephson (*paul.a.josephson2.civ@mail.mil*)

Water Quality - Ms. Elisa Ortiz (*elisa.a.ortiz.civ@mail.mil*)

Resource Conservation and Recovery Act - Mr. Karl Weighmann (*karl.j.weighmann.civ@mail.mil*)

Integrated Pest Management - Dr. Bill Miller (*william.b.miller54.civ@mail.mil*)

Environmental Management Systems -Mr. Bobby McGough (*bobby.d.mcgough.civ@mail.mil)*

Cultural Resources - Mr. Karl Kleinbach (*karl.kleinbach.civ@mail.mil*)

Natural Resources - Ms. Sharon Jones (sharon.l.jones118.civ@mail.mil)

Resilient Sustainability - Dr. James Mancillas (james.w.mancillas.civ@mail.mil)

Acronyms and Abbreviations	
CoPs	Communities of Practice
EPAS	Environmental Performance Assessment System
USAEC	US Army Environmental Command

POC is Mr. Michael Dette, (210)466-1776, Michael.j.dette.civ@mail.mil

Michael Dette is the chief of the technical services branch for USAEC at Fort Sam Houston, Texas.

(continued from previous page)

acres.

Despite these successes, the red cockaded woodpecker is still an endangered species, and Fort Bragg will continue to monitor and protect the birds in an effort to sustain its current populations and meet its habitat recovery goals. Buffers will remain in the main cantonment area, an area known as the Green Belt and satellite installation Camp MacKall. Fort Bragg will also enforce certain protocols to maintain and improve habitat for the birds and thus preserve open training lands.

"As a steward of public lands, Fort Bragg demonstrates that military training and natural resource conservation can and should coexist," said Jacqueline Britcher of Fort Bragg Endangered Species. "It is critical that we continue sound ecological management, not only to ensure long term red cockaded woodpecker recovery but also to ensure quality training lands."

POC is Fort Bragg Endangered Species, 910-396-2544

Jonelle Kimbrough is the media relations manager, Environmental Management, Environmental Division, DPW, Fort Bragg

Mitigation Work Helps Create New Habitat for Karner Blue Butterflies

by Rob Schuette

A range mitigation project at Fort McCoy means Soldiers can train on a new, upgraded range, while an endangered species of butterfly still has sufficient habitat.

Tim Wilder, installation Endangered Species biologist, said the mitigation project to create an alternate habitat for the Karner blue butterfly became necessary with the building of a 1,000 meter known-distance firing range. Karner blue butterflies, which are about the size of a quarter, are a federally endangered species found at Fort McCoy.

"When we sat down to see where to locate the new known-distance range, there were only so many places it could be located (due to land-use and environmental considerations)," Wilder said. "The best place was adjacent to Range 18, where a known Karner blue butterfly population occurred."

Initially, 14 acres would have been affected, Wilder said. After some reworking of the proposal, the affected habitat was reduced to four acres. The Fort McCoy Natural Resources Branch (NRB) program, in cooperation with the Directorate of Plans, Training, Mobilization and Security (DPTMS), found another location in the far northeast corner of the post to create habitat being lost due to the new range project, he said.

DPTMS training officials agreed the proposed location for the new Karner blue butterfly habitat would not affect training opportunities. Wilder said some Karner blue butterflies already were in the area, so it was a matter of expanding the existing habitat.

Karner blue butterflies need wild lupine plants to support the larvae stage of the life cycle, he said. NRB personnel tilled the land and are planting wild lupine seeds. McCoy harvests its own wild lupine seeds, which can cost several hundred dollars per pound if purchased commercially.

The seeding is done on a ratio of about two pounds of wild lupine seed per acre.

"This is a good time of year to plant the seeds because they can take advantage of the freeze/thaw cycle this coming winter and spring and then germinate in April 2013," Wilder said.

Tim Wilder, Fort McCoy Endangered Species biologist, uses a Bobcat to create a Karner blue butterfly plant habitat section as part a mitigation project in the far northeast corner of Fort McCoy. Volunteer John Polk prepares to assist the seeding by raking. (Photo by Rob Schuette)

The desired result is the plants would fully bloom in two years and be supporting the Karner blue butterfly population, Wilder said.

The seeding is done in narrow sections about 20-by-3 meters each. When the wild lupine takes hold, it is hoped the habitat area will further expand itself without any additional manmade assistance, he added.

Acronyms and Abbreviations	
DPTMS	Directorate of Plans, Training, Mobilization and Security
NRB	Natural Resources Branch

Plants providing nectar for the adult Karner blue butterflies also are being added to the mitigation area to support the population. Wilder said adult Karner blue butterflies live for only about five to seven days. Although these butterflies live only a short time, the adults need flowering plants, such as butterfly weed and lead plant, to nectar on.

Fort McCoy has one of the largest Karner blue butterfly populations in the state and country, and management practices used by the installation help the butterfly prosper, Wilder said. The installation documented the first Karner blue butterfly in 1990 and has been actively managing the species for more than 15 years.

The installation also has several other thriving animal/mammal species on state or federal concern, endangered or threatened lists, including gray wolves and bald eagles, and several insects including other butterflies, he said.

Mark McCarty, chief of the NRB, said the mitigation project demonstrates that environmental stewardship can coexist with and support the installation's training needs.

Sound environmental practices and proactive natural resource management also help ensure Fort McCoy's land will be able to support Army training needs for future generations, he said.

POC is Mark McCarty, 608-388-4793, mark.w.mccarty.civ@mail.mil

Rob Schuette is the assistant editor of The Real McCoy, Fort McCoy's installation newspaper , and works at the Fort McCoy Public Affairs Office.

Composting toilets demonstrated at Camp Atterbury

by Elisabeth Jenicek

Under the Installation Technology Transition Program, a commercially available composting toilet was installed and evaluated at Camp Atterbury, Ind., as part of efforts to identify inefficient water usage and assess conservation technologies. The U.S. Army Engineer Research and Development Center conducted the demonstration in cooperation with Camp Atterbury's Environmental Division.

Army training offers both challenges and opportunities for water conservation, both in technology implementation and in reaching a broad cross-section of Soldiers for water awareness education. Training populations come from many regions that vary in water availability and thus sensitivity to issues of water scarcity. In addition, Soldiers in training are often preparing for deployment to austere environments where water conservation is critical to the Army mission.

One opportunity to implement water-saving technologies is in latrine operation. For remote training areas, latrines incur major costs, both for treatment and, for flush toilets, water consumption. Whether it is hauling tankers of water to supply trailer-based flush toilets or the requirement to pump porta-potties on a regular maintenance schedule, maintaining toilets in the training environment is expensive.

Composting toilet technology offers an alternative to conventional latrines. Composting toilets use aerobic decomposition to treat excreta, with bacterial action in presence of oxygen breaking down the organic material and destroying pathogens. The cost effectiveness of replacing either flush toilets or porta-potties with composting toilets depends on the operation and maintenance costs of the existing units. Training sites are ideal locations for this retrofit due to the long distances traveled to maintain sanitation facilities.

Currently Camp Atterbury pays about $935,000/year for maintenance of 550 porta-potties, regardless of the units' usage rates. This amounts to $1,700/year in maintenance cost for each porta-pottie. It is likely that most are not being used at the maximum capacity of 30 uses per day. Monthly maintenance for a single composting toilet is $3,000/year based on the maximum 60 uses per day. If it is assumed that many porta -potties are used 15 times/day, then one composting toilet serviced monthly could replace four underused porta-potties. The installed cost per unit for one composting toilet is $25,000. The life cycle of the unit is 20 years. In this scenario, the simple payback, including monthly maintenance, is 6.57 years.

A composting toilet is installed at Camp Atterbury, Ind. between training ranges 18 and 19.

On the surface, the composting toilet may seem costly. However, as the number of composting toilets at a particular site increases, the maintenance cost per unit decreases. The most expensive part of maintaining a composting toilet is the maintenance contractor's drive to the post. Once on post, the cost to maintain each additional unit is low. Especially for locations with variable or low use, composting toilets can offer an effective alternative to porta-potties.

The following table shows the economics of several example scenarios for using composting toilets. It assumes that maintenance for porta-potties is constant at $1,700/each for the cantonment and $2,200/each for a remote site, and that one composting toilet replaces four porta-potties. It also assumes that maintenance for the first composting toilet costs $250/month for the cantonment and $350/month for the remote site, and that each additional composting toilet adds $50/month to the maintenance cost. Economies of scale can also be realized when installing composting toilets.

Site selection is a key factor that affects the performance and economics of composting toilets. Installation staff should strategically locate composting toilets to achieve the maximum of 60 uses ➤

Lower Cape May Meadows Beach Replenishment and Ecosystem Restoration Project

by Dovi Meles

This past November, the U.S. Army Corps of Engineers' Philadelphia District along with its cost sharing partner, the New Jersey Department of Environmental Protection (NJDEP), and the local communities of the Borough of Cape May Point and the City of Cape May, began work on an $8 million beach re-nourishment project in an area west of Cape May, N.J. known as the "Meadows". The project was completed through a contract awarded to Weeks Marine, Inc. Beach re-nourishment or replenishment refers to the periodic placement of sand on a beach. The sand is dredged from the ocean floor and pumped through pipes onto the beach, which increases the size of the beach for public use, but more important creates a barrier protecting the shore line against erosion.

Initial construction of the beach/dune potion of the project was completed in 2005, with ecosystem restoration features completed in 2007. The Army Corps expects to return to the site for re-nourishment every four years over a 50-year period (the amount of time authorized for the project). Without replenishment, erosion of the shoreline would continue as it had pre-project. Because the project's primary function was to protect a freshwater ecosystem, erosion is a critical issue. Erosion of the shoreline and dune system in the project area in the past has led to degraded fish and wildlife habitat, reducing the productivity of the Meadows wetland ecosystem.

Beach replenishment equipment

The current cycle of periodic re-nourishment began shortly just after Thanksgiving 2012 and was completed in early March of 2013. During the re-nourishment process, approximately 365,000 cubic yards of sand was placed over an area of 2.5 miles of beach and was spread out in three distinct locations therein. Similar to the previous beach replenishments done at this site, a hopper dredge was used to collect the sand from an offshore borrow area and bring it as close to the shoreline as possible, before pumping out the sand directly onto the beach through approximately 5,000 to 6,000 feet of pipe.

What made this project of particular interest and different from most other beach nourishment projects done by the Corps was that this project wasn't justified based on traditional storm damage reduction benefits. This project was justified as an ecosystem restoration. The initial beachfill-and-dune construction and the current re-nourishment are intended to protect a freshwater wetland/ecosystem that exists just behind the dunes. The Meadows consists of important coastal freshwater wetlands, which are vital resting areas for shorebirds and birds of prey during their seasonal migration along the Atlantic flyway. The project has restored and continues to protect fish and wildlife habitat, and provides flood and storm damage reduction throughout the entire project area. Without this project and its key features the freshwater wetland would be jeopardized. Salt water from the ocean would make its way into the wetlands, destroying them and their inhabitants.

POC is Dovi Meles, 215-656-6776, Aaron.d.meles@usace.army.mil

Dovi Meles is a public affairs intern with Philadelphia District, U.S. Army Corps of Engineers

Acronyms and Abbreviations	
N.J.	New Jersey
NJDEP	New Jersey Department of Environmental Protection

(continued from previous page)

per day.

The Camp Atterbury demonstration showed that it is possible to save money over the longer term by installing composting toilets at remote training sites. The Army has become dependent on porta-potties as a means for dealing with human waste on training ranges and contingency bases. However, there is a high cost for the convenience and in the potential to damage local environments if the removed waste is not deposited at treatment facilities, which is the case at some contingency bases. Large amounts of human waste can also overload sewage treatment plants, particularly those located on post.

While the demonstration at this site did not consider flush toilets—and therefore water savings were not realized with this retrofit—other sites do truck water into remote areas to service flush toilet trailers. Composting toilets should be explored at these sites as both hauling and pumping maintenance are likely to be high-cost items. In regions where water scarcity is a concern, this technology will help conserve water for more critical life support uses.

POC is Elisabeth Jenicek, 217-373-7238, elisabeth.m.jenicek@usace.army.mil

Elisabeth Jenicek is a senior researcher at ERDC's Construction Engineering Research Laboratory in Champaign, Ill.

Caserma Del Din Going for First LEED Gold On-Campus Project

by Anna Ciccotti

On behalf of the Army Installation Management Command Europe and the U.S. Army Garrison Vicenza, Italy, the U.S. Navy Facilities Engineering Command is about to complete one of the most sustainable Military Construction programs ever undertaken in Europe and the first to achieve Leadership in Energy and Environmental Design Leadership (LEED) Gold certification for On-Campus projects.

"I remain very excited, and incredibly impressed, that our tremendous Italian prime contractors of the Joint Venture CMC-CCC have worked so hard to aim for LEED Gold," said U.S. Army Garrison Vicenza commander, Col. David Buckingham. "Our contract required only LEED Silver certification, but CMC-CCC are an exceptional group of professionals with a real concern for the environment and if we are able to achieve LEED Gold on this project it is because of their hard work, sacrifice and caring," he said.

The $308 million, design-build, multi-facility MILCON project awarded in March 2008 has a contractual requirement to achieve Silver LEED certification as defined by the U.S. Green Building Council (USGBC). However, because of the team's efforts and a firm commitment to aim higher, a Gold rating now appears within reach without costing the Army any additional money.

The overall strategy was to approach the design of the new installation at Caserma Del Din as one large urban complex, comparable to a pedestrian-friendly campus. The complex features 31 buildings master planned into command, residential and operational areas. In a Campus Project, each building must meet the LEED requirements to be certified. The same prerequisites are also mandated for shared utilities, amenities, site landscape, efficiencies and infrastructure. This way, the certification of the entire complex can pursue sustainability at a higher level by enhancing the ease of future operation and maintenance, in line with the green themes of the Installation Management Campaign Plan.

Acronyms and Abbreviations	
LEED	Leadership in Energy and Environmental Design
USGBC	U.S. Green Building Council
PPM	parts per million
SOP	Standard Operating Procedure

The entire installation covers an area of 145 acres, of which nearly one-third is open green space. This space will also contribute to the LEED Gold rating by implementing water efficient landscaping and use of indigenous plants that thrive on site with minimal care and reduced maintenance cost.

One of the LEED features that will benefit Soldiers the most in their daily routines at the new base, Buckingham said he was "particularly happy with the concept of making Caserma Del Din a walking campus" - and with the design that supports that concept, from central parking garages to many 'green' walking paths shaded by over 1,000 trees.

The design has maximized open space, minimized building footprints and preserves more than 1.8 million sq. ft. of open space, which is more than twice the building footprint. Within the installation, two parking garages are strategically located in a central location to drastically reduce the use of automobiles and foster a walkable community.

"I am especially pleased that due to the great design our consumption of fuel, electricity and water will be measurably less than almost any campus of similar size anywhere in the world," Buckingham said.

Water use will be reduced almost 36 percent compared to conventional construction techniques by adopting ➤

(continued from previous page)

low-flow water fixtures, which will save 4.3 million gallons annually. At the same time, the design of energy efficient systems is estimated to reduce the total energy use and save more than 42 percent of annual costs.

Now that construction is almost complete and the first buildings already delivered, the LEED certification process has entered the final stage and Caserma Del Din, the largest single MILCON project ever built in Italy, is positioned to join an elite group of residential and institutional facilities that have achieved Gold.

"In December we received a 100 percent approval by the USGBC of the 24 credits submitted for the final design stage review," said Dario Tita, senior construction quality control manager for the joint venture, and on-site LEED expert.

"Obtaining all of the 24 credits for design, and considering that there are an additional 17 points possible for the construction stage submittal, set the conditions for this amazing project to aim at the Gold certification, for which the minimum threshold is 39 points," Tita said.

Of the last 17 credits submitted, 12 have already been approved by the LEED accredited professional consultant hired by the contractor, and they are confident they will complete the submission of the remaining documentation this spring, added Tita.

The majority of LEED credits are awarded for optimizing energy performance. A total of 10 points were at stake and the Caserma Del Din team earned them all, thanks to the energy efficient building design.

Notable energy features include a Central Energy Plant utilizing high-efficiency boilers, chillers and pumps, and a sophisticated heat recovery system, super-insulated building envelope and other basic strategies such as top-quality performance windows and doors and maximum use of natural daylight.

"Our design-build contractor has really embraced this unique opportunity to lead the way in green design. From the outset they have been driven to be the first to achieve a LEED Gold rating for a campus-wide project. They have seized every opportunity to make this a sustainable and environmentally friendly project," said Cmdr. Andrew M. Hascall, Navy resident officer in charge of construction for Northern Italy.

"From recycling 96 percent of the onsite material to improving energy efficiency, this project touches on it all. This has been an invaluable education for the government and private industry. With a lot of hard work and innovation you can really make a difference," Hascall said.

Credit for this achievement goes to the entire design and construction team, namely the JV-CMC-CCC, AI & Partners and Rosser International Inc., said Tita, who praised the efforts of the Army and Navy project teams with whom he has been working hand-in-hand on site for the past five years.

Tita said their trust and encouragement made a positive difference, supporting the project with the necessary documentation to verify the integrity of the accreditation during the rigorous submittal process, in which it is necessary to consider every element and cost-benefit calculation to the company, its employees and the overall environment.

During the First Flag Raising at Caserma Del Din March 1, MG Enrico Pino, Italian Army Commander for the Veneto region and chair of the local civil-military construction approval commission (Co.Mi.Pa.) that supported the project from the very beginning, spoke about the sustainable features that make Caserma Del Din "one of the greenest and most modern installations in Europe and one of finest U.S. military installation ever built in the history of America."

"The project, completed on time, is an example of efficiency and rationality and is also a model for our Italian military construction projects. I expect that from now on, and especially for new buildings, we will have to take into account the sustainable parameters adopted here at Caserma Del Din," Pino said.

POC is Anna Ciccotti, anna.ciccotti.ln.asc@mail.mil

Anna Ciccotti is a media relations officer with the U.S. Army Garrison Public Affairs Office, Vicenza, Italy

With achieving all 41 potential credits submitted, Del Din, the largest single MILCON project ever built in Italy, is positioned to be the first campus-wide LEED Gold certified project. Enforced by the USGBC, the LEED standard is one of the most authoritative benchmarks used to rate the design, construction and operation of green buildings. LEED standards are used to evaluate site sustainability, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality and innovation in design. There are four levels of certification, Basic, Silver, Gold and Platinum, which builders achieve by earning points from a menu of sustainability features.

Natural Resources gives Hawaiian plants a new home in Manuwai

By Celeste Ventresca

Some of Hawaii's rarest flora is enjoying final preparations under the nurturing care of horticultural specialists at the Oahu Army Natural Resources Program's (OANRP) rare plant nurseries. This year, six endangered plant species, including Hawaii's state flower, the ma'o hau hele (Hibiscus brackenridgeii subsp. mokuleianus) will be outplanted in a new location for the first time: Manuwai.

Situated in the northern Waianae Mountains of Oahu, Hawaii, Manuwai is one of just a handful of places on the island where patches of native dry-mesic forest remain. The OANRP, charged with managing more than 60 endangered plant and animal species on Oahu, is pleased to finally begin planting in this location. Various preparations spanning a 13-year period have been made, and this remote forest area is now ready to host the endangered plants that the OANRP has cultivated.

The diverse floral community at Manuwai was first noted in the early 1920s by renowned botanist and Waialua resident Dr. Otto Degener (1899-1988), who developed an extensive collection of Hawaiian plant specimens throughout the 20th century. Later in the 1980s, Manuwai would again come under the radar of the scientific community, when botanical surveys revealed patches of rare "diverse mesic forest" habitat.

One of the reasons Hawaii is recognized as the "endangered species capital of the world" is due to its severe loss of dry and mesic forest habitat. The classification "diverse mesic forest" denotes a forest that is neither wet nor dry and is "so evenly composed in its makeup that not one tree species dominates the community" (Sailer, 2006, p. 1).

This type of habitat, though now extremely scarce, contains some of the richest representation of Hawaii's rare plants. The OANRP found this place to be the case in 1999 when staff began to visit historical rare plant populations in Manuwai and also survey for new populations. Staff steadily collected fruit and cuttings from endangered species in the area so that the plants could be grown under the care of program horticulturalists, and eventually outplanted, once threats were removed from the wild.

Acronyms and Abbreviations	
OANRP	O'ahu Army Natural Resources Program
Subsp.	Subspecies
Var.	Variety

The endangered ma'o hau hele (Hibiscus brackenridgeii subsp. mokuleianus) is one of the endangered plants that will be outplanted in Manuwai, O'ahu for the first time.

While Natural Resources field staff may enjoy the helicopter support to help transfer plants for this year's outplanting effort, getting to Manuwai on the ground is no easy feat, requiring access through a four-wheel drive dirt road, and a long, steep, off-trail hike into the forest. Working in Manuwai isn't any easier than getting there. Much of the gulch boasts extremely steep terrain, making these areas inaccessible without the use of safety ropes. Rare plants like the endangered manono (Kadua degeneri var. degeneri) have managed to "hang on" in the steepest sections, where natural topography has helped protect them from the impact of feral pigs and goats.

Today, however, rare and endangered species located in the more accessible areas of Manuwai are benefitting from a fence that OANRP has built to protect native habitat from the damaging effects of feral pigs and goats.

While snaring and hunting programs for goats had been in place for several years at Manuwai, the fence crew also began hunting pigs in 2011, when the fence was completed. While the OANRP field crews check fence integrity on a quarterly basis, just one downed tree from a storm or high wind event can create an opportunity for the prolific pig and goat communities that surround the fenced unit to enter and destroy the protected native habitat area. The last pigs seen in the fenced area were removed January 2013, making life a lot easier for the native Hawaiian plant community at Manuwai.

While the way has been paved for this year's outplantings, the battle to protect these species is far from over, as fire poses a constant threat to natural resources on Oahu. A 2007 fire that started above Oahu's North Shore burned a total of 5,655 acres, blazing its way high into the mountains over the course of seven days. The fire destroyed some area now protected by the Manuwai fence, as well as many neighboring gulches, which were home to hundreds of endangered ma'o hau hele plants.

Controlling weeds in steep areas of Manuwai is also an ongoing challenge. OANRP staff currently focuses control ➤

Feral ungulates (hoofed animals,) such as pigs and goats, wreak havoc on Hawaiian forests by digging up soil, uprooting and eating native plants, increasing the spread of pathogens, such as avian malaria, and tracking invasive weeds into new locations..

Center Helps Federal Planners Manage Historic Buildings, Structures

by Bill Dowell

Historic buildings and structures are part of the nation's heritage and legacy. Preserving and protecting them means following preservation standards which should, and in the case of federal actions, must be followed.

Restoring, rehabilitating or preserving these resources honors past investments in design, materials, labor and craftsmanship. It also helps shrink carbon footprints, conserve materials and energy, and reduce landfill waste. Once renewed, older structures can attract visitors and generate new heritage tourism opportunities.

For federal installation property planners and facility managers dealing with aging buildings or other structures a big question can be, "Where do I start?"

The answer is the U.S. Army Corps of Engineers' Technical Center of Expertise, or TCX, for the Preservation of Historic Structures and Buildings located at the Seattle District. The Center's staff offers the Corps, military installations and federal agencies best practices and informed decision making for historic structures.

"There is great diversity among the older buildings and structures Corps districts, federal properties and DOD installations must account for in managing and executing projects," TCX program manager Lauren McCroskey said. "Some of the structures we've assisted with include a plantation house, a Great Lakes lighthouse, and a depression-era dam."

Alec Liebman performs ultrasonic testing on a historic gate component at Arlington National Cemetery. The testing measures the stone's consistency and condition, helping to determine conservation needs. The gates are being evaluated by historic preservation experts who catalog the components and assess their condition. Arlington officials plan to restore these gates and incorporate them into future expansion projects in the cemetery. (U.S. Army Corps of Engineers photo by Lauren McCroskey)

When the Corps' Huntington District acquired mitigation lands along the Ohio River, the parcel included the General Albert Gallatin Jenkins house. An 1830 farm carved out of a western corner of Virginia, the elegant federal-style building was constructed by slaves who hewed local timbers, pegged them together and laid up handmade bricks and stone. The home's architecture spoke of grace and sophistication.

"Years of ill-advised repairs and deferred maintenance marred the home's historic features and damaged sensitive materials," McCroskey said.

Through a series of site investigations, public meetings and coordination, the TCX staff crafted a plan to help the District meet its historic preservation responsibilities. These included identification of significant features warranting preservation, such as masonry repairs and re-pointing. Today, the building is well on its way toward an improved state of preservation that satisfies both regulatory mandates and local advocates, according to McCroskey.

A growing focus of the TCX is the promotion of state-of-the-industry technology for the treatment of historic materials. The Center's technical guidelines for the repair and restoration of historic masonry and mortar were recently improved. The revised specification, "Restoration and Cleaning of Masonry in Historic Structures" exceeds standard ➤

(continued from previous page)

efforts in intact forest patches and around rare taxa and are looking into ways to control canopy weeds across large areas of the management unit.

Nonetheless, given the careful management in this fenced unit, the time has never been better for endangered plants to spread their roots in the forest at Manuwai. This year the OANRP will be putting more than 3,100 endangered plants into the ground on Army, state, city and county and private land at 45 sites across Oahu. These efforts for endangered species will not only benefit the plants and their offspring, but all of the communities of life that surround them, including supporting the growing human population in Hawaii.

A cutting is a plant section removed from its parent plant and placed in a new medium to develop its own roots and stem. The cutting develops into a new plant that is an exact clone of its parent.

Like these plants, Hawaii residents depend on forests for their existence, as they constitute our primary source for drinking water, capturing rainwater and recharging groundwater aquifers.

POC is Mark Mitsunaga; 808-656-6511; mark.m.mitsunaga.civ@mail.mil.

Mark Mitsunaga is a master planner with the Planning Division, Directorate of Public Works, U.S. Army Garrison, Hawaii.

Preparing for climate change – a prototype flood modeling toolkit

by Dua Guvanasen

Military planners, humanitarian relief workers and their organizations' respective decision makers are confronted with the growing challenges of operating in environments that are increasingly impacted by flood events brought on by changing weather patterns throughout the world. Planners have begun searching for methods to study and identify specific impacts – particularly from flooding and the resulting havoc wrought on populations, infrastructure and military or humanitarian relief operations. Decision makers are asking: "Where will flooding occur?" "Who and what will flooding impact?"

Acronyms and Abbreviations	
CENTCOM	US Central Command
COTS	Commercial Off The Shelf
ERDC	Engineering Research and Development Center
GLOC	Ground Lines of Communication
HEC	Hydrologic Engineering Center
HEC HMS	Hydrologic Engineering Center Hydrologic Modeling System
HEC RAS	Hydrologic Engineering Center River Analysis System
TAD	US Army Corps of Engineers Transatlantic Division
USACE	US Army Corps of Engineers
USAID	US Agency for International Development

Flooding in Zarqa, Jordan January 2013 (source: Google Earth)

To begin addressing these questions, the US Army Corps of Engineers Transatlantic Division (TAD) developed the requirement for a flexible, predictive modeling toolkit that could mitigate some of the risks associated with flood forecasting. Two key objectives were identified: reduce modeling uncertainty associated with limited data availability and provide useful visual outputs that are easily understood by planners and decision makers alike.

Based on their initial investigation, USACE TAD knew "Commercial ➤

(continued from previous page)

guidance and technical bulletins provided by other preservation agencies.

This push for excellence culminated in a forensic investigation of structural components at the Jenkins House using instruments developed in Europe and rarely used in the U.S.

"Areas of the house were evaluated in systematic fashion to determine structural load bearing capacity," McCroskey said. "Ultrasonic waves were applied to measure the underlying status of wood fabric for continuity and stability. Next, a proprietary tool called a Resistograph was placed at regular intervals to probe the resistance level of the wood substrate."

Data generated from the tests were compiled and analyzed to yield the most accurate picture of the home's structural performance. District managers will use the findings as they negotiate a future use and steward of the building.

The Center's staff applied similar techniques in a recent study of historic stone components that once graced entrances in Arlington National Cemetery. Originally salvaged during demolition of the War Department Building in the 1870s, the individual pieces of columns and cornices were tested for condition and assessed for future use. Soon, the reconstructed gates may once again honor those who pass through.

The foundation of the Center's work is the National Historic Preservation Act, which directs federal agencies to act responsibly when their actions affect historic buildings, structures or landscapes. To help accomplish this, the Center offers a three-fold approach: keep property owners in compliance with federal historic preservation laws and guidelines; use creative planning to ensure that mission and project goals are met in a timely manner; and preserve and protect significant structures by applying high standards and best practices.

The Center also acts as a clearing house for technical information. Depending on campus or installation needs, the TCX staff offers tailored training for property and facility managers, planners and cultural resource staffs. Where mission meets history, the TCX can help formulate creative and efficient ways to reuse historic buildings to meet current needs.

POC is Lauren McCroskey, 206-764-3538 or 206-764-6185, lauren.l.mccroskey@usace.army.mil

Bill Dowell is a public affairs officer located at the US Army Corps of Engineers Seattle District Public Affairs Office.

The enterprise approach to design and construction of high performance sustainable buildings

by Lyndsey Pruitt

An increasing focus on enterprise solutions in private industry is reflected in the higher education sector, with more courses and research exploring the concept at universities with established MBA programs. In Washington, D.C. is the renowned McDonough School of Business at Georgetown University, MBA program has elective courses such as Corporate Strategy and Managing Corporate Change which both have an explicit emphasis on an enterprise approach to management. An enterprise approach can be an ambiguous term; in this context it follows and broadens the 1990's concept of Enterprise Project Management (EPM). EPM is a methodology for communicating and managing with intent to provide a holistic view of the organization's cumulative efforts. Thus, an enterprise approach is a way of enacting change in which an organization's priorities are viewed so that the collection of project goals is comprehensively and indiscriminately advanced for the cumulative benefit. This concept is predominately profitable when project goals conflict or have the potential to negatively affect each other. For example, at the sustainable design level, the objective to increase the cumulative square footage of green roofs is inversely successful to the objective of increasing the cumulative square footage of solar panels. Thus, combining project objectives across the organization for a goal of increasing energy efficiency removes the competitive disadvantage and holistically provides a more accurate representation of the conditions. Another example close to the federal government is the federal mandate to increase the portion of energy derived from renewable sources. If each project were considered independently, the solution would be costly and the potential to effect market change, inhibited. ➤

Acronyms and Abbreviations	
EPM	Enterprise Project Management
D.C.	District of Columbia
HPSB	High Performance Sustainable Building
MBA	Master of Business Administration
RECX	Regional Technical Centers of Expertise

(continued from previous page)

Off-The-Shelf" (COTS) modeling technology alone would not suffice and that an innovative, flexible approach would be needed to address these flood modeling challenges. To address these challenges, TAD contracted with a specialized team of consultants and leveraged internal USACE expertise from the Engineering Research and Development Center (ERDC) and USACE Hydrologic Engineering Center (HEC) to perform peer reviews and ensure the model complied with standard hydraulic and hydrologic methodologies. A 50-year storm event in the Kingdom of Jordan served as the test event and location to demonstrate the modeling toolkit's capabilities. The consultant team began work late in October 2012.

A phased approach was used to gather the data, build and calibrate the model, and then test the model by performing an analysis of impacted Ground Lines of Communication (GLOC). The prototype toolkit uses HEC-HMS and HEC-RAS models. HEC-RAS was used to simulate flows in the Jordan River and a major tributary, the Zarqa River. HEC HMS was used to model the Zarqa River watershed, which includes the city of Amman - one of the most populated areas of the modeled basin. Empirical runoff equations and applicable regression correlations between peak runoff rate and the drainage basin size were used for areas not covered by these two models.

Several challenges arose throughout the contract's 4-month performance period, but each challenge was met with a resourceful and innovative solution. One particular challenge the team faced was a lack of stream flow data, precipitation data and channel geometry. To overcome this challenge and build a representative model, the team gathered open source terrain data from USACE and peak streamflow data from universities and research agencies such as the US Geological Survey. The team extrapolated robust streamflow data and the results of regression analyses from similar hydrologic environments outside the Kingdom of Jordan to fill data gaps. Additional sources such as Google Earth proved to be invaluable for providing key imagery to estimate dimensions of hydraulic structures and channels as well as key terrain features.

GLOC impacts and animated flood model visualization clips were presented on February 7, 2013 to CENTCOM engineers, hydrologists, military planners, and a key staff member from USAID. The presentation was well received by the CENTCOM staff and various toolkit deployment options were also presented to maximize the utility of the toolkit within CENTCOM or elsewhere. Creating the prototype flood modeling toolkit is an important first step in providing the tools to our military and humanitarian relief organizations that will enable them to predict and visualize flooding impacts. Adopting this modeling construct, leveraging the lessons learned during this prototyping exercise, and applying this toolkit in flood prone countries of interest can help us prepare for and adapt to the inevitable flooding events that will occur.

POC is Suresh Kikkeri, 540-667-3324, Suresh.R.Kikkeri@usace.army.mil

Suresh Kikkeri is a program manager at USACE Transatlantic Division and Dua Guvanasen is a project manager with HGL, Inc.

Fort Polk leads the way in accomplishing the mission, with less

by Fredrick J. Hartzell and Bridget Carnahan

As the Army transitions to management of surface water programs under Small Municipal Separate Storm Sewer System Permits (MS4), Fort Polk is growing the program by doing more with less. Fort Polk's program had to get its feet on the ground upon receipt of its MS4 permit in December 2011. "Separate Storm Sewer System" means that the post's storm drains and sewer systems are not connected; therefore the storm water runoff does not receive the benefit of treatment as waste water does. As a requirement of the MS4 permit, Fort Polk was required to establish six Minimum Control Measures (MCMs) which act as measurable guidelines to ensure that the permit is being implemented to the fullest extent. Those MCM's are as follows:

- MCM 1: Public Education and Outreach on Storm Water Impacts
- MCM: 2 Public Involvement and Participation
- MCM 3: Illicit Discharge Detection and Elimination
- MCM 4: Construction Site Storm Water Run-off Control
- MCM 5: Post Construction Storm Water Management in New Development and Redevelopment
- MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations

Accomplishments within MCM 1 and 2 have resulted from a partnership formed in September 2012 with Fort Polk Boy Scout Troop 124. Members of the Storm Water Team served as merit badge counselors for the Soil and Water Conservation Merit Badge, attending meetings regularly to guide scouts through the merit badge process. One of the seven requirements was to carry out a soil and water conservation project approved by the merit badge counselor. The Troop participated in the Drains to Streams (Storm Drain Labeling) project. Scouts labeled 150 storm drains across the cantonment area of Fort Polk to promote public awareness. The labels were provided by the Louisiana Department of Environmental Quality (LDEQ): they cautioned -"No Dumping, Drains to Streams." These labels emphasize that our storm water drains lead directly to our streams without the benefit of treatment through a wastewater treatment facility.

Eight scouts successfully completed all the requirements for the Soil and Water Conservation Merit Badge, and were awarded their newly earned badge as well as certificates of appreciation at the Court Of Honor held 22 January 2013.

This is not the end of the story for the partnership with Troop 124. The Boy Scouts are now progressing toward the ➤

(continued from previous page)

However, with an enterprise approach, an agency has the ability to consolidate the requirement and implement it as opportunities and beneficial circumstances arise.

The establishment of the Regional Technical Centers of Expertise (RECX) engaged an opportunity to raise the expectations and technical competencies of all Corps divisions thus catalyzing the Corps as an agency to lead our military and civil works customers toward sustainable, energy efficient, and life cycle cost effective solutions. The RECX determined the most valuable advancement of high performance sustainable buildings (HPSB) into the Corps' technical process is the holistic revitalization of the site planning, design, construction management, and post occupancy phases with an emphasis on deeply embedding the requirements for a HPSB into a seamless process. The project will set expectations for the product, develop the appropriate processes, efficiently connect the processes, achieve customer buy-in, communicate the strategy and train our employees to execute all phases. Through an enterprise approach, the project will cumulatively evaluate existing processes and priorities against new technologies and strive toward the larger goal of a high performance sustainable building.

In early 2013, the RECX management board initiated the Enterprise Approach to Design and Construction project with the aforementioned intention. This project will systematically identify the successful strategies being utilized by our Corps districts, private industry, and other agency partners through all four phases. The strategies will be analyzed and distilled into a series of vital core components and necessary competencies that have the largest potential for affecting the efficiency and quality of the final construction. Recommendations will be made on the order, responsibility, and level of emphasis for each component. The four phases will be coordinated with tri-services representatives as well as vetted through the Corps business process. The final solution will be developed into an Engineering Regulation and scheduled for release at the end of FY14. Interim guidance for site planning, energy modeling, life cycle cost analysis, total building commissioning, quality assurance of building envelopes, and the Corps measurement and verification process is in development.

POC is Lyndsey Pruitt, 202-701-0281, Lyndsey.N.D.Pruitt@usace.army.mil

Lyndsey Pruitt, LEED® AP BD+C, is the Engineering and Construction Division sustainability program manager, U.S. Army Corps of Engineers.

Fort Polk Boy Scout Troop 124

(continued from previous page)

Environmental Science merit badge with the goal of completion for July 2013. All scouts wishing to achieve the prestigious honor of the highest rank in Boy Scouts, Eagle Scout, must earn this merit badge. Needless to say the scouts are very excited to begin the process of working through the merit badge.

Don't think for a minute that we have forgotten about the Girl Scouts. There are several Girl Scout Troops on Fort Polk, from Daisies, to Brownies, to Juniors, and beyond. Starting March 2013 the Storm Water Team will begin assisting several Girl Scout Troops with the Wonders of Water Badges, which help the scouts to appreciate water, encourage the protection of water and share the knowledge that they have with others.

To satisfy the requirements of MCM 3, the Illicit Discharge Detection and Elimination (IDDE) initiative, the Storm Water team has created a public hotline for reporting illicit discharges. Federal and Environmental Protection Agency storm water regulations define an illicit discharge as "any discharge to an MS4 that is not composed entirely of storm water." For the IDDE initiative to be successful, public education is critical. Concerned citizens, military personnel, and those working on Fort Polk are our best line of defense for the identification and reporting of illicit discharges which could be harmful to our local waterways and even our drinking water supply.

When it comes to locating and identifying potential illicit discharges across the installation, the Storm Water team has a little something up their sleeves. The Storm Water Team utilizes a new software product which employs a self-contained GPS device and digital camera that operates within one of the field-worthy notebook computers maintained by the Storm Water Team. The program uses Ft Polk GIS data that is loaded onto the notebook from the GIS database. The GIS overlays provide an interactive map indicating named streets, named and unnamed streams, sewer lines, potable water lines, storm water drains and culverts, and other GIS information.

Once a hotline call is received, the Storm Water team follows their standard operating procedure which calls for the use of both the computer and a field test kit. Upon arrival to the suspected site, a GPS point is placed onto the screen which indicates the point on the map of the area of concern. Pictures of the general area are taken to document the discharge. Utilizing the field test kit, samples are caught and tested for several routine field indicators. Once the discharge has been identified, all the information gathered by the team is saved to the database for documentation. Along with the test results and location information collected, the program stores the GPS coordinates of the site point and its geographical position within the area of the probable cause of the discharge. This allows for exact location information and cause verification to be called in to the responsible entity at Ft Polk.

Acronyms and Abbreviations	
DPW	Department of Public WorksSystem
ENRMD	Department of Defense
GIS	Geographic Information System.
GPS	Global Position System
IDDE	Illicit Discharge Detection and Elimination
LDEQ	Louisiana Department of Environmental Quality
MCMs	Minimum control Measures
MS4	Small Municipal Separate Storm Sewer System Permits

This system not only speeds up the process of identification, cleanup and repair, but it lends credence to the team's findings by providing the likely source of the illicit discharge. During 2012 alone, 18 incidents were reported through the IDDE Hotline. All incidents were assigned to a Storm Water Technician, investigated, and reported to the responsible entity (DPW Engineering and Operations and Maintenance). With cooperation from these entities, these working partnerships have helped to resolve issues quickly as well as save the installation money.

As required by the initiatives within MCMs 1, 4, and 6, as well as Fort Polk's Louisiana Pollutant Discharge Elimination System (LPDES) Multi Sector General Permit (MSGP) requirements, the Storm Water Team collectively constructed interactive storm water training modules. The training is comprised of six modules that address permit requirements covered under four different LPDES permits issued to Fort Polk. The online storm water training was created to allow all residents and tenants that operate on Fort Polk, as well as maintenance personnel, industrial activity personnel, water sampling ➤

A Sustainable Fort Lee (A New Road Map For Success)

by Carol Anderson

Fort Lee's Environmental Management Office (EMO) has been leading the way in recent sustainability efforts. From construction site management, low-impact stormwater design and development, air quality emissions, recycling and outreach efforts, the EMO has contributed numerous best management practices (BMPs) to the installation and the locality. Coordination with key members, extensive knowledge of federal regulations and comprehensive awareness of natural processes has enabled EMO staff to achieve sustainable success in a multitude of projects at Fort Lee.

One of the largest efforts that EMO has been involved in is the active collaboration with the six neighboring jurisdictions and the Crater Planning District Commission (CPDC) to identify and execute local planning and sustainability initiatives designed to promote the goals of Executive Order 13514. The Strategic Sustainability Conference which included cities, counties, community member groups, CPDC, and the local Metropolitan Planning Organization (MPO) was implemented by Fort Lee in April, 2011 with a 'Collaborative Land Use Planning and Sustainable Practices Conference'. The Conference focused on land use planning and sustainable practices and was followed by a 'Strategic Planning Goal Setting Workshop' which was held in December, 2011 and attended by a vast cross-section of internal and external stakeholders including the Garrison and Installation Command Groups. This three-day workshop was well received and attendance reached over two-hundred; it resulted in the development of six Teams which developed goals to accommodate future growth over the next 25 years while upholding sustainable development objectives and energy reduction. While all Teams developed objectives in accordance with the E.O. to foster and enhance economic, social benefits and the vitality, livability of our region, only two are mentioned here:

a. Installation Readiness Team: through the use of sustainability principles, we will maintain our status as the premier training installation in the Department of Defense. Targets for this objective are associated with reductions in: building energy usage, fuel usage for vehicles, greenhouse gas emissions, and water usage.

Acronyms and Abbreviations	
BMPs	best management practices
BRAC	Base Realignment and Closure Act
C&D	Construction & Demolition debris
CPDC	Crater Planning District Commission
EMO	Environmental Management Office
ESC	Environmental Special Conditions
HWPM	Hazardous Waste Program Manager
MPO	Metropolitan Planning Organization
NOx	Nitrogen Oxides
PPM	parts per million
SOP	Standard Operating Procedure

b. Quality of Life Team: Fort Lee is actively engaged as one of several key economic stakeholders committed to sustainable development in the broader community. Targets for this objective are associated with reduced emissions and fuel use as well as increasing mass transit opportunities.

In March, 2012 Fort Lee continued the Strategic Sustainability initiative by hosting a third event dedicated to align the policies and practices with community stakeholders by developing Action Plans to support the goals and targets each Team identified during the 'Strategic Planning Goal Setting Workshop'. This effort ➤

(continued from previous page)

personnel, and installation planning personnel free access to comprehensive information that is geared towards the specific participant, all available through the public Internet. The benefit of the newly developed online training is that it gives the participant the flexibility that classroom training does not provide. It allows required trainees to take the training at their convenience, and not interrupting the day to day operations of their facility, helping to accomplish the mission that they are performing on behalf of our soldiers here at Fort Polk. The other added benefit is that the Storm Water team also gains more flexibility through the training. The online training modules will be the primary means of training in the future, but classroom training will still be available through the Storm Water team for those individuals or activities that have limited access to computers during their day to day operations. Not all topics lend themselves to computer based training, but the beauty of the online storm water training is that it is dynamic. As permits are reissued and requirements change updates will be made to the training.

The Storm Water Team is responsible for ensuring that industrial, construction, and municipal activities on Fort Polk are in compliance with both the MS4 and MSGP Permits. Education, outreach, and prevention are the keys to success within the Storm Water program. Without the cooperation of various entities on the installation (USACOE, DPW, O&M, and the privatized utility companies) the Storm Water Program would not be as successful as it is today. Hard work, cooperation, and teamwork are the cornerstones of the Storm Water Program at Fort Polk, proving you can do more with less.

POC is Frederick J. Hartzell, 337-531-1962, Fredrick.j.hartzell.civ@mail.mil.

Fredrick J. Hartzell is an engineer technician and the storm water manager and Bridget Carnahan is a storm water technician at U.S. Army Garrison Fort Polk.

Sustainable behavior

by Donna Schell and Douglas Warnock

Behavior can be defined as anything that an individual or group does involving action and response to stimulation. Sustainable behavior can be defined as "to create conditions that make sustainable actions the most appealing or natural choice".

Behavior underlies almost all environmental problems and unsustainable conditions, such as pollution, climate change, deforestation and loss of diversity. Research in psychology and community behavior offers clues as to why people engage in unsustainable behaviors despite their concern about the broader consequences.

Acronyms and Abbreviations	
CO2	Carbon Dioxide
GHG	Greenhouse Gas
PPM	parts per million
SOP	Standard Operating Procedure

Why is it so difficult for us to change our behavior and act upon our environmental concerns? Is it motivation? There are two primary forms of motivation -- intrinsic and extrinsic. Intrinsic motivation is internally driven by an interest or enjoyment in a task or activity such as someone who studies hard for the personal satisfaction gained by learning, rather than the achievement of getting high grades. Extrinsic motivation is the performance of an activity primarily to achieve a specific outcome like high grades, public praise, and monetary or achievement awards.

Purchase and use of two neighborhood electric vehicles for use at NWP, Bonneville Lock and Dam. Funded with FY12 Civil Works sustainability budget packages.

Within the past year, the U.S. Army Corps of Engineers has offered a series of webinars discussing sustainable behavior and how it can enhance or impede our efforts in achieving our sustainability goals. These webinars emphasize the reality that the Corps of Engineers can have all the resources and tools in place (e.g. money, people, policy, training, infrastructure, new technology) but if individuals don't ➤

(continued from previous page)

will continue to ensure the objectives laid out are met and outcomes promote the E.O. policies.

Related to the reduction of emission goals, one EMO BMP requires external combustion units (such as boilers and hot water heaters) to have control burners which allow no more than 30 parts per million (ppm) Nitrogen Oxides (NOx) be installed at Fort Lee. This requirement has dramatically reduced emissions from the largest source of emissions on the installation. Equivalent to taking 127 cars off of the roadways!

Waste reduction goals are a part of every activity on the installation. Waste diversion requirements are included in every Directorate of Public Works project, whether construction, renovation or demolition, through the Fort Lee Environmental Special Conditions (ESC). The ESC is included in all contract packages to be taken into account during all work that is performed on Fort Lee property. Today, the ESC is 50 pages long and covers many issues in addition to waste minimization. Such issues include stormwater management, air quality, pollution prevention, hazardous waste management, recycling, asbestos/lead and any specification that pertains to activities or resources on the installation. Annually, key members are called together to review their sections to validate the information and remove or add new relevant information.

One success of the ESC is that Fort Lee has greatly exceeded the Army's Measure of Merit or goal for Construction & Demolition debris (C&D), reaching percentages of 92.8 and 92.6 in the past two years. The Army goal was 50 percent and 52 percent. This recycling accomplishment is at an installation that saw new missions and new construction of over 4 million square feet during Base Realignment and Closure Act (BRAC). The Hazardous Waste Program Manager (HWPM) performs quarterly Standard Operating Procedure (SOP) training to all units, tenants, and contractors on the installation. In the training the HWPM goes over the regulations that apply to Fort Lee including classification and storage of hazardous wastes. Also covered are the requirements for waste diversion and green procurement to replace hazardous materials and therefore reduce our hazardous and nonhazardous waste.

Fort Lee's EMO has cast a wide net to cover all aspects of environmental protection while searching for sustainable BMPs to implement that will improve the quality of the environment not only for today, but for the future. EMO is executing practices that will sustain the Army mission while having a minimum impact on the environment and executing initiatives to transform current operations into highly sustainable ones. By taking small steps along a road map of sustainable practices, Fort Lee is meeting the challenge to sustain, prepare, reset and transform to meet the Army's current and future needs.

POC is Carol L. Anderson, 804-734-5071, carol.l.anderson50.civ@mail.mil

Carol L. Anderson is the chief of the Environmental Management Office, USAG Fort Lee, Va.

Environmental management on the go!

by Melissa Magowan

At the end of 2011, Fort Lee completed a monumental BRAC growth effort, the most complex of the Army BRAC moves, bringing two AIT training schools, Ordnance and Transportation, to join the Quartermaster School at Fort Lee to create the Sustainment Center of Excellence with an annual population of approximately 65,000 trainees. Fort Lee is the home of Logistics Professional Military Education and Leader Development for Soldiers and civilians at the Army Logistics University with an annual student population of 30,500. These students are technologically savvy and typically have information at their fingertips through the use of Smart Phones and Tablets. The Environmental Management Office (EMO) needed a means to communicate with them in a way that complimented their lifestyle and provided quick access to critical information.

For several years the Fort Lee EMO provided handy, easy to carry Pocket Guides with essential information about programs in the division to include the mission statement, Environmental Management System information, recycling opportunities, a condensed "Red Plan" to provide on-the-spot instructions in case of a HazMat spill, local points of ➤

SGM John Brockington using the Fort Lee EMO "app".

(continued from previous page)

change their behavior, we will never be able to inculcate sustainability across the organization. These webinars tackled behaviors promoting water efficiency and reducing our greenhouse gas emissions.

Within the U.S. Army Corps of Engineers Civil Works community water efficiency has been viewed as a large hurdle due to the insufficient number of meters and lack of data on actual potable water consumption. Regardless of whether or not a district knows its actual potable water consumption at a project, there are actions individuals can take to reduce consumption -- as simple as washing vehicles less, using native plants in landscaping, and watering landscape in the morning or on windless days to avoid evaporation loss. There also are simple, low-cost technology fixes such as hose shut-off valves, low-flow faucets, low-flow toilets, and waterless urinals.

In the Corps of Engineers, one of our primary sources of GHG emissions is energy consumption. While programs such as Energy Star® and the Federal Energy Management Program have made energy-saving appliances, office equipment, and vending machines more readily available, people still have to choose to turn off computer monitors, not run the water until it is cold, and put a sweater on instead of using a space heater. Another Corps of Engineers source of GHG emissions is our vehicles. While there is a concerted effort to purchase more efficient vehicles, we individually need to ensure we use the appropriate vehicle for tasks and as managers we need to "right-size" our vehicle fleet. For example, opting to use a hybrid sedan is more efficient than a 4x4 truck when operating in paved areas and not hauling equipment.

The reduction of GHGs also involves decreasing or eliminating the use of those materials whose manufacturing and/or disposal processes create GHGs. Recycling is an obvious behavior choice to decrease the generation of GHG emissions through the reduction of wastes sent to landfills. While reducing your GHG emissions footprint, recycling also reduces your solid waste disposal bills.

In the end, personal motivation is needed to change our culture. We need to be self-motivated to condition ourselves to turn off that light when we leave an empty room, throw that can or bottle into the recycling bin and walk instead of drive that short distance to a meeting or lunch. We also can corporately and individually influence those around us by recognizing and praising individuals as they take actions to become more sustainable.

Each and every one of us can make a difference to become a more sustainable Corps of Engineers. Future generations are counting on us.

The webinars and more information on sustainable practices can be found at the follow locations:

https://www.us.army.mil/suite/files/39566147

https://www.us.army.mil/suite/files/39566060

www.epa.gov/watersense

www.energystar.gov

www.gsa.gov/greenproductscompilation

www.Fedcenter.gov

POC is Douglas Warnock. 202-761-7778. douglas.a.warnock@usace.army.mil

Donna Schell is a general physical scientist at the U.S. Army Corps of Engineers, Engineer Research and Development Center, Construction Engineering Research Laboratory. Douglas Warnock is an environmental protection assistant at the U.S. Army Corps of Engineers, Headquarters, Environmental Division.

Low-cost treatment for POL-contaminated soil using biodegradation

by Richard J. Scholze

Bioremediation has gained considerable recognition in recent years as an innovative remedial technology to help reduce concentrations of petroleum hydrocarbons in soil. A major concern raised has been the time required for treatment to achieve the target level when compared to other remedial techniques.

Army installations generate petroleum-oil-lubricant contaminated soil from a variety of military operations. Examples include fuel spills, leaking underground storage tanks, cleanups and waste sludge from oil-water separators. Often installations will store hydrocarbon-contaminated materials until sufficient quantities are generated for processing or disposal. As an alternative, bioremediation can transform contaminated soil into a useful, recyclable material at a relatively low cost.

The Corps of Engineers has updated and rereleased a Public Works Technical Bulletin addressing this option and appropriate contextual information for this cost-effective method of soil remediation. PWTB 200-1-111, "Biodegradation for Treatment of POL-Contaminated Soil," is posted on the internet at http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb_200_1_111.pdf

Acronyms and Abbreviations	
POL	Petroleum-oil-lubricant
PWTB	Public Works Technical Bulletin

Fort Hood, Tex., cut contaminated soil remediation costs in half by using bioremediation compared to treatment with commercial inoculums. Photo by Sonja Skinner

Biodegradation is a form of bioremediation, which is the use of microorganisms to treat soil containing pollutants. More specifically, biodegradation uses applied or naturally occurring microorganisms (with or without additional nutrients or other amendments) for the biological breakdown of carbon-based materials. The biodegradation of pollutants in the environment is a complex process, with the quantity and quality of the process dependent on three factors: (1) the nature and amount of pollutants present, (2) the actual surrounding ➤

(continued from previous page)

contact, and much more. The pocket guide was provided to Commanders, 1SGTs, Fort Lee newcomers and at environmental stewardship events, such as Earth Day.

The popularity and widespread use of Smart Phones and Tablets afforded EMO an opportunity to provide the much needed information in one single, easily accessible and mobile location. With the assistance of the CASCOM Technology Integration Branch personnel, an application (app) allowing for real-time references and information in one mobile location was created as a natural progression of the much used and successful Pocket Guide. As a partnering effort with CASCOM the application was developed for both Android and Apple Smart Phones and Tablets. Instructions for downloading the free app from the "Google Play" Store and the "App Store" are now given in all venues where the Pocket Guide had been provided. So far the feedback for the app has been positive. Additionally, the development and use of the EMO app helps Fort Lee save money and meet the Army's Net Zero solid waste goals. The production cost for the pocket guides for one year is approximately $3,000, and there is no waste when the app is updated, a savings compared with replacing the outdated version of the printed Pocket Guide. New apps are currently being developed to accommodate the desires and suggestions of our customers. Examples include the complete "Red Plan" that includes instructions for emergency response, a list of recyclable materials, and the Fort Lee Hazardous Waste SOP, today's warfighters are always on the go, and now the Environmental Management Office is on the go with them.

Acronyms and Abbreviations	
AIT	Advanced Individual Training
App	Application
BRAC	Base Realignment and Closure
CASCOM	Combined Arms Support Command
EMO	Environmental Management Office
HAZMAT	Hazardous Materials
MOS	Military Occupational Specialties
SOP	Standard Operating Procedure

POC is Melissa Magowan, 804-734-7188. Melissa.S.Magowan.civ@mail.mil

Melissa Magowan is the deputy to the Garrison Commander at Fort Lee, VA

Bulletin guides decisions for low-impact stormwater control

by Niels Svendsen

The U.S. Army Corps of Engineers released a new Public Works Technical Bulletin to help military land managers make sound decisions when selecting low impact development stormwater control practices. PWTB 200-1-116, "Guidance for Low Impact Development (LID) Site Selection and Integration on Military Lands," is posted on the internet at: http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb_200_1_116.pdf

Historically, stormwater has been managed using the flood-control approach, where excess stormwater runoff is conveyed through a developed network of channels and pipes downstream to a central treatment outlet. This centralized approach is outdated, expensive to maintain, and only moderately effective as a pollution control measure.

Numerous case studies and research have indicated that stormwater management strategies should become decentralized and stormwater control measures should focus on mimicking an area's pre-development hydrology in an effort to lower downstream pollution, increase water reuse, and improve groundwater recharge. These stormwater control strategies, otherwise known as LID Integrated Management Practices, can be implemented with either structural or non-structural stormwater control measures to lower the financial burden of end treatment controls and meet environmental regulations.

Acronyms and Abbreviations	
IMP	Integrated Management Practices
LID	Low Impact Development
PWTB	Public Works Technical Bulletin

This LID modular wetland stormwater control feature is at Fort Hood, Tex. Photo courtesy of ERDC.

The PWTB provides an overview of LID stormwater management practices and offers guidance on site analysis and selection as related to military lands for both new construction and site redevelopment. In addition, this document provides a comprehensive overview of the regulatory and policy documents that are the backbone of LID design practices. The key design concepts, common site development challenges and general issues regarding LID implementation are examined to help the planner/designer ensure successful integration of LID into traditional stormwater management approaches. LID IMP fact sheets are provided for the most common LID practices along with strategies to help planners make decisions about cost and suitability dependent on site development goals.

POC is Niels Svendsen, 217-373-3448, niels.g.svendsen@us.army.mil

Niels Svendsen is a researcher at the U.S. Army Engineer Research and Development Center, Construction Engineering Research Laboratory, in Champaign, Ill.

(continued from previous page)

environmental conditions, and (3) the composition of the native microbial community. Bioremediation can be applied to sites contaminated with a variety of chemical pollutants including monoaromatic hydrocarbons (e.g., benzene, xylene, and toluene) and alkanes and alkenes (e.g., fuel oil).

The PWTB's Appendix A discusses the science and process of biodegradation and its successful soil treatment at POL-contaminated sites such as residues from Central Vehicle Wash Facilities POL spill sites, or remedial action sites. The time for cleanup varies depending on the type and concentration of contaminant, level of cleanup required or end use desired and environmental conditions. For example, remediation to a concentration level for landscape use has more stringent requirements than for use as intermediate landfill cover.

Appendix B provides a detailed explanation of biodegradation and gives examples of its implementation at Fort Hood, Texas, and Fort Riley, Kansas. Appendix C discusses the concept of total petroleum hydrocarbons, a parameter used as an indicator for hydrocarbon contamination and remediation.

Additional information includes a literature review of biodegradation; a regulatory review of several states with strong Army presences and their soil cleanup requirements; a bioremediation white paper; a discussion of biopiles as another method for treating POL contamination; and applicable references and abbreviations.

POC: Richard J. Scholze, 217-398-5590, Richard.J.Scholze@usace.army.mil

Richard J. Scholze is a senior project manager and environmental engineer at the Engineer Research and Development Center's Construction Engineering Research Laboratory, Champaign, Ill.

Public Works Technical Bulletin 200-1-120

by Thomas Napier

Many Army installations have developed successful recovery and recycling programs for salvaging useful materials from building removal. Although the Department of Defense's target is 56 percent construction and demolition waste reduction in FY13, the lessons learned over the past several years can support greatly increased diversion percentages at most sites. Public Works Technical Bulletin 200-1-120, "Opportunities to Increase Construction and Demolition Waste Diversion," provides a thorough collection of these lessons along with recommendations for implementing them. The PWTB presents lessons learned and recommendations based on experiences recorded from 11 Army installations as well as input from personnel at Headquarters, U.S. Army Corps of Engineers, USACE Districts, Installation Management Command and Assistant Chief of Staff for Installation Management, all of whom are involved with construction, demolition, and solid waste management activities.

One industry accepted definition of Construction and Demolition (C&D) waste is: debris results from construction, remodeling, repair or demolition of buildings, roads or other structures. It includes (but is not limited to) wood, concrete, drywall, masonry, roofing, siding, structural metal, wire, insulation, asphalt, packaging materials related to construction or demolition.

Online resources to consult include:

- www.cicacenter.org
- www.wbdg.org
- www.bmra.org
- www.cdrecycling.org

Northwestern Division of the U.S. Army Corps of Engineers was recently designated as the Center of Expertise for Waste as a part of the Regional Technical Centers of Expertise for Energy, Sustainability and Life-Cycle Cost Analysis. Information about this regional center and additional waste resources can be found here: https://mrsi.usace.army.mil/sustain/SitePages/CX/Waste.aspx

Acronyms and Abbreviations	
C&D	construction and demolition
LEED	Leadership in Energy and Environmental Design
MILCON	Military Construction
PCB	Polychlorinated Biphenyl
PWTB	Public Works Technical Bulletin

POC is Ned Shepherd, 309-912-3103, Ned.Shepherd@usace.army.mil,

Thomas Napier is a research architect with the U.S. Army Corps of Engineers, Construction Engineering Research Laboratory

Environmental management plan to support training mission

by Rob Schuette

Completion and publication of the Fort McCoy Integrated Natural Resources Management Plan (INRMP) sets the environmental groundwork to support the installation's training mission from 2012 forward.

Jim Kerkman, the installation forester and main author of the INRMP, said the plan, which recently was completed, helps ensure the installation can maximize its potential to conduct military training by being a wise environmental steward. At the same time, the efforts help support recreational activities at Fort McCoy for both the installation community and neighboring communities. The INRMP undergoes a major revision when events warrant.

Acronyms and Abbreviations	
INRMP	Integrated Natural Resources Management Plan
WDNR	Wisconsin Department of Natural Resources

This revision occurred because the installation's military mission is moving from a focus directed toward counter-insurgency training operations to more large-scale maneuver elements involved in conventional force-on-force field training exercises.

Personnel from the many sections of the Natural Resources Branch, including program representatives from hunting, fishing, endangered species, invasive plants (exotic species) and cultural resources, provide input from an environmental standpoint, as does the Directorate of Plans, Training, Security and Mobilization from a training standpoint. Other organizations, such as the Directorate of Emergency Services, which provides enforcement support, also provide input for the plan.

A helicopter crew from the 1st Battalion, 147th Aviation Regiment drops water during a prescribed burn at Fort McCoy. Prescribed burns are one management tool Fort McCoy uses to support its Integrated Natural Resources Management Plan. (File photo)

Impacts from these activities, including prescribed burning, the Integrated Training Area Management program, pest control, game and fish enforcement, etc., are ➤

EMS to manage fiscal constraints

by Bobby McGough

You may have noticed that our Army is experiencing a resource crunch. In fact, we have received fewer resources but the requirements to manage our environmental programs have not been reduced. How do we continue to manage in these tough economic times? Think about the following scenario in relation to the management of the environmental programs at Army installations.

We are losing key people and their institutional knowledge is going with them. The commander wants a risk assessment to identify where we can reduce resources without incurring significant regulatory and mission risks. All of the garrison directorates have been tasked with development of a continuity of operations plan to show how we will hold the line if we see early retirements, lose subject matter expert contract support, and experience civilian furloughs. This is a scenario that may sound familiar and hopefully your installation already has a way to continue successful management your environmental programs. Let me illustrate how an effective Environmental Management System (EMS) can help.

Army installations that have implemented an ISO 14001 conformant EMS don't have to be in a mad scramble to plan and execute for this contingency. The risk assessment has already been done and has been reviewed annually with input from across the garrison. The EMS person called it an "aspect analysis" but it really is a risk assessment to determine priorities. The assessment will need to be reviewed to determine how to realign resources according to current funding situation so our limited resources are best utilized to accomplish the mission and maintain compliance.

The methods to identify and track installations non-discretionary legal environmental compliance requirements, that the EMS person call "legal and other requirements", are already well established and likely included in the risk analysis mentioned above. Examples of these legal requirements include permit conditions, biological opinion conditions, National Environmental Policy Act commitments, cultural resources agreements and applicable regulations. The critical non-recurring projects, possibly referred to as "objectives and targets", essential to maintain compliance with the legal requirements have already been identified for inclusion on the 1 to N list for funding. I've even heard the 1 to N list referred to as the "resource request" given that it includes the must fund non-discretionary (Class 0 and 1) projects as well as discretionary funding requests (Class 2 and 3).

Since installations with ISO 14001 conformant EMS have also identified and documented the actual responsibilities and authorities of staff associated with environmental management via environmental management plans (EMP), they can more easily ensure that critical duties are identified and those activities ➤

Acronyms and Abbreviations	
EMS	Environmental Management System
ISO 14001	Army adopted standard for environmental management
ISO	International Organization for Standardization
USAEC	US Army Environmental Command

(continued from previous page)

addressed in the plan.

Kerkman said input from the Wisconsin Department of Natural Resources (WDNR) and the U.S. Fish and Wildlife Service is incorporated into the plan as it is being formulated. The organizations represent the state and federal levels of the Sikes Act, which requires the compilation of the report. Public comment on the plan also was accepted and integrated into the report. "Having a partnership with the state (WDNR) and the federal government (Fish and Wildlife) helps let them know we're doing the right things," Kerkman said. "The plan helps keep track of what's been done and lets them know how well we are implementing our programs."

"Any input we receive helps us improve our programs," he added, "and promotes high-quality training lands so high-quality training can occur." The INRMP's 13 major initiatives support three objectives from the installation's Strategic Plan: 1) Enhancing Fort McCoy's military value through improved training area utilization and land-use initiatives; 2) Acquiring, effectively using and continuously conserving resources; and 3) providing well-being programs that improve the quality of life for Soldiers, Families and employees.

Major INRMP initiatives include maintaining existing areas of oak savanna vegetation and increasing its acreage when compatible with military training. Kerkman said this provides excellent support for military training.

Kerkman said the plan is integrated with the Fort McCoy Master Plan, the Range Complex Master Plan, the Integrated Cultural Resources Plan and other plans that address land use at Fort McCoy. Objectives of the program are implemented in regards to the availability of funding and manpower and mission requirements, Kerkman said.

The plan is available at the Fort McCoy public website at http://www.mccoy.army.mil/ReadingRoom/documents/INRMP_public_review.pdf.

POC is Mark McCarty, 608-388-4793, mark.w.mccarty.civ@mail.mil

Rob Schuette is the assistant editor of the Real McCoy, Fort McCoy's installation newspaper, Fort McCoy Public Affairs Office,

Environmental Performance Assessment System (EPAS)

by Martin Roberts

Since its inception in 1991, the U.S. Army Environmental Command's (USAEC) EPAS program has had different names and has been executed in slightly different ways. The purpose, however, is to help the Army take a proactive stance toward environmental compliance, maintaining consistently compliant operations and enabling a greater focus on mission execution.

The requirement for environmental assessments stems from the Department of Defense Instruction (DoDI) 4751.5 & .6. To accommodate unique characteristics, the Army's program is split into 3 parts – Active Army, Army National Guard, and Army Reserves. Common Army EPAS policy is disseminated by the Assistant Chief of Staff for Installation Management (ACSIM). Army Regulation (AR) 200-1, Environmental Protection and Enhancement, requires an annual internal environmental performance assessment and an external assessment every 3 years.

No one on any installation wants an external team getting in their business, but EPAS discovers and fixes problems before the Environmental Protection Agency and/or other regulatory agencies discover the problem and apply financial and/or operational penalties as some regulators have the ability to shut down certain installation operations if they are found out of compliance with laws and permits. Another benefit of EPAS is that it provides a fresh set of eyes to examine your environmental programs; helping to clarify incorrect/incomplete understanding of regulations and to identify related knowledge gaps and accidentally overlooked discrepancies. For Active Army installations, USAEC has mechanisms in place for helping to correct problems – from staff assistance visits to project funding justification.

If you work at an installation and are proficient in an environmental subject area USAEC welcomes you to be an external assessor. USAEC pays all travel costs and you get to cross-fertilize and exchange ideas with other installation-level personnel. As an added benefit, participating as an assessor at other installations will help you better prepare your installation for its next EPAS.

In these times of varying budgets, environmental assessments become more important because installations may not have the resources to fully manage their programs. In this way we are all working together for a more ready Army.

POC is Martin Roberts, martin.e.roberts.civ@mail.mil.

Martin Roberts is part of the EPAS Program Management Team, US Army Environmental Command.

Acronyms and Abbreviations	
ACSIM	Assistant Chief of Staff for Installation Management
AR	Army Regulations
DoDI	Department of Defense Instruction
EPAS	Environmental Performance Assessment System
USAEC	U.S. Army Environmental Command

(continued from previous page)

maintain adequate coverage. Another way to put it is that the installation can more easily identify and reallocate resources to maintain the effectiveness of critical operational controls while accepting more risk with other operational controls. Oh, by the way, operational controls are things like inspections, operating instructions or procedures, secondary containments, scales to weigh waste, dig permits, drip pans, as well as maps and signs for off limits natural or cultural resource areas.

For continuity of operations, it really comes down to the EMPs. An EMP includes the information essential to execute a program and can validate the resource commitments for the program. The program responsibilities, assigned duties, resources used, operational controls, projects, legal drivers and how the daily activities are performed are all integral to the EMP.

Installations with a mission oriented EMS should be able to review their environmental programs, reset priorities in accordance with command guidance and revise EMP's to support continuity of operations in times of uncertain resources. This in not to say it's easy but having a management system that meets the Army standard helps accomplish the mission despite tough fiscal constraints that we face today. Contact USAEC for additional information or assistance.

POC is Bobby McGough, 210-466-1610, bobby.d.mcgough.civ@mail.mil

Bobby McGough is an EMS program manager with the U.S. Army Environmental Command.

IS YOUR INSTALLATION LOOKING IN THE RIGHT PLACES?

Top EPAS findings over the last 3 years.

- Air Emissions
- Hazardous Waste
- Petroleum, Oil, & Lubricants (POL) Tanks
- Solid Waste
- Wastewater (includes stormwater)
- Water Quality (drinking water)

Fort Detrick uses Aquatic Biomonitoring for drinking water protection

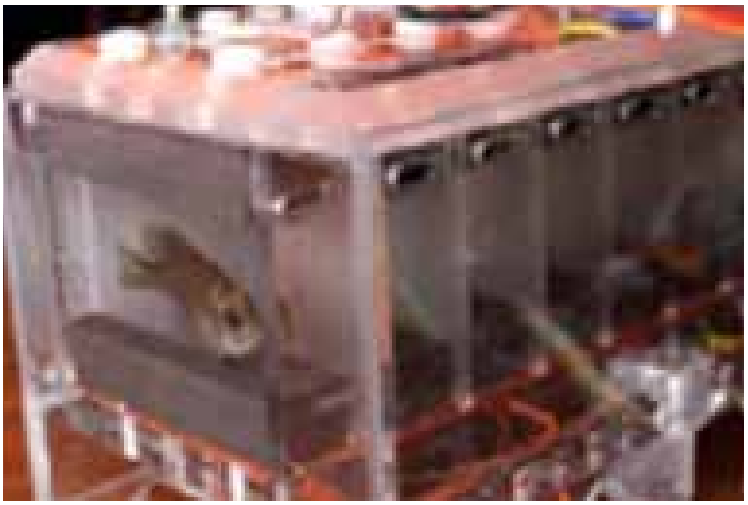
by Larry Potter

Military installations face the possibility of drinking water exposed to a wide range of toxic industrial or agricultural chemicals as a result of accidental spills or deliberate chemical contamination of water. Unfortunately, rapid detection capabilities for toxic chemicals in water are limited and may not provide sufficient warning of developing toxic hazards.

With support from an Army Science and Technology Objective (STO) (#IV. ME.2000.05), the United States Army Center for Environmental Health Research (USACEHR) has developed an aquatic biomonitor that detects potentially toxic events by measuring changes in fish behavior. Fish are natural integrators of water quality conditions and can respond to a wide range of unsuspected toxic chemicals or chemical mixtures. This aquatic biomonitor is used at water treatment plants and other water production facilities for monitoring source waters. Product water in distribution systems can be evaluated after the water is dechlorinated.

In the USACEHR aquatic biomonitor, fish behavior is monitored by pairs of electrodes mounted above and below each of eight bluegills. As the fish move in the chamber and ventilate their gills, muscle contractions generate electrical signals in the water that are monitored by a computer. When abnormal fish behavior is identified, the computer provides immediate alarm notification and can start an automated water sampler to permit follow-up chemical analysis. Two-way communication allows remote monitoring and control of computer operation. An automated water chemistry multiprobe is used to track parameters such as temperature and dissolved oxygen that may affect fish ventilatory behavior. Laboratory tests have shown that the aquatic biomonitor responds within an hour to most chemicals at acutely toxic levels.

Acronyms and Abbreviations	
Md.	Maryland
SOP	Standard Operating Procedure
STO	Science and Technology Objective
USACHER	United States Army Center for Environmental Health Research



Fixed Aquatic Biomonitor

Field testing has demonstrated the usefulness of the biomonitor in a range of applications including drinking water protection at the Fort Detrick, Md. Water treatment Plant.

The aquatic biomonitor technology has been in use at Fort Detrick since just after 9/11 to protect the water system with an excellent performance record. Initially, the biomonitor was in a mobile lab and now it is installed permanently at the water treatment plant. Fort Detrick has the monitor installed on both the raw water and the finished water. This provides the assurance that any toxic chemicals that may get into the raw water do not get through the treatment process and into the drinking water distribution system. On two occasions, the monitor alerted Fort Detrick to toxic chemicals in the raw water from the Monocacy River. The problem occurred in the spring during the period when farmers were putting chemicals on their fields. Analysis of the grab sample taken by the automated sampler triggered the biomonitor alarm indicated that the events were most likely caused by agricultural chemicals. In both cases, there was no alarm from a fish monitoring the finished water indicating that the toxic chemicals did not get through the treatment process into the finished water.

Fort Detrick has established a Standard Operating Procedure for responding to alerts from the aquatic biomonitor. The SOP coordinates an alert with Safety, Industrial Hygiene, Environmental Management Office, Emergency Operations, USACHER and the Installation Operation Center. The Maryland Department of the Environment is also notified of any toxic chemicals found in the raw water source, the Monocacy River. In addition, the City of Frederick is notified since their treatment plant also uses the Monocacy River as its raw water source. The SOP outlines different plans of action depending on different scenarios dealing with the fish reactions and the chemical analysis of the grab sample of the raw water at the time of the alert. The SOP is part of the Fort Detrick Water System Emergency Response Plan.

POC is Larry Potter, 301-619-2441, larry.potter@us.army.mil.

Larry Potter is the director of Public Works at Fort Detrick, Maryland.

"America's Army–Our Profession"

by Major General Gordon B. "Skip" Davis, Jr., U.S. Army, and Colonel Jeffrey D. Peterson, U.S. Army

As our Army enters this period of transition—underscored by an impending drawdown in Afghanistan, preparing for a new mission post-2014, a forecasted reduction in Army end-strength, and the challenges of developing capabilities for the Army of 2020—we have an exceptional opportunity to learn, grow, and posture our profession for an uncertain future. While we cannot predict the future, we know the nation will call upon our Army to undertake some of its most difficult challenges. The American people we serve trust us to accomplish our assigned missions effectively, efficiently, and ethically. All Army professionals must consciously work to maintain that trust through their demonstrated competence, character, and commitment.

Our Profession

The Chief of Staff of the Army (CSA) Marching Orders concludes with an important emphasis on one of the five essential characteristics of the Army Profession: "Trust—the Bedrock of our Profession." Reinforcing the importance of trust, General Raymond T. Odierno announced "America's Army—Our Profession" at the October 2012 AUSA Conference. "America's Army—Our Profession" is a Calendar Year 2013 (CY13) education and training program designed to build a common, Army-wide understanding of the Army Profession.

The CSA's intent is to generate dialogue for soldiers and Army civilians, to increase their understanding of the Army Profession, to reaffirm their understanding of what it means to be a professional, to recommit to a culture of selfless service, and to internalize the Army Ethic. The primary goals of the "America's Army—Our Profession" program are to create an enduring emphasis on the Army Profession, to strengthen our professional identity, and to inspire future generations of Army professionals. Ultimately, Army professionals must—

Chief of Staff of the Army General Raymond T. Odierno (U.S. Army)

- Know and understand the Army Profession doctrine and concepts.
- Conduct themselves in a manner worthy of their professional status and calling.
- Ensure stewardship through accountability of conduct and performance and constant improvement of the Army Profession.
- Generate and sustain their dialogue about the profession.

Our professional responsibility is to continually create and advance our expert knowledge and skills in landpower. We accomplish this by ensuring every Army professional is continually certified through a lifelong commitment to learning and developing expertise in our Army's four fields of expert knowledge:

- Military-Technical—How the Army applies landpower to accomplish its missions.

Moral-Ethical—How the Army accomplishes its missions in ways congruent with our moral and ethical framework.

- Political-Cultural—How the Army, mindful of its subordination to civil authorities, understands and operates in a multi-cultural, complex world.
- Human Development—How the Army recruits, develops, and inspires Army professionals.

Through certification, the Army validates the expertise of its individual professionals and of its organizations. The role of certification within the Army is two-fold. First, it demonstrates to the American people that the Army is qualified to practice its profession effectively, efficiently, and ethically. Second, certification milestones motivate Army professionals to achieve higher performance standards in the pursuit of ➤

Marching Orders

America's Force of Decisive Action, 38th Chief of Staff, U.S. Army, January 2012

- Provide trained, equipped, and ready forces to win the current fight while maintaining responsiveness for unforeseen contingencies.
- Develop the force of the future, Army 2020 as part of Joint Force 2020 – a versatile mix of capabilities, formations, and equipment.
- Sustain our high-quality All-Volunteer Army – Soldiers, Civilians, and Families, in the Active and Reserve Components.
- Adapt leader development to meet our future security challenges in an increasingly uncertain and complex strategic environment.- Foster continued commitment to the Army Profession, a noble and selfless calling founded on the bedrock of trust. *http://usarmy.vo.llnwd.net/e2/c/downloads/232478.pdf*

(continued from previous page)

excellence. Certification ensures each Army professional demonstrates three critical traits:

- Competence—An Army professional's demonstrated ability to successfully perform his/her duties and to accomplish the mission with discipline and to standards.
- Character—An Army professional's dedication and adherence to Army Values and the Profession's Ethic as consistently and faithfully demonstrated in decisions and actions.
- Commitment—The resolve of an Army professional to contribute honorable service to the nation, to perform his/her duties with discipline and to standards, and to strive to successfully and ethically accomplish the mission despite adversity, obstacles, and challenge.

Trust

Trust is assured reliance on the character, ability, strength, and truth of someone or something. Trust is the core intangible, which is essential inside and outside the Army Profession. The ability to accomplish our mission depends upon trust. Our Army Values, consistently reflected in our decisions and actions, reveal our character and result in trust. By living our values in all our endeavors, personal and professional, we sustain and develop trust inside the Army among fellow professionals and outside the Army with the American people.

Trust with the American people is earned and maintained when the Army Profession consistently demonstrates military and civilian expertise, honorable service, esprit de corps, and effective stewardship. Army professionals have a duty to serve society in an effective, efficient, and ethical manner, thus preserving the trust we earned throughout our history and to sustain that trust during a period of transition.

Trust among Army professionals is the foundation of our success. We earn and develop trust with our fellow soldiers and civilians by consistently demonstrating our competence, character, and commitment. In every situation, we perform our duty with discipline and to standards.

Finally, we must strive to maintain trust between civilians, soldiers, families, and the Army. People are the Army and when a soldier or civilian joins the Army Profession, their family joins the Army family. Therefore, the Army is committed to a supportive and caring culture that strengthens Army family bonds and provides a secure, nurturing quality of life for our families. Continuing to honor this commitment is essential to preserving trust among civilians, soldiers, their families, and the Army.

The Way Forward

The active support of Army leaders, military and civilian, is the key factor in the success of the "America's Army—Our Profession" program. Army leaders are called upon to integrate Army Profession concepts, to motivate all members of the profession to reflect on and discuss these concepts, and inspire professional behavior while role-modeling that behavior themselves. Leaders can integrate Army Profession concepts by emphasizing them in training and leader development guidance, public remarks, professional development sessions, ceremonial events, soldier and NCO boards, and organizational functions.

Uniformed and Civilian leaders at all levels are charged to support "America's Army–Our Profession," to understand our doctrine, and to inspire a culture where all Army professionals conduct themselves in a manner worthy of their professional status. The future of the Army Profession depends on each and every leader ensuring these fundamental principles are practiced and passed on to the next generation of Army professionals. *-MR.*

POC is Donna Crawford, 202-761-7493, Director CP-18 Proponency Office, donna.crawford2@us.army.mil

This has been amended from the Military Review article that MG Davis and COL Peterson authored on America's Army-Our Profession. For further information on the Army Profession/Campaign please contact Harry Sarles, public affairs officer at the Combined Arms Center Leader Development and Education Command and General Staff College in Fort Leavenworth, KS. 913-684-3097

Most Civilian Career Programs have updated career maps hosted in Army Career Tracker (ACT). The career maps are a tool for self development and provide recommended training, education and competency information. Army Career Tracker home page: https://actnow.army.mil

USACE partners with eCYBERMISSION for STEM outreach

by Rekisha White

The U.S. Army Corps of Engineers (USACE) is committed to answering the nation's need for increased literacy in Science, Technology, Engineering and Mathematics (STEM). USACE has proven its commitment to STEM outreach programs, including Gains in the Education of Mathematics and Science (GEMS), Science and Engineering Apprentice Program (SEAP) and Great Minds in STEM (GMiS), and our support continue to grow every year. In many programs we have doubled and even quadrupled our volunteer efforts. This article is the second in a series that will be presented over the next several issues regarding STEM events, opportunities or programs.

One of these programs is eCYBERMISSION, a web-based STEM competition for students in grades six through nine, where teams compete for awards while solving problems in their communities.

On December 18, 2012, USACE Human Resource Director, Sue Engelhardt requested USACE districts and divisions provide support this year's eCYBERMISSION program and the response was overwhelming. In FY12, USACE registered 14 eCYBERMISSION Volunteers, and in FY13 that number increased to 69 Volunteers.

eCYBERMISSION is supported by a diverse group of Volunteers who are dedicated to helping our next generation of STEM leaders. USACE was able to provide multiple volunteers for each area. Volunteer roles include:

- Ambassadors: Promote the program in their communities by visiting schools, conducting outreach to STEM or like-minded organizations and recruiting colleagues to volunteer for the program.
- CyberGuides: Provide online assistance to eCYBERMISSION teams through Discussion Forums, Instant Messaging, Chat Rooms and Webinars.
- Virtual Judges: Score team Mission Folders independently and objectively during the competition's online judging period.

Acronyms and Abbreviations	
FY	fiscal year
GEMS	Gains in the Education of Mathematics and Science
GMiS	Great Minds in STEM
HSR	Hydraulic Sediment Response
NJ&EE	National Judging and Education Event
SEAP	Science and Engineering Apprentice Program
STEM	Science, Technology, Engineering and Mathematics
U.S.	United States
USACE	U.S. Army Corps of Engineers

Jason Floyd, MVD and Fidel Rodriguez, CEMP display the HSR model

In addition to volunteers during the competition, USACE supports the Army's eCYBERMISSION program during the National Judging and Education Event (NJ&EE). NJ&EE is a week-long event that brings together the 16 National Finalist Teams, nearly 80 student's total, from across the country to compete for the title of First-Place National Winners in their grade. During this week long event the 16 regional winners compete for national recognition and for a chance win an additional $5,000 in U.S. Savings Bonds.

In 2012 USACE participated in the NJ&EE, hosting a workshop for the STEM Tech Expo. The workshop consisted of an interactive Hydraulic Sediment Response (HSR) model. Using this technology, river engineers are able to replicate the mechanics of an actual river or stream on an area the size of a normal table top. USACE also hosted question and answer session for students with a series of research questions and several displays with USACE Engineers and Scientists.

USACE Senior Leaders Sue Engelhardt and Robert Slockbower also participated in the awards ceremony. Motivating and engaging tomorrow's leaders, answering questions and speaking to the youth about exciting STEM careers and opportunities that await them in USACE. This year USACE will continue its support to the NJ&EE and eCYBERMISSION within budget constraints. We look forward to mentoring tomorrows STEM leaders today.

POC is Rekisha White, 202-761-1698, Rekisha.i.white@usace.army.mil

Rekisha White, is a Human Resources Specialist at Headquarters, USACE, Washington D.C.

U.S. Army Installation Management Command
2405 Gun Shed Road
Fort Sam Houston, TX 78234-1223
www.imcom.army.mil