

Public Works

D I G E S T

Volume XXVIII, No. 2
April/May/June
2016

This Issue:
**Environment and
Sustainability**

Leader
Commentaries 3

Secretary of
the Army Awards 5

Environment and
Sustainability 16

Technology and
News 40

Professional
Development 42

The poster features a textured, light brown background with several large, vibrant green leaves scattered across it. In the upper left, a solar panel array is visible. In the center, a soldier in a green uniform and helmet is working on a laptop. A recycling symbol is also present. The text 'ARMY EARTH DAY 2016' is prominently displayed in a bold, green, sans-serif font. Below it, the slogan 'SUSTAIN THE MISSION • SECURE THE FUTURE' is written in a smaller, black font, followed by the tagline 'The Readiness of the Army Depends On It' in an italicized black font.

ARMY
EARTH DAY
2016

SUSTAIN THE MISSION • SECURE THE FUTURE

The Readiness of the Army Depends On It



Public Works DIGEST

Volume XXVIII, No. 2
APRIL/MAY/JUNE 2016



U.S. Army Installation
Management Command
2405 Gun Shed Road
JBSA 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: 1,000; 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.

Gregory S. Kuhr

Director

Facilities and Logistics

Installation Management Command

U.S. Army Installation Management
Command

2405 Gun Shed Road

JBSA Fort Sam Houston, TX 78234-1223

Attn: Editor, *Public Works Digest*

Candy Walters

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.

Leader Commentaries



- 3 Army continues to embed sustainability into its culture, *by Katherine Hammack*
- 4 Partnership promotes sustainable practices on installations, *by Karen Baker*

Secretary of the Army Environmental Awards



- 5 Army honors installations, teams for environmental stewardship, *by Cathy Kropp*
- 5 Mine restoration efforts bring Camp Blanding recognition, *by Cathy Kropp*
- 7 Aggressiveness, innovation pays dividends for USAG-Humphreys, *by Cathy Kropp*
- 8 Army recognizes Fort Hood for environmental excellence, *by Christine Luciano*
- 9 Innovative partnerships win Fort McCoy Army recognition, *by Cathy Kropp*
- 11 JBLM recognized for innovative cleanup adaptations, *by Cathy Kropp*
- 12 Ensuring acceptable design earns working group honors, *by Kristina Curley*
- 13 Conserving natural resources brings West Virginia Guard award, *by Cathy Kropp*
- 14 Sustainability team approach brings Tobyhanna Army Depot win, *by Cathy Kropp*
- 15 History receives recognition at White Sands Missile Range, *by Cathy Kropp*

Environment and Sustainability



- 16 Relationships create environmental partnering opportunities, *by U.S. Army Environmental Command Public Affairs*
- 18 Concrete recycling helps Fort McCoy crush solid-waste costs, *by Scott T. Sturkol*
- 19 Public Works Technical Bulletin provides waste diversion opportunities, *by Thomas R. Napier*
- 21 Study characterizes solid waste at Natick Soldier Systems Center, *by Tazanyia L. Mouton*
- 22 Food waste composting helps Fort Hood divert landfill waste, *by Jennifer N. Rawlings*
- 23 Fort Hunter Liggett Recycling Program unleashes the coyote, *by Jonelle Kimbrough*
- 23 Fort Benning initiates 6-month recycle program review, *by Vanessa Marquette*
- 24 Green Boot Program participants have big boots, *small boot print*, *by Mindy Love*
- 25 Environmental Warfighters tackle habitat restoration, *conservation*, *by Dennis Aubrey Buckingham*
- 26 Partnerships result in school permeable parking lot, *outdoor lab*, *by Chris Otto*
- 27 Strategies for managing stormwater on Army installations, *by Patricia Donohue*
- 29 Fort Carson's 4th CAB Hangar earns LEED Platinum rating, *by Al Barrus*
- 30 New Strategies help build Army Reserve sustainability program, *by Jonelle Kimbrough*
- 31 USAG Bavaria sets environmental sustainability support example, *by Mark Albe and Caecilia Kastl-Meier*
- 32 MEDCOM sustainability efforts continue forward momentum, *by Elizabeth Keysar, Kathy Labaye and Karrie Fristoe*
- 34 Fort Hood breaks ground for Army's largest renewable energy project, *by Todd Pruden*
- 35 Greenhouse 'living collections' promote cloning for preservation, *by Larry Abbott and Matthew Keir*
- 36 Fort Buchanan's unique environment helps endangered species, *by Victor Rodriguez Cruz and Francisco Méndez*
- 38 Fort Drum project tracks white-tailed deer fawn survivorship, *by Raymond Rainbolt and Martin Feehan*
- 39 Reserve Command works to conserve northern long-eared bat, *Jonelle Kimbrough and Veronda Johnson*

Technology and News



- 40 IMCOM revises protocols for sampling for lead in drinking water, *by Richard Morris*
- 41 Army projects win 7 Federal Planning Division design awards, *by Andrea Kubn*

Professional Development



- 42 Civilian Education System offers leader development, progression, *by Russell Dunford*



Army continues to embed sustainability into its culture

by Katherine Hammack

What is sustainability? Webster's dictionary defines it as "involving methods that do not completely use up or destroy natural resources." The Army defines sustainability as a critical enabler in the performance of the Army's mission, as its importance and benefits cut across the entire Army enterprise. As a foundation, the Army is integrating sustainability into our four lines of operation — materiel, military training, personnel, and services and infrastructure. By implementing sustainability principles and practices, the Army is decreasing future mission constraints, increasing operational flexibility and resilience, safeguarding human health and the environment, and improving quality of life for Soldiers, the civilian workforce and local communities.

Senior leaders of today's Army are making a directed effort to embed sustainability into Army culture, from both the top-down and the bottom-up. The Army Net Zero Initiative, the Senior Energy and Sustainability Council, the Office of Energy Initiatives, and the Energy Security and Sustainability Strategy are all examples of key sustainability efforts.

- Net Zero applies the principles of integrated design to ensure the Army appropriately manages energy, water and waste resources. The Net Zero Pilot Installations, which were self-nominated, serve as test beds to identify lessons learned and best practices to be institutionalized across

the Army.

- The Senior Energy and Sustainability Council provides strategic direction to integrate energy and sustainability into Army policies, plans and programs.
- The Office of Energy Initiatives serves as the central management office for implementing cost-effective, large-scale renewable energy projects, 10 megawatts or greater, leveraging private sector financing.
- The Energy Security and Sustainability Strategy positions the Army to enhance its current and future capabilities, readiness, and performance by building upon its ability to employ resources effectively to support all aspects of operations through effective system design and integration of resource considerations into behaviors and decision processes. The strategy's key goals are: Inform Decisions, Optimize Use, Assure Access, Build Resiliency and Drive Innovation.

Sustainability initiatives preserve choice for the Army of tomorrow, at a cost it can afford, now and in the future.

The Army was the first federal agency to publish a Sustainability report following Global Reporting Initiative's guidelines. Since 2007, the Army has published five publically available reports, disclosing our progress in embodying the principles of sustainability in our operations, installations, systems, and community




*Katherine Hammack
Assistant Secretary of the Army (Installations,
Energy and Environment) (U.S. Army Photo)*

engagements.

Sustainability reporting enables the Army to consider impacts of wide range of sustainability issues, enabling us to be more transparent about the risks and opportunities we face.

As you drive sustainability across your area of responsibility, you can find more information about the Army's sustainability journey through the links below:

POC is Dennis Bohannon, 703-614-4679, dennis.k.bohannon.civ@mail.mil

Katherine Hammack is the Assistant Secretary of the Army for Installations, Energy and Environment. Bohannon is the director of strategic communications, executive office of the Assistant Secretary of the Army (Installations, Energy and Environment) 

Army sustainability websites:

Assistant Secretary of the Army (Installations, Energy and Environment)	http://www.army.mil/asaie
Army Energy and Sustainability	http://www.asaie.army.mil/Public/ES/
Army Environment, Safety and Occupational Health	http://www.asaie.army.mil/Public/ESOH/index.html
Army Sustainability reports:	http://www.asaie.army.mil/Public/ES/sustainability.html
Army Sustainability Report 2007	http://www.asaie.army.mil/Public/ES/doc/2%20-%20Army%20Sustainability%20Report%202007.pdf
Army Sustainability Report 2008	http://www.asaie.army.mil/Public/ES/doc/2%20-%20Army%20Sustainability%20Report%202008.pdf
Army Sustainability Report 2010	http://www.asaie.army.mil/Public/ES/doc/2%20-%20Army%20Sustainability%20Report%202010.pdf
Army Sustainability Report 2012	http://www.asaie.army.mil/Public/ES/doc/2%20-%20Army%20Sustainability%20Report%202012.pdf
Army Sustainability Report 2014 Annex	http://www.asaie.army.mil/Public/ES/doc/Army%20Sustainability%20Report%202014%20(GRI%20Annex)(150%20dpi).pdf
Army Sustainability Report 2014	http://www.asaie.army.mil/Public/ES/doc/Army%20Sustainability%20Report%202014.pdf
Net Zero Program	http://www.asaie.army.mil/Public/ES/netzero/index.html
Army Office of Energy Initiatives	http://www.asaie.army.mil/Public/ES/oei/index.html
ES2 Strategy	http://www.army.mil/e2/c/downloads/394128.pdf



Partnership promotes sustainable practices on installations

by Karen Baker

This year's Army Earth Day theme is "Sustain the Mission. Secure the Future. The Readiness of the Army Depends On It." This theme recognizes that sustainable approaches are a critical mission enablers for the Army. Our installations play a vital role in supporting readiness, as power projection platforms where our Soldiers train and in providing quality of life to our Army Families. Sustainable practices allow our installations to be more resilient, efficient and effective in delivering the mission.

Earth Day is always a time for reflection. The path to sustainability has been an evolving journey for the Army, which has always been a federal leader in sustainability. I have been privileged to have participated in and witnessed much of the start of that journey, as one of a group of people who served as the architects of the Army's sustainability strategy issued in 2004. It was the first of its kind for a federal agency, and much as we still do today, we wrestled then with defining the concept in a way the entire Army enterprise would understand.

Our inspiration came from pioneers at Army installations who took a very different mission-based approach to solving problems at the grassroots level. Leveraging the concept of the "triple bottom line" in which economic, environmental, and social impacts were considered part of the solution, Army installations found was a "sweet spot" at the nexus of these considerations in which systematic thinking fostered innovation and delivered the mission more effectively.

To promote this concept across the Army enterprise, we adopted the Army "definition" of the triple bottom line - Mission, Environment and Community.

It's been a long personal journey with stops in a number of Army organizations that eventually led to my official selection as the Chief of the Environmental Division at U.S. Army Corps of Engineers Headquarters in October. I

am extremely honored to work with so many talented professionals who share my passion for sustainability and taking care of the environment. For nearly 15 years, the Corps of Engineers has operated under a set of Environmental Operating Principles, the first principle of which is "Foster sustainability as a way of life throughout the organization." I often tell people that sustainability is in the DNA of the Corps of Engineers, because no matter where you work within the organization, you understand that everything we do considers the impacts on the environment, our economy, and the well-being of the communities we serve.

I have found it personally rewarding, as well as professionally challenging, to serve in a leadership role reporting and managing the Corps of Engineers' performance on its own sustainability scorecard. While our teams help Army installations build in accordance with Leadership in Energy and Environmental Design requirements or adopt deep-energy retrofits that result in High-Performing and Sustainable Buildings, we are working hard to apply those practices to our own facilities. This is often a challenge, as our assets are often more "horizontal" construction - multiple, small facilities strewn across a geographic region.

Today our Corps of Engineers leaders again are talking about definitions as we discuss how to apply "large-scale" sustainability and build in resilience across a large region, or across a series of projects. We've learned tremendously from our support of the Army in its net zero installation efforts and other resiliency effort. We have found that the our systems-based approach to considering environmental, economic and social benefits in delivering water infrastructure solutions in our civil works mission - a program known as "Engineering with Nature" - has also had applications beneficial to Army installations.



Karen Baker is the chief of the Environmental Division of the U.S. Army Corps of Engineers. (U.S. Army Photo)

It's this leveraging of knowledge across our great Army/Corps of Engineers partnership that gives me great hope that the solutions and innovation our future Army needs will once again come from those working the issues most closely - namely our Districts and installation teams in partnership. We just received word that several of our installation/Corps of Engineers teams were recognized by the American Planning Association for master planning efforts incorporating energy and sustainability considerations into installations' future plans.

As the Chief of Environmental Division leader for the Corps of Engineers, I pledge to help the Army to deliver its mission by helping to support innovation and leveraging capabilities where ever it can be applied. As a member of the Army's Career Program 18 advisory board, I will do my best to ensure our Army environmental professionals have the right skills and training to provide sustainable solutions in the future.

I look forward to hearing from you about how together we can continue to Sustain the Mission and Secure the Future. Our Army's readiness depends on it.

POC is Eugene Pawlik, 202-761-7690, Eugene.a.pawlik@usace.army.mil

Baker is the chief of the Environmental Division of the U.S. Army Corps of Engineers. 



Army honors installations, teams for environmental stewardship

by Cathy Kropp

Five Army installations, three teams and one joint program office earned recognition from Army leaders as winners of the Secretary of the Army's Environmental Awards program for fiscal year 2015.

These awards recognize excellence in natural resources conservation, cultural resources preservation, Army land restoration, sustainability, waste reduction, and pollution prevention.

This year's winners include:

West Virginia Army National Guard's Camp Dawson -- Natural Resources Conservation, Small Installation

White Sands Missile Range, New Mexico -- Cultural Resources Management, Installation

Fort Hood, Texas -- Environmental Quality, Non-industrial Installation

Tobyhanna Army Depot, Pennsylvania

-- Sustainability, Industrial Installation

Florida Army National Guard's Camp Blanding -- Environmental Restoration, Installation

Fort McCoy, Wisconsin -- Natural Resources Conservation, Team

U.S. Army Garrison Humphreys, Korea -- Environmental Quality, Team

Joint Base Lewis-McChord, Washington -- Environmental Restoration, Team


Joint Program Office, Joint Light Tactical Vehicle, Environmental, Safety and Occupational Health Working Group - Environmental Excellence in Weapon System Acquisition -- Large Program

Runners up include: Michigan Army National Guard's Fort Custer (Natural Resources Conservation); Missouri Army National Guard (Cultural Resources Management); Maine Army National

Guard (Environmental Quality, Non-industrial Installation); North Carolina Army National Guard (Sustainability, Industrial Installation); White Sands Missile Range (Natural Resources Conservation Team); Kentucky Army National Guard (Environmental Quality Team); and John Keiser, Jacksonville District U.S. Army Corps of Engineers (Environmental Restoration, Individual).

The Secretary of the Army Environmental Awards represent the highest honor in the field of environmental science bestowed by the Army.

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

Kropp is an environmental public affairs specialist with the U.S. Army Environmental Command. 

Mine restoration efforts bring Camp Blanding recognition

by Cathy Kropp

Restoring a wasteland to create a Florida-type ecosystem gained recognition for the Camp Blanding Environmental Restoration Team in the recent Secretary of the Army Environmental Awards competition.

In the 1950s, nearly two decades before adoption of regulations to protect the environment and well before its 1993 transfer to the Florida Army National Guard, approximately 500 acres of Camp Blanding's western area supported titanium dioxide mining. That land developed 30- to 40-foot-deep pockets of well-drained sands with virtually no organic material or nutrients to support plant life. Along with its inability to support vegetation, the land was useless in supporting the Guard mission of training Soldiers.

To bring the former mining lands back to life and create an area that can enable readiness in the future, Camp Blanding's environmental restoration team came up with a plan to remediate these sites by reintroducing organic material. Unfortunately, this is a slow process, taking five to 10 years to produce viable soil, but the team found an opportunity to shorten that time to less than six years. The key to success was partnerships.

First Camp Blanding partnered with local counties that needed help disposing of organic debris resulting from hurricanes to use as mulch. Restoration staff members collected organic material spreading it as mulch across the land and then tilling the top layer as the mulch broke down, driving nutrients below the surface to turn the sand into functional soil.

On another part of the installation, an effort to remediate 88 miles of swales to help protect the St. Johns River and watershed was ongoing. The swales capture runoff soils during heavy rains and can increase turbidity in the river if they are swept into the water. In addition, these swales contain nitrogen and phosphorous from agriculture operations, which also can cause algae in the river, harming water quality and wildlife.

To address Camp Blanding's potential storm water impacts, the soils near the river needed to be removed, but instead of conventional remediation, which would involve disposing of the soil, the team arranged to relocate it to the mining restoration site where it was tilled into

(See Camp Blanding, page 6)



(Camp Blanding, continued from page 5)

the sand. The richness of this sand-soil combination shortened the wait time. Long leaf pine trees were planted on two acres in 2014 as a test to see if they could survive.

The team partnered with the Florida Department of Environmental Protection to gain approval for the simultaneous solution to both mining and swale remediation. And the results for both are proving successful.

Realizing an 80 percent survival rate for the long-leaf pine, planting was accelerated in 2015, and the planting of pines expanded to an additional 15 acres. The team will continue scaling up planting goals during the next three years to ensure the site continues to support vegetation at the anticipated levels.

As the initial plantings take hold, the restoration staff also is managing for

invasive or exotic species that may emerge, preventing those species from taking root.

Water and soil sampling at the mining site have shown no contaminants or adverse effects from the sand reclamation.

Using swale soil has allowed Camp Blanding to meet its St. Johns River protection requirement and fully address the 88-mile swale remediation allotment well ahead of Florida Department of Environmental Protection timelines, and in a mutually beneficial and virtually cost-free way.


Though it may take 12 to 15 years for the new forests to take hold, and 15 to 30 years before a fully functional ecosystem emerges, it will emerge from what was a virtual wasteland. Once forested, this previously unusable land can be opened up to new training activities.

The revitalized land also is making an opportunity for new partnerships. In the future the staff plans on working through

the Youth ChalleNGe program to enlist students in the program that provides environmental projects and education to at-risk youth, to help bring these restored areas back to flourishing ecosystems.

As a result of these efforts, Camp Blanding is the Fiscal Year 2015 Secretary of the Army Environmental Awards Program winner for Environmental Restoration – Team winner and will go on to compete with other services in the Secretary of Defense competition later this year.

POC is Paul Catlett, 904-682-3453, paul.l.catlett.nfg@mail.mil

Cathy Kropp is an environmental public affairs specialist with the U.S. Army Environmental Command. Catlett is the forestry program manager at Camp Blanding Joint Training Center, Land Management Center, Starke, Florida. 



Excavation equipment removes soil for the Camp Blanding swale cleaning project. (U.S. Army Photo)



Aggressiveness, innovation pays dividends for USAG-Humphreys

by Cathy Kropp

As the United States consolidates its military footprint, closing U.S. bases in and north of Seoul, Korea, the \$10 billion-plus expansion of Camp Humphreys presents some unique environmental challenges. Due to its innovation in meeting those challenges, the environmental quality team at the U.S. Army Garrison – Humphreys is a winner in the Secretary of the Army Environmental Awards Program for fiscal year 2015.

Transforming Camp Humphreys into the Army's major South Korea hub involves construction of more than 600 new facilities and demolition of more than 250 buildings. Each project requires the environmental staff to identify environmental issues during the planning stage, prepare preconstruction surveys, conduct environmental reviews of every construction and demolition project and ensure compliance with all Korean Environmental Governing Standards.

As a result of the transformation, the current military and civilian workforce, excluding family members, will rise from 7,300 to an estimated 28,800 personnel on an area that expanded from 1,210 acres to 3,623 acres. With this tremendous growth, the garrison relies on its fully implemented environmental management system to maintain environmental compliance.

Using a cross-functional team, the installation sets and achieves goals for energy and fuel consumption, fuel spills, waste generation, water consumption and hazardous material use. The Environmental Division's approach focuses on the importance of being environmentally involved throughout the installation to ensure resources, recyclables, and other wastes are properly collected, segregated, recycled and or disposed of in accordance with applicable policies, regulations and laws.

The garrison exceeded its energy reduction target by installing solar domestic-water systems, converting



Camp Humphreys' central wetland enhancement project improved wetland functions and provided a community observation deck. (U.S. Army Photo)

heating fuel to lower cost natural gas, implementing the Army metering program to identify and monitor buildings with high electrical utility use, installing a system to use daylight instead of electrical lighting in vehicle and aircraft maintenance facilities, and replacing metal halide perimeter lights with more energy efficient lights installation-wide. It also met the fuel consumption target by acquiring electric plug-in vehicles and promoting their use.

Fuel spills were reduced by 28 percent last year through formal classroom bilingual training on handling of hazardous material and hazardous waste, development and implementation of a hazardous waste accumulation point standard operating procedures, hand-on unit-based training, and staff assistance visits. This resulted in fewer hazardous substance spill emergencies and saved costs for spill cleanup labor, as well as costs from special packing and handling to dispose of the waste.

The USAG Humphreys team also exceeded its target for non-hazardous solid waste generation, achieving a 62 percent diversion rate last year. In addition, it increased its diversion rate for construction and demolition waste from 59 to 65

percent, in one year, by expanding the reuse program of crushed concrete demolition debris in the construction phase.

The garrison also exceeded its water conservation goals by installing low-flow shower heads, waterless urinals, sensor controlled sinks and better building management practices.

In addition to the conservation efforts, the team also mitigated impacts from several construction projects on natural and cultural resources. To protect the Central Wetland, which covers a little less than 12 acres of USAG Humphreys, the environmental team developed a Central Wetland enhancement project.

The wetlands is home to aquatic bed, palustrine emergent and palustrine scrub shrub plant communities and provides habitat for heron, mallard, toad, carp and snakehead. The project increased the ecological function of the wetlands, enhanced the wetland buffer and increased plant diversity and habitat structure, all while providing an aesthetic recreational area for the Soldiers, Civilians and Families who live and work on the installation.

When 11 grave sites were discovered during construction, the team coordinated

(See Humphreys, page 9)



Army recognizes Fort Hood for environmental excellence

by Christine Luciano

Fort Hood's Soldiers, Civilians, contractors, and their Families are leading the way to a greener future. Their commitment to being environmental ambassadors of a better tomorrow for the installation, surrounding communities, and environment was recognized by the Army's highest honor in the field of environmental science and sustainability

"It is the collective effort of community stakeholders, who promote and support environmental stewardship, that makes Fort Hood's program the best in the Army," said Timi Dutchuk, chief of environmental programs, Fort Hood Directorate of Public Works.

The Secretary of the Army Environmental Awards Program recognized Fort Hood as the winner of the Fiscal Year 2015 Environmental Quality Non-Industrial Installation Award.

"It's an honor for us to receive this prestigious award and a fitting recognition of the great efforts of our Garrison team," said Brian Dosa, Fort Hood director of Public Works. "I am particularly proud of our Environmental Division and their many significant accomplishments."

Fort Hood's success also was attributed to the involvement of senior leaders and the commitment of the environmental team.

The environmental team at the Texas installation is responsible for mission readiness and the environmental protection of more than 1,800 archeological sites, 18 endemic species, and two endangered birds on 218,823 acres. The team leverages pollution prevention opportunities, increases recycling efforts, enhances environmental awareness and community



Glenn Collier, an Environmental Compliance Assessment Team assessor, explains best management practices for storing used and unused products to 2nd Lt. Neidy Hernandez and 2nd Lt. Steven Sloan, Environmental Compliance Officers for Regimental Engineer Squadron. (Photo by Christine Luciano)

involvement, and promotes long-term sustainability.

Since fiscal year 2014, Fort Hood's environmental accomplishments include the Pollution Prevention Corner, which collected 95,187 gallons of JP-8 fuel, 282,005 gallons of used oil, and 50,071 gallons of antifreeze, generating \$186,628 and the Classification Unit, which collected 46,211 pounds of household hazardous waste and reissued 23,900 pounds. In fiscal year 2015, the Fort Hood Recycle Center collected 7,205 tons of recyclable materials, generating \$1.578 million and sponsoring \$135,000 in community events.

"The Pollution Prevention Corner, Classification Unit, and Fort Hood Recycle Center are all aimed at providing services that make it easier for Soldiers to do their day-to-day duties and allow them to focus more readily on the mission," Dutchuk said.

The Pollution Prevention Corner also offers a mobile kitchen trailer and containerized kitchen wash bay and a tanker purge facility that prevents water from entering the sanitary sewer and saves Soldier man-hours. The Classification Unit, a multi-functional operation, offers a collection program for Department of Defense personnel and their family members to dispose of household hazardous and residential electronic waste for free. The Fort Hood Recycle Center, the Army's largest recycle program, is upgrading its equipment to offer single stream recycling this summer, making recycling easier.

"Through education, training, and outreach efforts, the environmental team helps enhance and reinforce muscle memory of the installation's environmental services," Dutchuk said.

Helping to educate units is the Environmental Compliance Assessment Team.

The four-man team is the on-the-ground force that teaches, trains, and assists Soldiers, Civilians, and contractors. ECAT goes through steps to help units identify deficiencies, help correct them, and then set procedures and policies in place to prevent further occurrences. During the past two years, the team conducted 440 assessments and trained 8,644 individuals.

"As the environmental consultants for the installation, ECAT is one of the commander's tools to ensure compliance and help find solutions," said Randy Doyle, environmental support team supervisor, Fort Hood Directorate of Public Works.

Fort Hood's success also was attributed to the involvement of senior leaders and the commitment of the environmental team.

"Fort Hood's senior leaders are committed to balancing training and combat readiness with taking care of our training lands and being good stewards

(See Fort Hood, page 10)



Innovative partnerships win Fort McCoy Army recognition

by Cathy Kropp

Fort McCoy, Wisconsin, cites partnerships and collaboration as the essential elements in its Fiscal Year 2015 Secretary of the Army Environmental Awards Program Natural Resource Conservation Team win.

Using an Army, U.S. Fish and Wildlife, and Wisconsin Department of Natural Resources interagency agreement, the Fort McCoy Natural Resources Team established the first eight-way partnership involving the Habelman Cranberry Marsh, Colorado State University, U.S. Geological Survey, U.S. Army, U.S. Fish and Wildlife Service, Wisconsin Department of Natural Resources, and local volunteers and school groups to complete fish barrier removal and stream habitat improvement on the installation.

This effort focused on Stillwell Creek, which has flow problems in its highly degraded channel. Collectively, the partners improved nearly 2,000 feet of stream habitat in 2014, which proved successful in 2015 with the discovery of several cold water-intolerant species.

The garrison also leveraged partnerships with the U.S. Army Corps of Engineers and the Cooperative Ecosystem Studies Unit to develop new and update previous monitoring plans for the Mound Prairie Sacred Area, Gypsy Moth, Emerald Ash Borer, Karner Blue Butterfly and Gray



Army M113 Armored Personnel Carriers move through the newly constructed La Crosse River low water crossing designed to support heavy tactical vehicles. (U.S. Army Photo)

Wolf, as well as general endangered species and invasive species management plans.

Partnering with the Wisconsin Department of Natural Resources enabled the team to successfully remove the Alderwood Lake Dam and reroute a road to avoid a range's surface danger zone. This involved mitigating 6.5 acres of wetlands that benefitted the military by eliminating surface danger zone concerns, improving traffic movement, adding a low-water crossing, and eliminating weight limitations on an aging dam structure over the La Crosse River.

Fort McCoy's Natural Resource Conservation Team also partnered with the Wisconsin National Guard to cut and remove debris from the north impact area firebreak, helping minimize the threat of wildfire. In addition to the nine miles cleared, another seven miles of brush mowing, tree removal and erosion control improved the installation boundary firebreak. Maintaining boundaries will keep fire from escaping Fort McCoy protecting private property and delineating the installation boundary to prevent trespass.

(See Fort McCoy, page 10)

(Humphreys, continued from page 7)

with the Republic of Korea Ministry of National Defense to relocate the grave sites off-post. In addition, the garrison coordinated with the Cultural Properties Protection Subcommittee to identify potential buried cultural property areas.

The environmental team also provides educational activities throughout the year to educate stakeholders on the importance of environmental protection, stewardship and management. The garrison holds a month-long Earth Day


celebration including a 5K family fun-run, Earth Day essay contest, Earth-friendly tip of the day announced on American Forces Network radio, and an Earth Day fair for its more than 1,000 community members. Each year the Environmental Division conducts a tree-planting project with the Cub and Daisy scouts, allowing each of them to plant a tree to honor Earth Day.

Despite the various environmental challenges generated by the Army's largest repositioning transformation project, USAG Humphreys environmental team led the Army in enhancing environmental

quality while enabling readiness and supporting the Army mission.

The team will represent the Army in the Secretary of Defense Environmental Awards competition held later this year.

POC is Lori Kim, DSN 315-753-7964, lori.m.kim.civ@mail.mil

Cathy Kropp is an environmental public affairs specialist with the U.S. Army Environmental Command. Kim is chief of the Environmental Division of the U.S. Army Garrison Humphreys Directorate of Public Works. 



(Fort McCoy, continued from page 9)

The team also coordinated with multiple agencies for an aerial wildfire suppression training exercise at Fort McCoy, which proved to be a win-win for all parties as 20 pilots received valuable wildfire training using Bambi Buckets®. In addition, habitat was enhanced and fuel load reduced, and members of the Fort McCoy Fire Department and Wisconsin Department of Natural Resources were trained in air/ground asset coordination.

The Fort McCoy Natural Resources Team worked closely with the Directorate of Plans, Training, Mobilization, and Security to increase the amount of available maneuver acreage by reducing internal encroachments. As a result of this partnership, the installation reduced the environmental and safety restrictions on 34,562 acres without adding additional risk to the environment, personnel, property or training, while maintaining compliance with state and federal laws.

The team also spearheaded an installation-wide effort to improve watershed health by maintaining forested watersheds, adhering to strict erosion control, reducing storm water runoff and enhancing riparian uplands. Fort McCoy's integrated land management efforts minimized nutrient and sedimentation impacts to streams and resulted in water

leaving the installation at a higher quality than when it entered.

Because Fort McCoy has met its conservation goals for the federally endangered Karner Blue Butterfly, the natural resources team developed an interagency agreement to mitigate incidental take for the endangered butterfly outside the installation. The agreement

Fort McCoy's integrated land management efforts minimized nutrient and sedimentation impacts to streams and resulted in water leaving the installation at a higher quality than when it entered.


allows the Army to transfer funds to the Fish and Wildlife Service, which in turn partners with the Wisconsin Department of Natural Resources to create or enhance the butterfly's habitat on state property where conservation goals have not yet been met.

Off-installation mitigation significantly reduces the potential for future conflicts between military training and endangered species on Fort McCoy, helps the state meet its conservation goals, and assists in recovery of the Karner Blue Butterfly with the potential for the species to be delisted.

The team frequently consults with state and federal regulators for wetland mitigation, stream realignments, species of concern, and takes a proactive approach to help ensure success. The result is longstanding and productive relationships with local regulators that promote sustainability of Fort McCoy's operational training capabilities, help to maintain natural resource compliance, and prevent the loss of training days due to natural resource management issues.

Fort McCoy will represent the Army in the Natural Resource Conservation Team category of the Secretary of Defense Environmental Awards Program later this year.

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

Cathy Kropp is an environmental public affairs specialist with the U.S. Army Environmental Command. McCarty is the chief, Natural and Cultural Resources in the Directorate of Public Works at Fort McCoy. 

(Fort Hood, continued from page 8)

of our post. They know that we can accomplish both, without sacrificing either of these priorities, and preserve our resources for future Soldiers and units to train on," Dosa said.

"Also, the expertise, passion and commitment of our environmental staff, comprised of Army Civilians, are second to none. They are fully committed to supporting the training of our Soldiers and balancing that with taking care of


Fort Hood's vast training lands and infrastructure."

Fort Hood will go on to compete against other defense agencies for the Secretary of Defense Environmental Award.

"Given the passion and efforts of our environmental staff and Soldiers, who approach environmental situations every day, this award is a testament to their professionalism and commitment to balance mission readiness and sustainability," said Col. Todd Fox,

Fort Hood garrison commander. "The Secretary of Defense competition will be a great opportunity to show other communities and military installations what we are doing at Fort Hood and how the installation serves as a model for environmental responsibility."

POC is Christine Luciano, 254-535-1008, christine.a.luciano.civ@mail.mil

Luciano is the environmental outreach coordinator, Directorate of Public Works, Fort Hood. 



JBLM recognized for innovative cleanup adaptations

by Cathy Kropp

Only four of the more than 180 environmental remediation sites physically investigated as part of the Joint Base Lewis-McChord, Washington, Installation Restoration Program remain open. The program's success in identifying and addressing the potential environmental impacts from past practices earned the installation's environmental restoration team recognition in the recent Secretary of the Army Environmental Awards for its expert management of cleanup activities.

The installation restoration program is almost finished, with all site restoration already determined, implemented and either underway or completed. Only the Logistics Center closed landfill (known as LF-2) and the American Lake Garden Tract, which are both on the National Priorities list; a Washington State Department of Ecology agreed order site (known as AOC 9-2); and a consent decree site on McChord Field (known as SS-34N) remain active. Innovative engineering projects converted active National Priorities List site groundwater treatment processes into facilities promoting water and energy conservation, and have resulted in considerable savings.

Three pump and treat systems address the Logistics Center groundwater remediation and another remediates groundwater at the American Lake Garden Tract. The systems pump groundwater from contaminated aquifers, pass it through air strippers to remove the contamination and return it to the aquifer.

For the American Lake Garden Tract National Priorities List site, the groundwater passes through activated carbon before its return to the aquifer.

At the Fort Lewis agreed order site AOC 9-2, an air sparge/soil vapor extraction system is in place to alleviate gasoline and gasoline vapors in groundwater and soil.

The Site SS-34N remedial action consisted of injecting a non-toxic oxidant



The I-5 pump and treat system at Joint Base Lewis-McChord provides heating for two tactical equipment maintenance facilities, annually saving approximately \$50,000 in energy costs. (Photo by Tom Lynott)

into groundwater to break contamination down into harmless products.

Installation restoration program progress at these sites minimizes staffing requirements and resulted in conclusion of the costly scientific studies required as part of site investigations. The remediation team's current focus is optimizing long-term monitoring to further reduce operating costs.

In addition to the cost savings for the remediation program, the three pump and treat systems at the Logistics Center also serve as clean water sources supporting the installation's heating and cooling systems and contribute to the installation's net zero water conservation goals.

The sea-level-aquifer pump and treat system meets the water supply needs of the Madigan Army Medical Center's heating, ventilation and air-conditioning system. It also supports a recent hospital expansion, eliminating the need for a separate water supply system for cooling that facility.

Reconfiguration of one treatment system provides water for ground source heat pumps for two buildings recently constructed on the installation. The heat pumps use 62 percent less energy annually than conventional heating, ventilation and air conditioning systems. This reconfiguration eliminated the need for separate groundwater supply wells and a water delivery system for the new facilities.

The final landfill pump and treat system was reconfigured in 2014 to provide water for ground source heat pumps for a nearby

Army Reserve Center.

The three pump and treat systems also serve as a learning tool for others. Observations of the systems, which mitigate contamination resulting from a closed landfill, are part of a Department of Energy pump and treat closure study conducted by Pacific Northwest National Laboratory and completed in 2015. The report provides resources and guidance on conducting assessments of other pump and treat systems.

The installation restoration team also collaborated with a design engineer to include an air sparge and soil vapor extraction system as part of the construction of a restaurant and bank. This in situ remediation of gasoline-contaminated soil and groundwater enabled building new facilities on a brownfield site currently undergoing remediation, without risk to building occupants or customers.

As recipient of the Secretary of the Army Environmental Award in the team category for environmental restoration, Joint Base Lewis-McChord will represent the Army at the Secretary of Defense Environmental Awards competition later this year.

POC is Mike Grenko, (253) 966-1785, michael.j.grenko.civ@mail.mil

Cathy Kropp is an environmental public affairs specialist with the U.S. Army Environmental Command. Grenko is chief, compliance branch of the environmental division of the Directorate of Public Works at Joint Base Lewis-McChord.



Ensuring acceptable design earns working group honors

by Kristina Curley

The next generation of Army and Marine Corps tactical vehicles will meet important safety and environmental standards thanks to the work of the Joint Light Tactical Vehicle Environmental, Safety, and Occupational Health (ESOH) Working Group.

Chartered in lieu of the traditional System Safety Working Group, the ESOH Working Group serves as a technically qualified advisory group to ensure safe and environmentally acceptable design, production, fielding, operation and mission effectiveness of the Joint Light Tactical Vehicle. Successful accomplishment of the team's mission through the award of the contract for the first vehicles, which are now entering low rate initial production, earned the ESOH Working Group the Secretary of the Army Environmental Award for Environmental Excellence in Weapon Systems Acquisition.

This working group's responsibilities include environmental, safety and occupational health risk management and hazard tracking, developing environmental, safety and occupational health design requirements, preparing the Programmatic Environmental, Safety, and Occupational Health Evaluation and National Environmental Policy Act documentation, coordinating risk acceptance, providing regulatory guidance, tracking hazardous materials and keeping the responsible program management office aware of any environmental, safety or occupational health-related program risks during the vehicle's life cycle management.

The Joint Light Tactical Vehicle program is an Army-led, joint modernization program designed to replace a portion of Army and Marine Corps light tactical wheeled vehicle fleets while closing an existing gap in the fleet's balance of payload capacity, mobility performance, and protection. The family of vehicles will be capable of performing multiple mission roles while providing protected, sustained, and networked mobility for personnel and



The Joint Light Tactical Vehicle is the next generation of tactical vehicle for the Army and Marine Corps. Oshkosh, which produced the vehicle shown, actively participated in the working group that identified and tracked environmental, safety and occupational health hazards. The collaboration of the working group and the vendors will result in reduced environmental risk and liability and improved sustainability.
(U.S. Army Photo)

payloads across the full range of military operations.

By formally establishing the working group, the Joint Light Tactical Vehicle Program fully integrated environmental, safety and occupational health into the systems engineering process. The group manages the overall daily environmental, safety and occupational efforts for the vehicle program including developing design requirements to address those concerns.

The Army and Marine Corps successfully transitioned the vehicle program into production on-budget and on-schedule after a competitive engineering and manufacturing development acquisition phase that ended in early 2015, following rigorous testing of prototypes from three competing vendors. In August, the Army awarded a single low-rate initial production contract to Oshkosh Defense, and the services expect delivery of the first production test vehicles later this year. Low rate initial production will continue through 2018 with a ramp up to full rate production in 2019.

The working group updated the vehicle's Programmatic Environmental, Safety, and Occupational Health Evaluation

throughout various phases and then finalized it in support of moving into the production and deployment phase. The final evaluation includes a National Environmental Policy Act compliance schedule and provides a planning tool for developing the Joint Light Tactical Vehicle Programmatic Environmental Assessment, completed prior to contract award.

As part of its overall risk reduction strategy, the working group continues working to reduce the use of hazardous materials and integrating pollution prevention into the overall program. It uses a closed-loop hazard management process for the identification, tracking, and management of environmental, safety and occupational health hazards and their respective risks throughout the life of the system.

Thanks to the working group, the new vehicles will include several features to effectively minimize air, soil, noise, and water pollution and reduce hazardous materials usage and generation.

The working group's efforts will reduce safety and occupational health risk to the operator and maintainer; environmental risk and liability; the volume of generated

(See Honors, page 15)



Conserving natural resources brings West Virginia Guard award

by Cathy Kropp

Limited funding does not limit the success of the West Virginia Army National Guard's natural resource program.

With the program's comprehensive ecosystem management approach, each project is analyzed to determine how it directly or indirectly supports goals of all other program areas. For example, the natural resource staff developed an integrated invasive species eradication plan that uses species mapping and prioritization of effort to establish a five-year rotation for treatment.

West Virginia University interns help plot the location of all invasive species that restrict access for Soldier training and compromise native wildlife on the training area. Security fence lines and motor pools requiring clearances are prioritized for invasive removal, followed by timber stands that are being over taken.

Once invasive species are removed, native grass can be planted. Eliminating invasive trees and shrubs for native grass enhances training while providing ecosystem restoration to more than 100 acres.

The natural resources team constantly looks for ways to maximize their limited resources so funding does not hamper mission accomplishment. In an effort to create valuable habitat, the staff designed a pond that could serve as a fire suppression resource for range operations and include use of surplus excavated clay soil from other projects. This design was incorporated into the scope of projects to remediate a demolition range and to provide stream bank stabilization. The pond serves the training mission while also providing enhanced wildlife habitat.

The team also takes advantage of the annual two-week training schedule for the horizontal and vertical engineering schools, coordinating for the engineers' assistance in excavation, bank creation, sloping, grading, and channeling springs to create the pond, construct a pavilion and run electrical lines to turn the pond into a complete morale,



The completed pond project serves as a fire suppression source for the range and habitat enhancement for area wildlife. Recreation fishing at the pond also is planned. (U.S. Army Photo)

welfare and recreation asset.

Once the Camp Dawson natural resources team treats the turbidity of the pond water to clear suspended clay particles, it will establish a trout and bass/blue gill population to provide opportunities for recreational fishing.

To ensure best management practices are used to preserve habitat, the natural resources staff works with a local company that processes timber on leased West Virginia Army National Guard lands and Camp Dawson's in-house fire-management program. These efforts include a fire training program that allows Soldiers the opportunity to practice prescribed fire activities, avoiding the need/cost for contracted burn crews.

In addition to reducing wildfire fuel loads, the program focuses on native grasslands using fire regime rotation to help grasses thrive and control invasive species. Volunteer firefighters from the community also assist on some burn events, along with trained university interns.

Camp Dawson's natural resources staff also completes habitat assessments, detailing vegetative cover and potential roost habitat before any projects involving

timber removal. The staff also conduct annual catch-and-release surveys for the state-listed Allegheny wood rat, marking individuals to track population health.

In partnership with the West Virginia Department of Natural Resources, the staff initiated a golden wing warbler survey, taking DNA samples to track the hybridization of golden wing and blue wing warblers.

The staff uses cameras to survey golden eagles that stop at Camp Dawson bait stations during winter migration and use an adapted facial recognition software to identify birds from year to year.

The Camp Dawson Natural Resources team use all its assets to ensure it achieves natural resource goals and complete projects to minimize restrictions to training and enable readiness. It prioritizes projects that directly enhance training while seeking ways to improve ecosystems, with the added benefit of providing recreational opportunities.

The team's success has won it the Secretary of the Army Environmental Award for Natural Resource Conservation. It will represent the Army well at the Secretary of Defense Environmental

(See West Virginia, page 14)



Sustainability team approach brings Tobyhanna Army Depot win

by Cathy Kropp

Tobyhanna Army Depot, Pennsylvania, credits use of a focused environmental review program to ensure environmental sustainability is integrated into future construction and renovation projects for its recent win in the Secretary of the Army's environmental awards program's Sustainability – Industrial Installation category.

The environmental staff at the depot understands that successful environmental programs are developed throughout time through a shared vision and continuous improvement. Individual program managers within the depot's environmental branch develop aggressive program goals and meet weekly to ensure development of a team approach with cross-program strategies to meet those goals.

A cross-functional master planning design team allows the depot to apply best management practices from multiple disciplines to all phases of project development. The environmental staff evaluates each proposed project for 35 functional areas, in compliance with the National Environmental Policy Act.

Suggestions for environmental improvements include installation of hybrid daylight/LED lighting systems, sustainable flooring surfaces, increased-efficiency natural gas heating systems and noise isolating panels.

Updating of the wastewater treatment plant to add a water reclamation system

is one example of the types of projects resulting in Tobyhanna's recognition. It enabled the depot to reduce potable water usage by 90 percent, replacing it with treated/ disinfected water. Future enhancements are expected to increase the quality of the water to enable reuse in lawn watering and construction activities. Reducing potable water use also means reducing the chemicals needed to treat that water, saving dollars and decreasing hazardous material use.

The depot's energy conservation measures include installing heat recovery coils for a new paint booth, replacing steam coils with direct gas-fired duct burners, installing more efficient fans and including direct expansion cooling to help maintain the indoor temperature in material storage. Energy initiatives like these save 7.5 percent of the depot's total energy usage for an annual saving of more than \$350,000.

Tobyhanna also sustains the largest mass transit program of all federal government facilities outside of Washington, D.C. During the award period, the percentage of rider participation increased by 8 percent, equating to a reduction of more than 340 tons of carbon monoxide, 13,000 tons of total greenhouse gas emissions, and a fuel savings of approximately 1.3 million gallons, annually.

Energy savings mean decreased operating costs; a boon for weapon systems program managers. These energy conservation projects also improve conditions for those working at the depot.

In addition, the installation is increasing energy efficiency, which also reduces maintenance costs, by replacing all exterior lighting with LED lighting. The new lights eliminated the waste stream of sodium vapor lights and reduced the fluorescent bulb universal waste stream by 2,250 pounds, saving \$6,300 annually.

Another key sustainability effort at Tobyhanna is its robust recycling program. The depot recycled 1.5 million pounds in fiscal year 2014 and 2.1 million pounds



Tobyhanna Army Depot completed installation of its reclaimed water system as part of the upgrades of the Waste Water Treatment Plant. In fiscal year 2015, it resulted in a 90 percent reduction from the average monthly potable water use at the plant, with a savings of \$50,497. (U.S. Army Photo)

in 2015, resulting in sales of more than \$700,000 and cost avoidance of more than \$195,000. This money is used to manage the program, invest in environmental- and safety-related projects and support Morale, Welfare and Recreation programs that provide quality of life improvements for Soldiers, Families and Civilians.

Tobyhanna Army Depot continues to reduce the impact of its operations on the environment by reducing waste and air emissions, conserving water and energy, and recycling up to 80 percent of its solid waste stream. Region 3 of the U.S. Environmental Protection Agency recognized the depot for these efforts, as well as the conversion from a central coal-fired heat plant to natural gas, installation of more than 100,000 square feet of vegetative roof, and other sustainability efforts.

Tobyhanna Army Depot will represent the Army at the Secretary of Defense Environmental Awards competition later this year.

POC is Michael L. Parrent, (570) 615-6105, Michael.L.Parrent.civ@mail.mil

Cathy Kropp is an environmental public affairs specialist with the U.S. Army Environmental Command. Parrent is the acting Chief of the Environmental Branch at Tobyhanna Army Depot.

(West Virginia, continued from page 13)

Awards competition later this year.

POC is Rick Chaney, (304) 791-4135, richard.c.chaney6.nfg@mail.mil

Cathy Kropp is an environmental public affairs specialist with the U.S. Army Environmental Command. Chaney is the environmental manager at the West Virginia Army National Guard's Camp Dawson Army Training Site.



History receives recognition at White Sands Missile Range

by Cathy Kropp

Although it is the birthplace of America's missile and space activity, and one of the Nation's most important Cold War era facilities, the historical magnitude of White Sands Missile Range, New Mexico, may not be widely known. Documenting and managing that history recently garnered recognition for the installation's Cultural Resource Management Program in the Secretary of the Army Environmental Awards competition.

The post manages 8,300 recorded archaeological sites, several thousand facilities and structures, a historic main post district, and two National Historic Landmarks: the Trinity Site (first atomic bomb test) and the V-2 Launch Complex 33.

The range is the largest overland test facility in the United States and includes structures, facilities and archaeological sites across much of its 2.2 million acres. At the height of the Cold War, it was the most instrumented range in the world, with state-of-the-art tracking telescopes, cinetheodolites (photographic instruments that collect trajectory data), radars and telemetry equipment. With technological changes, many of these sites became obsolete and unused. In support of the Army's Facilities Reduction Program, more

(Honors, continued from page 17)

hazardous wastes, and the vehicle's life-cycle cost. The group's work also means improved sustainability and reduced environmental burdens on installations where the vehicles are fielded, with minimal effect on mission effectiveness and program cost.

Vehicle fielding locations have not yet been defined, but once they are, the working group will work with the Joint Light Tactical Vehicle Material Fielding Team to ensure the installations receive all they require to meet their National Environmental Policy Act requirements.



The White Sands Missile Range Wind and Sand website provides visitors 40 years of historic newspapers, which are date and key word searchable. (U.S. Army Photo)

than 175 facilities were inventoried and evaluated for their historic significance.

In further survey efforts, supporting the Network Integration Evaluation test and future operational testing, the Cultural Resource Management Program team implemented and completed the inventory of 92,000 acres of land for historic properties. The project resulted in protection of 150 National Register eligible archaeological sites, in addition to opening up maneuver area.

As the Secretary of the Army Environmental Award winner, the Joint Light Tactical Vehicle Environmental, Safety and Occupational Health Working Group will represent the Army in the Secretary of Defense Environmental Awards competition later this year.

POC is Michelle L. Davis, (586) 282-4378, Michelle.L.davis2.civ@mail.mil

Kristina Curley is a public affairs specialist with the U.S. Army Environmental Command. Davis is a chemical engineer with the materials, environmental and corrosion team at the U.S. Army Tank Automotive Research, Development and Engineering Center, Michigan.

The team also completed the inventory and evaluation of the Green River Test Site in Utah, an off-range facility that supported the Advanced Ballistic Re-entry System test program and Pershing test firing in the 1960's and 70's. The installation facilities are targeted for demolition. In consultation with the Utah Division of State History, Green River Test Site was determined to be a National Register of Historic Places eligible Military Landscape.

To offset the loss of this resource, and to preserve its history for the community, the team is developing an interactive project for the Green River community to use for educational purposes, restoring a scale model of the Athena missile in a local park, and developing new interpretive signage.

The team also developed a project to digitize historic base newspapers that have been stored in the White Sands Public Affairs Office, making them accessible on the Internet. Digitized from 1950 to 1990, The Wind and Sand newspaper (becoming The Missile Ranger in 1969) is online searchable and downloadable, and is viewable in a "flip version", simulating a printed newspaper.

Moving way back in White Sands'

(See History, page 16)



Relationships create environmental partnering opportunities

by U.S. Army Environmental Command Public Affairs

With providing the best possible service as its goal, the U.S. Army Environmental Command began 2015 with a total command redesign. The command reorganized from functional to regional divisions, similar to those of the regulatory agencies they work with, to provide installations single points of contacts for all environmental issues and enhance interactions at all levels.

“The intent was to improve partnering and build relationships with those we support,” said Col Rob Wittig, commander of the Army Environmental Command. A year later the command is seeing the reorganization’s positive impacts and increased effectiveness.

“When I speak with Roger Paugh, Randy Cerar, Tom Bucci and others at the command, I feel they are in the office next door -- right here at the installation. And the relationship is the same during their field trips to Fort Hood,” said Charlotte F. Baldwin, National Environmental Policy Act program manager at Fort Hood, Texas, where the environmental command



The solar energy project at Fort Hood, Texas, will employ the technology used in photovoltaic array at Fort Carson, Colorado. (Army News Service Photo by Alexandra Hemmerlybrown)

supported a solar energy project to provide electricity for approximately 8,100 homes.

Roger Paugh first went to Fort Hood on a developmental assignment. The solid relationships he formed during that time eventually became instrumental in meeting aggressive timelines on the environmental analysis required for a renewable energy

project. The “easy, fluid and positive” professional relationships resulted in record completion of the environmental assessment and supporting National Environmental Policy Act documentation.

“USAEC should maintain this level of

(See Relationships, page 17)

(History, continued from page 15)

history, the cultural resources staff contracted a multidisciplinary team to document trackways of Pleistocene mammals through archaeological and paleontological surveys.

Although limited artifacts were found, a juvenile mastodon fossil was discovered, representing the first finding of a mastodon in the Tularosa basin. The study provides insights into changes in the paleo-climate and paleo-hydrology of the area and helps identify high-probability areas for late Pleistocene-age archaeological sites.

The staff also established partnerships with several educational institutions. The University of Vermont School of Engineering provided condition assessments and treatment

recommendations on 13 historic ranches as part of a plan to stabilize and preserve the existing intact historic ranches on the range.


Additional partnerships were established with the New Mexico State University’s Public History and Anthropology Programs. Opportunities have been provided for Public History student interns to assist in creating a digital archive housing thousands of archival documents. Partnerships with the Anthropology Program have resulted in the first ever archaeological field school conducted at White Sands Missile Range.

The Native American Coordinator and natural resources staff teamed up with the Mescalero Apache tribe to identify and collect plants with traditional uses, resulting in a brochure published to teach Mescalero youth about traditional Apache

culture. The team also partnered with the Tortugas Pueblo to collect Yucca stalks for a religious ceremony, known as the Our Lady of Guadalupe Festival.

The White Sands Missile Range cultural resources program has sought innovative and cost effective to identify, protect and preserve their tremendous cultural resource. These efforts gained the program recognition in the Secretary of the Army Environmental Awards and will represent the Army in the Secretary of Defense Environmental Awards program later this year.

POC is William Godby, (575) 678-6003, william.c.godby.civ@mail.mil

Cathy Kropp is an environmental public affairs specialist with the U.S. Army Environmental Command. Godby is archaeologist at White Sands Missile Range in New Mexico. 



(Relationships, continued from page 16)

support, continue to send its people to the field, and nurture the relationships characterized by good rapport, open-door communications, support, and availability,” Baldwin said.

At Rock Island Arsenal, Illinois, Randy Cerar, division chief for the environmental command’s Midwest Division, and his staff helped the arsenal’s command group understanding the environmental requirements essential to mission accomplishment and provided assistance with preparation of environmental cooperative agreements related to Rock Island’s management of the former Jefferson Proving Ground.

“Randy provides top-notch personalized service. He gets involved at the beginning and sees all efforts through.” said Kathy Miller, Rock Island Arsenal public affairs officer. “His knowledge and expertise played a key role in meeting the requirements of national and local stakeholders in a balanced way.

“In short, we received much more than we asked for. USAEC representatives are experts in what they do and their support is invaluable,” Miller said.

The redesign is increasing the environmental command team’s responsiveness to customer needs through improved communications and relationships.

“Our environmental support managers and subject matter experts are developing solid organizational and individual partnerships to identify what the installations really need and to find solutions to their environmental challenges,” Wittig said.

While the functionally organized environmental command met customers’ needs, specific garrison and regional requirements, funding cuts, shifting priorities, and other changes challenged the command to find more effective ways to identify needs and provide first-class environmental services and solutions. The new regional structure gives environmental command experts the opportunity to expand their abilities and agility, generating efficiencies and opportunities to create and cultivate strong partnerships while providing customized support to individual garrisons and areas with highly localized requirements. It also improves allocation of resources and responsibilities, promotes transfer of knowledge and best practices, and allows integration of environmental strategies in collaboration with other entities already operating at a regional level.


Rock Island Arsenal’s widely scattered historic artifacts and its no-longer-sustainable storage costs demonstrate the need for collaborative and transferrable solutions. Through a multi-agency team effort, environmental support manager Denise Miller is helping the installation’s

cultural resources team consolidate and preserve these items in a regional location with minimal cost to the garrison.

Miller’s tailored collaboration with Rock Island Arsenal is generating opportunities to help other garrisons sharing the same concerns. Lessons learned are expected to lead to a national Army strategy to reduce costs by consolidating historic artifacts at garrisons providing the professional museum and archival practices to serve as designated regional repositories.

The Army Environmental Command’s efforts at Rock Island Arsenal, along with the positive garrison-level responses to the new design’s benefits, illustrate how the environmental command is effectively capitalizing on its expertise to bridge the gaps created by installations’ evolving needs. The resulting partnerships, opportunities and benefits to the Army support the Army Environmental Command’s vision of being “an innovative, value-added, customer-focused partner, providing environmental services and solutions to the Army through expertise, communication and partnering.”

POC is Adriana King, 210-466-1300, Adriana.King2.naf@mail.mil

King is a business programs analyst participating in a developmental assignment as a public affairs specialist with the Army Environmental Command. 

Call for **ARTICLES**

The July/August/September 2016 issue of the Public Works Digest will feature

Operations Maintenance and Engineering

Deadline is June 3, 2016 ~ Submit articles to

editor.pwdigest@usace.army.mil



Concrete recycling helps Fort McCoy crush solid-waste costs

by Scott T. Sturkol

Hundreds of tons of concrete recycled at Fort McCoy, Wisconsin, each year find new purpose as material to create a road base or upgrade tank trails.

Water and Wastewater Branch supervisor Michael Miller with the Directorate of Public Works said the Army has a standing goal to reduce the amount of waste sent to a landfill by 50 percent.

“The term for not sending waste to a landfill is called diversion,” said Miller, who also oversees recycling efforts at Fort McCoy. “One of the things you can do to divert waste is recycle it.”

Military installations such as Fort McCoy, have many types of waste streams. Old concrete is part of the construction and demolition (C&D) waste stream, which also must have a recycle rate of at least 50 percent.

“About 85 to 90 percent of the C&D waste weight is concrete,” Miller said. “So by recycling and reusing that concrete alone, we are surpassing that 50 percent goal. We were close to 99 percent in C&D waste recycling (in 2015).”

‘So by recycling and reusing that concrete alone, we are surpassing that 50 percent goal.’

Michael Miller

Contractor Panacea Group of Seymour, Wisconsin, began work in February with a rock crusher at a Directorate of Public Works staging area on North Post, said John Adams, a Directorate of Public Works general engineer.

“The rock crusher is set up there for primarily crushing nearly 20,000 tons of old concrete,” Adams said. “During this process, (the contractor) separates metals from the concrete and that also gets



A contractor uses a loader to fill a rock crusher at an area on Fort McCoy's North Post. (Photo by Scott T. Sturkol)

recycled.”

Most of the concrete that is crushed and recycled comes from the demolition of old buildings and infrastructure within the cantonment area at Fort McCoy.

“It could be old footings or foundations, old stairways, or even parking areas,” Adams said.

“When the demolition is done, the concrete gets hauled up to the holding area on North Post. When there is a sufficient accumulation of concrete and materials that need to be crushed and recycled, we cut a task order to have a contractor come in and get it done,” he said.

Metals separated from the concrete are sorted in two piles for ferrous and nonferrous materials. Ferrous metals have iron in them, such as rebar. Nonferrous metals include aluminum, brass, copper, nickel, tin, lead, and zinc, as well as precious metals such as gold and silver.

“Once the metals are weighed, they are hauled offsite,” Adams said. “During the process they submit weight tickets of what was separated to DPW.”

The concrete recycling process is not new to Fort McCoy, Miller said, adding that for years, the crushed concrete

gravel has been used for road and trail improvements throughout the installation. The biggest advantage of the concrete recycling, however, is the money saved.

“You first have to look at the cost of sending something to the landfill,” Miller said. “With nearly 100 percent of the concrete being recycled here, that’s hundreds of tons of material we are not paying to be sent to a landfill somewhere, which is significant.

“Then you also have to look at the cost of not having to buy new materials for the road improvements that take place annually at Fort McCoy,” he said. “That, again, is the kind of material we would have to buy, but instead we are recycling it and not incurring that cost. It’s an all-around economically beneficial process.”

For more information about recycling at Fort McCoy recycling operations, call 608-388-6546.

(Originally published in Fort McCoy's installation newspaper, The Real McCoy.)

POC is Scott T. Sturkol, 608-388-4128, mark.m.mitsunaga.civ@mail.mil

Sturkol is with the Fort McCoy Public Affairs Office.



Public Works Technical Bulletin provides waste diversion opportunities

by Thomas R. Napier

Many Army installations have developed successful recovery and recycling programs for salvaging useful materials from building removal. Although the Department of Defense set targets of 50 percent non-hazardous solid waste diversion and 60 percent construction and demolition waste reduction for fiscal year 15 and beyond, the lessons learned throughout the past several years can support greatly increased diversion percentages exceeding these targets 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 technical bulletin 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, Corps of Engineers 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 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.

Key findings in Public Works Technical Bulletin 200-1-120 include:

- Small construction and demolition projects and those in remote locations may lack waste diversion infrastructure. Those installations without a significant military construction program in recent years may not generate the quantity of waste that attracts the necessary diversion



An excavator separates debris material from salvageable material at Joint Base Lewis McChord, Washington, as the installation works to meet waste diversion requirements. (Photo by Thomas Napier)

services. One solution is to aggregate materials from multiple projects until enough is collected that diversion services would be interested in the material.

- For military construction-scale projects construction and demolition waste reduction is now common in the building industry. Approximately 80 percent of all Leadership in Energy and Environmental Design-certified projects achieve more than 75 percent diversion; 74 percent of military construction Leadership in Energy and Environmental Design certified projects achieve more than 75 percent diversion. Achieving diversion rates higher than the current Department of Defense 60 percent requirement should not be a significant challenge on traditional military construction projects.
- It is important to consider the long term costs and impacts associated with providing “free” tipping at on-post landfills. There is an inherent cost associated with the loss of land and remaining capacity of on-post landfills when they are filled with construction

and demolition waste. Installations are encouraged to charge construction and demolition contractors tipping fees comparable to those charged in the surrounding area to incentivize waste reduction.

- The construction and demolition waste industry has grown significantly in the past several years and includes many new resources. Project teams are encouraged to consult their state solid waste agencies for information about building material salvage, recovery and reuse and non-traditional demolition and deconstruction services. Online resources to consult include:
 - o www.cicacenter.org
 - o www.wbdg.org
 - o www.bmra.org
 - o www.cdrecycling.org
- Project teams are encouraged to consider construction and demolition waste diversion early in the project. Early and regular inclusion of construction and demolition waste management throughout the planning,

(See Public Works, page 20)



(Public Works, continued from page 19)

design and construction of the project can reduce or eliminate the negative budget and schedule impacts often associated with construction and demolition waste diversion. Waste reduction objectives should be integrated into planning charrettes and contract documentation as well as contract administration.

- Project teams are encouraged to consider the appropriate acquisition strategy to achieve the highest diversion possible on the project. The competitive bid process does not necessarily guarantee or incentivize contractors to achieve diversion rates above the contract minimum threshold. Teams should consider the advantages and disadvantages of bid options, performance work statements, incentives and other contracting mechanisms that will incentivize contractors to achieve higher diversion percentages.
- Project teams that have separated demolition contracts from new construction contracts have achieved higher diversion percentages than those that included demolition with the new construction project. Providing a separate demolition contract places full attention to the building removal task and achieving a high diversion rate. Otherwise,

construction and demolition waste reduction is only one criterion within a more complex construction or design-build contract.

- The most commonly recycled materials are asphalt, brick, concrete, metal and wood. These are considered “low hanging fruit” and when diverted into separate bins they retain a higher value. Although they may take more effort to divert, other material (for example: toilets, sinks, windows) can

Teams should consider the advantages and disadvantages of bid options, performance work statements, incentives and other contracting mechanisms that will incentivize contractors to achieve higher diversion percentages.

have value as well if removed and stored appropriately.

- Deconstruction of buildings and structures allows for recovery of materials for reuse and is an avenue to achieve significantly increased waste diversion rates on your project and contributes to Army Net Zero Waste initiative. Through early planning and feasibility assessments of buildings to be demolished, teams can identify and capitalize on opportunities for reuse of building materials and products. U.S. Army Corps of Engineers Engineering and Construction Bulletin 2015-19 *Deconstruction, Diversion, & Disposal of Debris* is a resource available that provides additional information on


current directives and guidance for implementation.

- As diversion percentages continue to increase it is imperative that hazardous material regulation and practices are observed. All asbestos and mercury and polychlorinated biphenyl containing items must be handled in accordance with applicable standards and requirements.
- Project teams should consider how construction and demolition diversion will be reported. Teams are encouraged to require formal demolition and deconstruction plans in addition to a construction waste management plan. Teams should require contractors to describe their quality control provisions as well as the recording and reporting plan for the project.

The U.S. Army Corps of Engineers Northwestern Division is designated as a knowledge resource group of subject matter experts for waste as a part of the Centers of Expertise in Sustainability and can be contacted for support in achieving measurable waste reduction:

Waste@usace.army.mil. Information about this knowledge resource and additional waste resources can be found here: <http://www.usace.army.mil/Missions/Sustainability/ExpertiseinSustainability/ConstructionWasteDiversionandMitigation.aspx>.

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

Shepherd is the technical lead for the Northwestern Division Waste Center of Expertise, U.S. Army Corps of Engineers, and Thomas Napier is a research architect, U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory. 

Showcase your STORY

Would you like to see your installation, agency, program or project featured in the Public Works Digest?

Submit a story by sending it to:

editor.pwdigest@usace.army.mil



Study characterizes solid waste at Natick Soldier Systems Center

by Tazanyia L. Mouton

NATICK, Massachusetts -- A team of three from the Army Public Health Center conducted a solid waste characterization study last fall at the Natick Soldier Systems Center to assess the amount of trash the installation is producing.

"[The study] will help the installation save money in the long run when we determine how much of the solid waste that goes out in our trash cans is recyclable, how much is organic material, [and] how much of it is truly solid waste," said Rich Valcourt, an environmental engineer with U.S. Army Garrison Natick.

It gives Valcourt valuable information to better assess the installation's needs, and will "dictate how we see down the road [and] whether we need to strengthen our recycling policies." It also will give him a better idea of what the center's footprint will look like going forward.

The Army Public Health Center's mission included taking trash from each building, sorting through each bag, and weighing the trash by each of 30 categories. The main categories were paper, plastic, metal, glass, organics, construction and demolition waste, and special waste.

Kim Fleischmann, an Army Public Health Center environmental scientist, said that in a majority of instances, these studies are done to help an installation establish or



Personnel from the Army Public Health Center weigh individual pieces of trash during a solid waste characterization study recently completed at the Natick Soldier Systems Center. (Photo by Tazanyia L. Mouton)

improve a recycling program.

"The recycling here is pretty good," Fleischmann said. "We're not getting a lot of white office paper, [and] people are doing a very good job with cardboard and aluminum cans. We usually try to give real data to figure out how you should focus, where you can improve or set up your programs."

Fleischmann said programs are already in place at Natick; they just need to be improved. "The Army's goal is to try to [get] to net zero waste, which means you are recycling or reusing everything and

there's no actual waste," Fleischmann said.

Valcourt said that each time you throw something away, you should think about recycling it, instead.

"It doesn't matter what you wear on your shoulders or what your pay grade is," Valcourt said. "We all work here, and we need to do the right thing."

POC is Tazanyia L. Mouton, 508-233-5945, tazanyia.l.mouton.civ@mail.mil

Mouton is with the U.S. Army Garrison Natick Public Affairs office. 🌻

Readership **SURVEY**

Let us know what you think about the *Public Works Digest*.

How often do you read it?

Where did you hear about the current issue?

How would you improve it?

Take our short 13-question survey online at

https://ice.disa.mil/index.cfm?fa=card&sp=136626&s=1263&dep=*DoD&sc=5

We appreciate your feedback. Issues accessing the survey?

Email the [editor](#).



Food waste composting helps Fort Hood divert landfill waste

by Jennifer N. Rawlings

The first step for improving landfill waste diversion should be to reduce the amount of waste generated. Ideally, the amount of food purchased and prepared would better reflect the amount of food consumed on-post. However, to ensure Soldiers are fed adequately, installations must provide food in excess, regardless of whether Soldiers come to eat a meal or not.

Calculating the amount of food required for an installation is further complicated by the fact that some installation populations can vary from week to week by orders of magnitude due to training. According to a 1998 U.S. Environmental Protection Agency report, food discards include any food preparation waste and uneaten food that can be recovered via food donations, rendering, composting, or as animal feed.

Following a Material Flow Analysis and Waste Characterization Study, Fort Hood, Texas, realized that 25 percent or 4,800 tons of the material entering the landfill was food or food packaging that could be composted. Fort Hood contracted with the U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory to conduct an Evaluation and Survey of Feasibility for a large scale composting facility.

The study's results suggested implementing a six-month food waste collection pilot project to gather best practices and lessons learned before expanding the program installation-wide and upgrading the current on-post yard waste Compost Center to accommodate food waste.

Concerns about contamination of trash in the food waste prompted Fort Hood to develop a robust training and education program prior to the first pick-up of food waste on Sept. 28. The nine food facilities participating in the pilot project received various sized indoor collection bins, composting bags, and a four cubic yard outdoor food waste dumpster. Each food facility requires 20 to 40 durable compost bags per day depending on the size of the facility and average meals served per day.

Fort Hood created a separate contract with its waste service contractor to pick up dumpsters once a week for the six months of the pilot project and to deliver the food waste to an off-post Compost Center. It is estimated that 700 tons of food waste could be diverted from the landfill annually from just the nine food facilities participating in the pilot program. Daily inspection reports are sent to the food facility managers and weekly in person visits help to remind staff members to avoid contaminating the food waste bins with trash.

An incentive program was announced during the training sessions prior to starting the collection program, which seems to keep the staff motivated to comply with the composting program requirements. The incentive is a large trophy presented quarterly in front of Army leadership to the food facility that has the least number of negative findings during the daily inspections. Fort Hood also hands out on-the-spot giveaways to staff members if correct behavior is observed during site visits.

Fort Hood is currently researching options for food waste dehydrators to reduce the smells and vectors often associated with outdoor food collection programs. Using dehydrators will additionally help reduce weekly pickups and compost bag expenses.

Since the pilot program is successful, Fort Hood is also currently investigating options for expanding the installation Compost Center, which includes



Food waste at Fort Hood, Texas, is collected inside each facility and transferred to the outdoor three-yard compost bins for pick-up. (U.S. Army Photo)

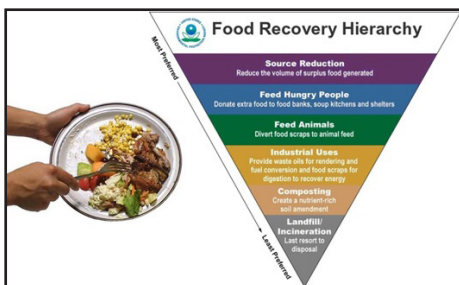
equipment and facility upgrades to accommodate food waste. If the Compost Center upgrade is approved and implemented, Fort Hood could grow the current 700 tons composted annually from nine facilities to as high as 4,800 tons post-wide, as recommended by the Material Flow Analysis and Waste Characterization Study.

In addition to food waste, Fort Hood also is promoting the composting of yard waste. All bagged yard waste, such as leaves, trimmings, grass clippings, etc., can be dropped off at the Compost Center located at the landfill. All Fort Hood Family Housing residents can contact their Community Centers for brown compost bins to collect their yard waste for curbside pick-up.

These efforts will dramatically improve Fort Hood's diversion rate, provide a soil amendment for the installation and help accomplish Net Zero Waste by 2020.

POC is Jennifer N. Rawlings, 254-287-8712, jennifer.n.rawlings.civ@mail.mil

Rawlings is the Fort Hood environmental programs manager. 





Fort Hunter Liggett Recycling Program unleashes the coyote

by Jonelle Kimbrough

If you're not recycling properly at Fort Hunter Liggett, California, watch out! The "recycling coyote" is on the loose, and he may be coming for you.

The Fort Hunter Liggett Qualified Recycling Program's "QRP TV" revealed amazing, never-before-seen "footage" of the recycling coyote at the garrison's America Recycles Day, Safety Stand-Down and Organizational Day in November.

In the footage, the recycling coyote stealthily appears when unsuspecting individuals either toss their recyclables into refuse receptacles or deposit their trash into recycling bins. Sightings of the coyote, encouraging Soldiers and Civilians to recycle right and recycle more, have been reported throughout the Installation.

Rick Bosch is Fort Hunter Liggett's appointed Qualified Recycling Program manager and chief of the Community Recreation and Business Operations Division at the Directorate of Family and Morale, Welfare and Recreation. He said that the coyote was born from a need to educate the community about proper recycling practices in a unique and different way.

"Recycling should be fun and dynamic, not rigid and regimented with force," Bosch said.

Since Fort Hunter Liggett's garrison mascot is a coyote, the creature was the perfect choice to serve as an ambassador for

the program. "At this remote and isolated Installation, there are actually more coyotes than people, so we have a built-in watchdog force," he joked.

The coyote has been well received so far and the recycling program has been successful in leveraging community champions. The program's achievements can be attributed to the efforts of Soldiers, Families, Civilians and contractors, he added.

Fort Hunter Liggett established its Qualified Recycling Program in 2013. By 2014, it had recovered 207,000 pounds or 103 tons of recyclables. In 2015, it recovered almost four times that amount 776,000 pounds or 388 tons. The program has not only diverted tons of recyclables from the landfill, it also has raised around \$500,000 in funds for numerous quality-of-life projects at the installation. In the past two years, it has funded the Army Reserve birthday barbecue, occupational health and safety educational materials and signage, two organizational days, the annual holiday tree lighting and free Internet access at the Cybrary.

Collaboration with the state of California also has enhanced success. The program has achieved Certified Community Service Program status, and the curbside recycling services in Army Family Housing gained Certified Curbside Recycling Program status. And, their status as a Certified Oil Generator affords credit and state funding.

Although Fort Hunter Liggett has a 30 percent diversion rate, "we can't sit on our haunches and rest on our laurels," Bosch said. The installation is still chasing the Net Zero standard of a 50 percent diversion rate for municipal solid waste, he said, adding that he estimates the installation would need to recycle about 300,000 additional pounds of materials this year to meet that goal.

To that end, Fort Hunter Liggett plans to continue educating its population about the benefits of recycling – with the help of that wily coyote, of course.

"We have turned a corner in changing behaviors and perceptions," Bosch said. "[The recycling program] is something that helps us meet our Net Zero waste goal but allows us to have fun and benefit as a community. People are the heartbeat of this community, and the more opportunities we have to share time and smiles as an organization, the more prepared and passionate we are to support our mission daily."

POC is Tyrone Cook, 703-806-6738, tyrone.g.cook.ctr@mail.mil.

Cook is the Army Reserve solid waste program coordinator and Jonelle Kimbrough is the Army Reserve Sustainability Programs communications coordinator. 

Fort Benning initiates 6-month recycle program review

by Vanessa Marquette

Fort Benning has commissioned a six-month pilot project, RECYCLE Fort Benning, to collect recycling data at five buildings on post. The goal is to establish a long-term, successful recycling plan for the Georgia installation, said Nathan Shuler, Qualified Recycled Program manager.

The pilot study is being conducted in Buildings 4, 6, 35, 70 and 85 by TIYA Support Services. The focus is on these buildings because of their large size and the amount of recyclable material used.

"We want to expose the success stories of what Fort Benning is doing right, when it

comes to recycling and diverting waste from the landfill," Shuler said. "We want to push and gain momentum for improvement in our efforts ... we need responsible recycling, and I think Fort Benning will definitely gain from this program."

Shuler said a blue recycle bin was placed at each desk in the buildings in the pilot project. He said to best help the program in its efforts, white office paper should be placed in the desk-side bin. Individuals from the Material Recycle Facility conduct a weekly, desk-side collection of the blue bins that contain white paper. The big, blue 50-gallon

bins, that are centrally located within office areas, are for all paper products.

Plastic bottles and aluminum cans should be cleaned and properly disposed of in the bins marked accordingly.

Call 706-545-2135 for more information on RECYCLE Fort Benning.

POC is Vanessa Marquette, 706-545-4622, vanessa.marquette@bayonetandsaber.com

Marquette is with the Fort Benning installation newspaper, Bayonet and Saber. 



Green Boot Program participants have big boots, small boot print

by Mindy Love

A Native American proverb states “We don’t inherit the Earth from our ancestors, we borrow it from our children.” Sustainability, or ensuring resources are available for future generations, is vital not only to the Army to sustain the mission, but to humankind to sustain the future. Through efforts to simultaneously reduce their impact on the environment and support the Army mission, Fort Bragg, North Carolina, represents the “Go Green” adage in many ways.

An innovative initiative implemented several years ago, and the first of its kind in the Army, the Green Boot Program encourages organizations to practice sustainable daily operations. Applying sustainable actions daily and educating personnel about the benefits of implementing environmentally conscious business practices potentially will have a large impact on conserving resources.

Conservation is a community effort. The small actions of many equate to large savings overall. When we strive to conserve, divert and recycle as a community, the result is savings on our utilities, purchasing, and disposal, and the greater the positive impact on the mission. Efforts to reduce waste, promote recycling, improve energy efficiency, conserve water and educate staff about the benefits of environmentally conscious practices directly supports Garrison Strategic Goal #1: A sustainable community.

Fort Bragg is a large installation using a large amount of energy and water. Many units and organizations are unaware of the cost and impact of our daily activities. How does the Green Boot Program help? The Green Boot Program assists with conserving resources and reducing utility bills by highlighting changes that may be implemented, leading to financial savings and minimization of our “boot print.” Certified Green Boot Organizations benefits include a plaque for display, public recognition, and access to a team of professionals at Public Works.

Certified organizations implement



Cathy Powell conserves energy by turning off Material Maintenance Division office lights. (Photo by Mindy Love)

measures featured on the Green Boot Program checklist to achieve their certification. Some changes made by organizations include motion sensors, timers, and programmable thermostats, setting energy saver features on equipment, and installing energy efficient lighting to reduce energy consumption.

Recently, the Installation has refocused efforts to certify organizations in the Green Boot Program. The program is voluntary, therefore the unit must take the necessary steps and actions to implement the program for certification with the guidance of Green Boot Program personnel.

In recent months the Environmental Education and Outreach Lead has asked organizations to participate in the program with the goal of becoming certified. This resurgence in organization participation not only demonstrates the commitment of Public Works staff to sustainability, but the recognition of the importance of conservation of natural and fiscal resources by installation entities.

After tornados decimated 400,000 square feet of Material Maintenance Division facilities in 2011, it took some time to rebuild. Rebuilding was geared toward “greening” the reconstructed facilities and included recycling and reclamation centers, improved lighting, and efficient heating, ventilation and air conditioning systems. “Since the right containers and energy saving labels are in place, it’s now common practice to dispose of recyclables knowing that we are living by the theme ‘from

cradle to grave’ for everything,” said Cathy Powell, an installation quality assurance specialist. The division achieved its initial certification under the Green Boot Program for three of its facilities on Jan. 14, demonstrating how sound sustainable decisions supports Fort Bragg’s mission.

The United States Army Reserve Command and the Forces Command, the second largest facility on Fort Bragg, received their initial certification on March 1. Constructed with conservation in mind, Marshall Hall features built-in awareness on each floor promoting energy and water conservation. Additionally, Marshall Hall has a facility management team working diligently to ensure the facility functions at optimum efficiency.

Once certified, an organization must strive to maintain its certification in the Green Boot Program by continuing to follow the organization-specific Green Boot checklist and maintaining Green Boot awareness for personnel. The best part of this program is its flexibility.

“A lot of the initiatives were simple “no brainers,” Powell said. “The best advice I can give is to go out to your buildings and STOP, LOOK and LISTEN.”

POC is Mindy Love, 910-432-8476, mindy.r.love-stanley.ctr@mail.mil

Love is environmental education and outreach manager, Fort Bragg directorate of public works environmental management branch. 🌻



Environmental Warfighters tackle habitat restoration, conservation

by Dennis Aubrey Buckingham

Joint Base Lewis-McChord is pairing wounded warriors and other transitioning Service members with habitat restoration, rare species conservation, and ecological science. During the last two years, 37 active-duty servicemembers have interned with Environmental Warfighter program, offered through the installation's Public Works (Environmental Division, Fish & Wildlife branch) and Colorado State University's Center for Environmental Management of Military Lands.

Most of the work is done on the installation's 90,000 acres of contiguous habitat, but participants have also helped on restoration projects with non-military groups around the installation's perimeter. To the south, the servicemembers worked with long-term partner and neighbor of the installation, the Nisqually Tribe and Nisqually Land Trust, to restore a critical salmon-bearing tributary in a shared watershed. To the northwest, they collaborated with the National Guard at Camp Murray, including them in Lewis-McChord's western bluebird nest-box program and undertaking headwater projects to ensure year-round stream flow on Murray Creek. On the installation's northeastern side, interns worked with Washington State University's Puyallup Research & Extension Center to restore a sensitive wetland area.

These active-duty interns also have the opportunity to work with biologists stationed at the installation, participating in species surveys, reintroductions, and ecological research. Student volunteers from seven local colleges join the servicemembers in the field nearly daily, creating an unusual teaching relationship. The servicemembers are instructing students in how to conduct restoration work on the ground, while the students share their current studies of environmental science and help the servicemembers understand the opportunity that college represents.

For those ready to use their GI Bills, college application and scholarship support is provided. To date, Joint Base Lewis-McChord has four program graduates enrolled in college --three studying



Joint Base Lewis McChord Environmental Warfighters search for Oregon spotted frogs using submersible Passive Integrated Transported tag readers. (Photo by Dennis Buckingham)

environmental science. Others have fledged from the program and are finding success using the skills garnered here: one works at an outdoor education facility for adjudicated youth, another is employed by the state of Kansas as a foreman on environmental projects.

Another benefit of the program is its ability to provide eco-therapy to combat veterans. Increasing evidence supports the effectiveness of outdoor recreation and employment in addressing the symptoms of post-traumatic stress disorder. Interns have said things to program leaders that could never have been anticipated. One, in a driving February sleet-storm, said, "I love this stuff, man. Wind and rain don't matter I just love being out here. Putting up these boxes, helping out some wood ducks, this is awesome to me."

Another, after spending all day on hands and knees, planting prairie plugs for an endangered Taylor's checkerspot butterfly reintroduction site, said, "When I get settled on my property in Tennessee, I'm going to make some butterfly habitat like this on the hill behind my house."

And then there are the quotes that have nothing to do with rare species at all. "I think my memory's coming back. It's weird, you know? I've been having these really peaceful dreams lately." Another

Soldier said through watering eyes, "I joined the Army to serve my country but I feel like it's all been selfish. Before I got hurt all I ever did was train. I feel like I'm finally serving my country."

These interns are heroes. They have put their lives on the line to protect this country and this is just another way they have found to continue that selfless dedication. After all of their injuries and deployments, with only a few months remaining in the Army, they continue to serve. They are out spending all day in the winter rain, restoring habitat and conserving species. Their successes are protecting the military mission by helping Joint Base Lewis-McChord meet its environmental compliance goals, and paving the way for the future involvement of more veterans in environmental science.

The Environmental Warfighter program is putting extra hands to work, mending bodies and minds, and restoring habitat for rare species, all while building partnerships and helping veterans transition to meaningful civilian careers. The hope is to continue to develop this project and to share what we have learned, for the mutual benefit of servicemembers and environmental efforts, at other installations nationwide.

(See Warfighters, page 27)



Partnerships result in school permeable parking lot, outdoor lab

by Chris Otto

The Assistant Secretary of the Army, Installations, Energy and Environment, Fort Riley, Kansas, and the Environmental Protection Agency have been collaborating on innovative projects in support of the installation's Net Zero Water efforts. In one exciting project, a "Smart" Permeable Parking Lot was constructed at the installation's Seitz Elementary School.

At first glance, the parking lot looks like any other asphalt parking lot except for one row of parking stalls lined with pavers. It is a state-of-the-art permeable parking lot surrounded by more than 40 monitoring wells with an elaborate monitoring system that provides EPA with information on water quality and hydrology under the lot. It also serves as an outdoor laboratory for the school.

Construction began in November 2014 and was finished in August. The Army provided the construction funding, EPA's Office of Research and Development (which also paid for the monitoring equipment and weather station) provided the design, and it was built by the U.S. Army Corps of Engineers Kansas City District. All of this was done in close collaboration with Fort Riley's School District.

About 90 percent of the parking lot surface is non-permeable asphalt that directs stormwater toward the row of permeable pavers that sit above a storage gallery. The pavers are designed to allow high volumes of water to infiltrate.

The 10-foot deep gallery is filled with various sizes of gravel. The gallery's bottom is in a sandy soil layer that allows water to infiltrate into the groundwater, helping to prevent flooding and erosion issues associated with normal parking lots and recharging groundwater levels.

Permeable parking lots are not new or unique, but what makes this one different is the amount of monitoring equipment and monitoring wells installed under and around the parking lot. In addition, this



Workers install "smart" permeable pavers at a parking lot at Seitz Elementary School. (Photo by Chris Otto)

project is unique due to the partnership behind the development project.

The sensors in and under the parking lot send data to a weather station installed on the school's roof. That station also collects weather data, sending it to the school's wireless network.

Seitz Elementary already was designed with water conservation in mind. The school collects rainwater for use in flushing toilets and cooling towers. However, the students and teachers do not know how much water their system collects. As part of this project, sensors were installed in the rainwater storage tanks that will provide information on how much water is collected during each storm event.

The EPA plans to visit the site several times per year to check on the monitoring equipment and to collect water samples from the monitoring wells. The data from the sensors will be used, along with water quality samples, to see how the lot functions and how it impacts water quality. The EPA will test water samples for substances like salts and fuels to see how they interact with the groundwater. This is an important question for the EPA as more permeable infrastructure is installed around the country.

The parking lot also will be used as a "Live Stormwater Laboratory" to help teach students about weather, hydrology, groundwater, and water conservation. The EPA is working with Kansas State University, the Kansas Association for Conservation and Environmental Education, and the school district to develop curriculum to meet new state science standards using data from the parking lot, weather station, and rainwater storage tanks. The Kansas Association for Conservation and Environmental Education also will train teachers on how to use the new curriculum.

While it is usually hard to get excited about parking lots, this one is exciting because of all the benefits it is providing. The lot helps meet the parking needs of the school, is providing critical information to the EPA on how permeable parking lots function, is helping Fort Riley promote water conservation in support of Net Zero, and will be a valuable learning opportunity for the students.

POC is Chris Otto, 785-239-8663, christopher.l.otto.civ@mail.mil

Otto is the Net Zero Water coordinator at Fort Riley Kansas. 🍁



Strategies for managing stormwater on Army installations

by Patricia Donohue

Surface water is the latest focus area for conservation as droughts and floods alternately impact the regional hydrologic cycle. New construction techniques to manage and conserve stormwater on site is called low impact development.

Low impact development is a rapidly growing concept in stormwater management that began in Prince George's County, Maryland, in the early 1990's. It was developed to address runoff issues associated with new residential, commercial, and industrial suburban development in the county to protect its natural resources of downstream water bodies and to restore the natural groundwater recharge cycles. It presents a paradigm shift from treating stormwater as something to be quickly conveyed away from the site to managing stormwater onsite as a valuable resource.

Hydrology is an organizing principle integrated into site planning and even installation level planning. The design objective is to maintain or restore the predevelopment (pre-project) hydrology of the property with regard to the temperature, rate, volume, and duration of flow. Development increases impervious areas (pavement and hard structures) and impacts natural hydrology, causing erosion, sedimentation, habitat loss, and

water quality degradation. Managing stormwater by using multiple, integrated, small scale Low Impact Development Best Management Practices provides for infiltration, filtration, detention and storage to control stormwater runoff discharge, volume, frequency, maintain water temperatures, and provide pollution prevention opportunities.

The primary goal of low impact development is to mimic pre-development hydrology by managing stormwater close to its source. Integrating low impact development across a project site, and especially into installation level planning, brings about incremental and holistic approach to the management of stormwater runoff.

Common practices used to manage stormwater at or near its source are green roofs, rainwater harvesting systems, bioretention features, and permeable pavement. Using these practices can help achieve the low impact development goal of preserving a site's pre-development hydrology, as required by Energy Independence and Security Act of 2007 Section 438 and as described below.

Green Roof

A green roof is a vegetative system installed atop a conventional roof. The vegetation takes up and transpires rainfall



Green roof retrofit on industrial building at Tobyhanna Army Depot, Pennsylvania. (U.S. Army Photo)

and also removes pollutants. Green roof types are classified by section depth; Intensive green roofs have deeper soil sections (6 inches to 4 feet) capable of growing small trees and shrubs, and Extensive systems have shallow soil media sections (less than 6 inches) typically seeded with grasses, groundcover or succulents. A typical green roof system includes (from the bottom up): waterproof membrane, drainage materials, growing media, and landscaping. The dead load of the saturated green roof must be included in the structural engineer's design.

Green roofs provide partial retention of stormwater and filter the remaining runoff prior to the roof drain system. Runoff volume and velocity is reduced when compared to a conventional impervious roof. Green roofs reduce the heat island effect, which reduces the building's cooling energy load during summer months. The addition of soil on the roof provides additional insulation in winter months reducing heating load.

Rainwater Harvesting

Rainwater harvesting is the collection, storage, and reuse of rainwater. Runoff from pavement or building roofs can be collected and reused instead of being discharged into local waterways. Rainwater harvesting systems reduce runoff rate and volume and can decrease a site's potable

(Warfighters, continued from page 25)

POC is Miriam Easley, 253-966-1734, Miriam.e.easley.ctr@mail.mil

Easley is the Sustainability Outreach coordinator for the Directorate of Public Works Environmental at Joint Base Lewis-McChord and Dennis Buckingham is a Conservation Ecologist with the Colorado State University Center for Environmental Management of Military Lands, Joint Base Lewis-McChord Directorate of Public Works/Environmental Division Fish & Wildlife branch.



Typical Environmental Warfighter projects

- Restoration forestry
- Installing and monitoring nest boxes for rare birds
- Invasive species control and native seed collection
- Salmon passage enhancement and riparian restoration
- Wetland searches for rare amphibians
- Raptor nest surveys for planned timber sales
- Certification as red-carded wildland firefighters
- Prescribed burns to maintain rare Puget lowland prairies and oak woodlands

(See Strategies, page 28)



(Strategies, continued from page 29)

water demand.

Rainwater harvesting can be as simple as a rain barrel at the bottom of a downspout, with a hose spigot connected to it for irrigating plants. More complex systems may include large cisterns, filters, water quality treatment, and pumps to reuse rainwater for use inside buildings. Uses for non-potable harvested rainwater include flushing toilets, irrigation, exterior washing, and fire suppression systems. The reuse function determines filtering and treatment requirements in the design.

Bioretention

Bioretention is a vegetated depression with a cross section of gravel, engineered soil media, and plants that filter, evapotranspire, and infiltrate runoff. During rain events, runoff enters the bioretention and temporarily ponds above the filter bed, then slowly filters through the layers. The soil media removes pollutants as runoff passes through it, and plant roots uptake water. Depending on the in situ soil conditions, the bioretention may have an underdrain at the bottom. Without an underdrain, runoff infiltrates into underlying soils.

Bioretentions are classified into three types, depending on the size of their contributing drainage area. Bioretentions treat approximately 1/2 acre to 5 acres. Micro-bioretention treats approximately 10,000 square feet up to 1/2 acre, and rain gardens treat drainage areas less than 10,000 square feet.

Permeable Pavement

Permeable pavement differs from conventional impervious pavement because stormwater is able to pass through it into a gravel reservoir and ultimately the underlying soils below. This reduces runoff volume and rate when compared to traditional pavement surfaces. When underlying soils do not allow infiltration (e.g. clay or karst topography), an



*Bioretention with forebay and overflow inlet in parking lot at Fort Meade, Maryland.
(U.S. Army Photo)*

underdrain can be used to convey runoff to the storm drain system.

The four types of permeable pavement are: porous asphalt, pervious concrete, permeable concrete pavers, and reinforced turf. For porous asphalt and pervious concrete, their mix designs include void space to allow rainfall to pass through the surface. Many permeable pavement products have a surface layer that can accommodate vehicle loads with open graded aggregate layers below.

Tools and Support

More specific details related to the above strategies are available in “TechNote” documents developed by the U.S. Army Corps of Engineers. TechNotes capture and disseminate information on design and construction of sustainable technologies. TechNotes exist as short guides highlighting pertinent information about technologies including content such as project application, product information, relative costs, and case study examples. These documents are a quick primer on the topic area and are stored on Whole Building Design Guide within the Army/Corps of Engineers Criteria section of the Documents Library at

http://www.wbdg.org/ccb/browse_cat.php?c=266. The Corps of Engineers Centers of Expertise in Sustainability maintain and update TechNotes on their subject matter and may be contacted for support on projects to implement sustainable technologies and processes.

The Energy Independence and Security Act of 2007, Section 438 requires that any development or redevelopment project involving a Federal facility with a footprint that exceeds 5,000 square feet shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology. Careful planning and development can strategically create areas that reduce quantity of runoff from a site. The Corps of Engineers in collaboration with Army Chief of Staff for Installation Management has developed the Army Low Impact Development Technical User Guide, provided to assist Department of Defense planners, engineers, and stormwater managers in meeting the requirements of the energy act for their facility. This technical guide along

(See Strategies, page 29)



Fort Carson's 4th CAB Hangar earns LEED Platinum rating

by Al Barrus

Five years have passed since the Army began requiring all new construction to earn validation with the U.S. Green Building Council's Leadership in Energy and Environmental Design. The Army's goal is to meet the standard for LEED Silver certification.

The 4th Infantry Division at Fort Carson, Colorado, was selected in 2013 to support the new 4th Combat Aviation Brigade. To support this new unit, more than \$700 million in new facilities have gone toward housing the troops, maintaining the unit's aircraft and mission supporting functions.

With the surge of LEED-required construction, Fort Carson has one of the highest concentrations of LEED certified buildings in the country. The construction of LEED facilities is not a new concept at this installation. The U.S. Army Corps of Engineers Omaha District has built approximately 82 LEED certified buildings at Fort Carson. While silver is the minimum acceptable rating, more than half have earned higher ratings, with 39 achieving LEED Gold certification and three attaining the maximum rating of LEED Platinum.

The most recent LEED Platinum

certification was in December for the 4th CAB's 404th Aviation Support Battalion's new maintenance hangar.

"Originally, Department of Defense directives only required projects be LEED Silver certifiable, but not actually certified through the USGBC. Fort Carson was one of the first places in the Army to start certifying projects before it was required," said Brian Nohr, Omaha District's sustainability coordinator. "When it became a requirement, our contractors had a friendly competition to achieve higher certification levels. Now, half of our projects at Fort Carson are LEED Gold or Platinum certified, which is really commendable, and we are getting better quality, more permanent, and more sustainable facilities, which is the intent of the certification standard, and that's a good thing."

While obtaining LEED Gold and Platinum certification is nice for project managers, the greatest benefit is to the taxpayer because these certifications translate into future savings in energy and water costs. They also play a part in strengthening national security.

"The Federal Government recognizes sustainability is important for our security



The 10-ton cranes in the 404th Aviation Support Battalion's Net Zero hangar at Fort Carson, Colorado, support the maintenance of the 4th Combat Aviation Brigade's 113 helicopters, which include CH-47 Chinooks, UH-60 Blackhawks, OH-58 Kiowas and AH-64 Apaches. (Photo by Harry Weddington)

and overall health of the nation," Nohr said. "The Army's Net Zero goal is to ensure a building or installation can stay powered and continue its mission in an emergency situation in the event the electrical grid goes down. That's a big reason why we are trying to get all of our

(See Fort Carson, page 30)

(Strategies, continued from page 28)

with photos of successful low impact development projects can be found at the Corps of Engineers sustainability web page for Hydrology and Low Impact Development.


<http://www.usace.army.mil/Missions/Sustainability/HydrologyandLowImpactDevelopment.aspx>

A primary goal of the technical user guide is to refocus typical planning and storm water construction practices through a paradigm shift to low impact development best management practices as solutions. To accomplish

this, the technical user guide includes a description of legislative drivers, descriptions and appropriate uses of non-structural and structural best management practices, simulation techniques to determine the volume of stormwater required to be managed to comply with security act Section 438, facility case studies, and design and construction specifications for commonly used low impact development best management practices. The simulation chapter provides practical methods to plan and select best management practices including step-by-step examples. The Army Low Impact Development Planning Tool is a desktop application designed for use by

planners and engineers to estimate the stormwater runoff volume required to be managed for post-construction land use and identify potential types and sizes of best management practices. For more information on these strategies above, estimating tools, and the technical user guide, contact the low impact development center of expertise at LID@usace.army.mil.

POC is Patricia Donohue, 347-370-4580, patricia.donohue@usace.army.mil

Donohue is the Regional Sustainable Program manager, U.S. Army Corps of Engineers North Atlantic Division. 



New Strategies help build Army Reserve sustainability program

by Jonelle Kimbrough

Maj. Gen. Peter Lennon, Deputy Commanding General (Support), has signed the Army Reserve Water Security and Solid Waste Implementation Strategies for the Army Reserve Sustainability Program.

These strategies – along with the existing Energy Security Strategy and the Environmental Strategy that is currently in development – are critical foundational building blocks for a successful Army Reserve sustainability program.

“The Army Reserve is moving forward on the path of sustainability as a world-wide organization,” said Sustainability Programs Chief Paul Wirt. “A sustainable Army Reserve will enable mission resilience and meet the social, environmental and economic interests of Army Reserve communities now and into the future.”

The Army Reserve Water Security Implementation Strategy (ARWSIS) created four goals: promote water conservation; increase water efficiency; utilize alternative water sources; and build a sustainable water program foundation.

From these four goals, 12 action items were established to help the Army Reserve and the Mission Support Command, Regional Support Commands and Installations build a sustainable water program. These action items include methods for developing water awareness and education plans, designing water efficient facilities and assessing program performance.

“The signing of the ARWSIS will help build a strong foundation for the Army Reserve water program,” said Water Program Coordinator Jaime Kearney. “The document defines a strategy for several years to help the Army Reserve strive toward its Net Zero water goal as well as the 36 percent reduction in potable water use and 30 percent reduction in industrial, landscaping and agricultural water use mandates.”

The Army Reserve Solid Waste Implementation Strategy (ARWSIS) also defines four goals: develop a sustainable procurement program; increase solid waste diversion through source reduction, reuse and other methods; create and manage a recycling program at Army Reserve

facilities; and implement an integrated solid waste management program.


“The ARSWIS is the cornerstone of the Army Reserve solid waste program,” added Solid Waste Program Coordinator Tyrone Cook. “This document sets the tone for the program and spearheads the effort to achieve sustainability.”

Ultimately, the strategies will help the Army Reserve conserve natural resources vital to Department of Defense operations.

“Decreasing the demand for water will ensure water surety and security for current and future Army Reserve missions,” Kearney said.

“A comprehensive solid waste program will only enhance the overall Army Reserve sustainability program,” Cook agreed.

POC is Jonelle Kimbrough, 910-570-8906, jonelle.kimbrough.ctr@mail.mil

Kimbrough is the Army Reserve Sustainability Programs Communications coordinator. 

(Fort Carson, continued from page 29)

facilities to Net Zero: to eventually be ready, in the event of a power-grid failure, to be able to respond and continue the mission.”

“LEED Silver certified was our contract requirement because of Fort Carson’s need for Net Zero compliance by 2020, meeting these goals put the project at LEED Platinum certification at no additional cost to the government,” Hoff said. “As the design build team we worked together to review USGBC credits from the design-build phase, and we achieved the ones we said we would. Bonus credits came from the USGBCs ergonomic scores that account for location.

“Forty percent of the building’s power was offset by a photo-voltaic solar panel array, and we had a 57 percent energy reduction prior to the PV implementation, that puts us at 105 percent under energy usage.”


Scott Clark, Energy Manager Fort Carson Directorate of Public Works Efforts is involved with the Army’s Net Zero program.

“Fort Carson was selected as a pilot site for Net Zero in 2011 ... the National Renewable Energy Laboratory conducted an analysis of Fort Carson and found that the available technology could almost completely eliminate nonrenewable energy use although it may not be cost effective,” Clark said.

The USACE project manager confirms that the greatest portion of the maintenance hangar’s LEED Platinum certification came from energy efficiency and onsite energy production.

“We came up with new evaluation criteria when selecting contractors,” said Omaha District Project Manager Jimmy Harding. “Contractors were given higher evaluations if they proposed energy savings and onsite energy production. We made those the most important selection criteria.”

POC is Al Barrus, 402-995-2420, alma.h.barrus@usace.army.mil

Barrus is a public affairs assistant, U.S. Army Corps of Engineers Omaha District. 



USAG Bavaria sets environmental sustainability support example

by Mark Albe and Caecilia Kastl-Meier

The Department of Defense mission is to provide the military forces necessary to deter war, protect the security of the American people, our allies, and advance our interests globally. To execute its mission and ensure compliance with Executive Order 13693, *Planning for Federal Sustainability in the Next Decade*, environmental sustainability must be an integral part of the defense mission.

Individual service organizations must have the energy, land, air, and water resources necessary not only to train but also to successfully operate in all austere environments. This challenge becomes increasingly complex with competition for local resources and the enormous complexities of contingency operation resource logistics. The Department of Defense Strategic Sustainability Performance Plan provides a path forward for the service commands to advance the mission both home and abroad by:

- Ensuring the longevity of critical resources;
- Minimizing long term costs;
- Addressing environmental, safety and occupational health considerations; and,
- Advancing technologies and practices that further sustainability goals.

Triggered by recent destabilizing world events in Europe, DOD has responded with the 2014 European Reassurance Initiative reinforcing the continued support of Operation Atlantic Resolve. These strategic initiatives reassure our NATO Allies and partners especially along NATO's eastern flank that the United States is committed to the security and stability in the region.

A critical component of the initiative is not only providing the necessary funding for a prolonged rotational presence of United States forces in Europe but also improving and constructing supporting infrastructure including airfields, facilities, staging sites, and training ranges. Inherent in these initiatives are the overarching



A roof-mounted photovoltaic system provides U.S. Army Garrison Bavaria housing electricity (U.S. Army Photo)

requirements to integrate environmental sustainability protocols and best practices aligned with the DOD Strategic Sustainability Performance Plan.

The United States Army Garrison Bavaria, Germany, has been setting the example for enabling the plan's requirements and putting these initiatives in practice to ensure support to the warfighter. USAG Bavaria is a key NATO training facility and is no stranger to overall environmental program excellence having been selected as a Secretary of Defense Environmental Award winner in 2000, 2006 and 2010. It has been recognized for its outstanding environmental facilities and ecological infrastructure to sustain existing training lands while maintaining training capabilities for emerging needs such as Operation Atlantic Resolve. Furthermore, the installation has improved internal business processes by fully implementing an International Organization for Standardization-14001 compliant Environmental Management System.

The result is reducing environmental impacts and risks to ensure safe and healthy sustainable communities by reviewing all activities and projects for potential impacts and then programming

appropriate remediation measures. Additionally, USAG Bavaria is a good neighbor to its German Host Nation authorities, continually working to improve its overall reputation with the public and preventing encroachment through partnership.

USAG Bavaria Grafenwöhr installation also was chosen as a Net Zero pilot installation for waste in 2010. The objective of this initiative is to produce zero landfill during the course of a year through reduction and converting waste streams into alternative energy sources. Since 2010 the garrison has been able to reduce waste by as much as 60 percent and also has established an impressive recycling program. Material that cannot be recycled is sent to a local shredder plant and then to an Energy Incineration Plant where it is burned resulting in three different products: ash for fertilizer, steam, and electricity.

The installation also has put energy conservation practices in place including several solar-based energy systems for several barracks and the physical fitness center. The energy produced from these systems is used to heat cold water and produce electricity, which is fed into the German grid system resulting in a credit

(See USAG Bavaria, page 32)



MEDCOM sustainability efforts continue forward momentum

by Elizabeth Keysar, Kathy Lahaye and Karrie Fristoe

The United States Army Medical Command's sustainability program is continuing to mature and grow, building on lessons learned and formalizing requirements to address accountability and reporting challenges.

The Army Medical Command began its sustainability journey in 2008 when it developed its Army Medical Command Sustainability Action Plan, which described the goals and strategy to achieve them. As part of the strategy, the command conducted sustainability workshops at 29 locations, training personnel and establishing "Green Teams" at each location. The training workshop produces a sustainability action plan for each facility with specific goals applicable to that location. This type of "bottom up" approach has been shown to be critical for successful implementation of sustainability efforts, as each location needs to take active ownership for desired outcomes to be achieved.

The command's experience has shown the teams are not sufficient in and of themselves, however. Sustainability efforts continue to vary greatly from one location to the next and the command headquarters is challenged to analyze progress and identify actions to enhance the program.

Annual sustainability data calls proved cumbersome and difficult to complete by the Health Readiness Platforms, also formerly called Military Treatment facilities. Furthermore, it has been difficult to use the reported data to track progress and identify success stories, best practices and areas in need of improvement.

To address these challenges and continue its forward momentum, the command recently - initiated two essential actions -- develop and issue an updated sustainability policy and adopt the Practice Greenhealth annual awards application process as its annual data call. The recently drafted sustainability policy formalizes the purpose, goals, roles and responsibilities for command's headquarters, regions and the Health Readiness Platforms. The policy establishes tools for measuring compliance and will require that regions and facility leadership play a more active role. Accountability through the four regional headquarters, Atlantic, Pacific, Central and Europe, will increase the visibility and reinforce the importance of sustainability throughout the Command. The policy also will establish a new reporting requirement using Practice Greenhealth.

Practice Greenhealth is the nation's leading membership and networking



organization for institutions in the healthcare community that have made a commitment to sustainable, eco-friendly practices. The Army Medical Command has an existing membership in this organization and many Health Readiness Platforms have completed the Environmental Excellence Awards application in past years, with several achieving the "Partner for Change Award" in 2015. Evans Army Community Hospital, Fort Carson, Colorado, received the Greenhealth Emerald Award last year, which is presented to hospitals that demonstrate superior sustainability programs and cross-functional excellence. Given the command's existing relationship with this organization, its focus on healthcare facilities, and the past success in using the application process, the command decided to use this process as its annual sustainability data call beginning this fiscal year with the 29 Health Readiness Platform locations that have Green Teams. In 2017, the command will expand the process to all hospitals, clinics, and stand-alone laboratories that have command authority.

There are many reasons this was the right decision. Practice Greenhealth is focused on the healthcare community, making its tools and expertise well-suited to the command's unique mission. Practice Greenhealth not only provides the application and awards program, it also conducts detailed analysis of all entries

(See MEDCOM, page 33)

(USAG Bavaria, continued from page 31)

for the garrison and ultimately lower energy costs.

In addition to these outstanding environmental sustainability achievements, USAG Bavaria Hohenfels installation received the Fiscal Year 2014 Secretary of the Army Energy and Water Management Individual Award for Energy Efficiency/ Energy Management. The team developed and implemented several effective low and no cost energy conservation measures during that fiscal year, which resulted in a combined annual savings of \$426,000.

USAG Bavaria has continued to demonstrate not only operational

excellence in support of the warfighter but also implement a robust and innovative environmental program. The installation is leading the way in Europe by meeting and often exceeding promulgated environmental program requirements, ensuring collaboration with local host nation authorities, and providing Soldiers the best training facilities possible.

POC is Mark Albe, 49-(01)1722967792, mark.albe@arcadis.com

Albe is the ARCADIS Europe Department of Defense Account manager, and Caecilia Kastl-Meier is with the Environmental Division, U.S. Army Garrison Bavaria, Germany. 🌱

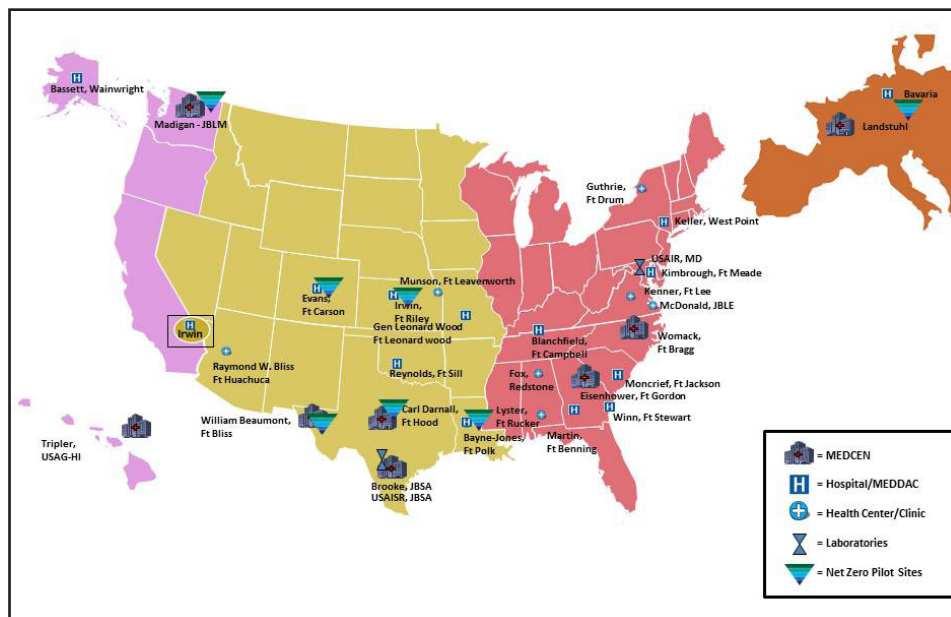


(MEDCOM, continued from page 32)

each year, producing a database of industry sustainability information and providing the command's headquarters summary reports by location and region, as well as a command-level summary.

Practice Greenhealth also uses its database management expertise to provide a report card of key sustainability metrics that allows Health Readiness Platforms to compare their performance against like institutions, enabling sustainability performance to be far more meaningful for the individual Health Readiness Platforms. For example, Practice Greenhealth's application includes items like "Greening the Operating Room" and "Making Medicine Mercury-Free" recognition. Army Medical Command Health Readiness Platforms now will be able to benchmark their progress against like institutions, and each year the "industry best practice" will continue to improve, keeping the command's relevant targets as it seeks continual improvement.

Practice Greenhealth metrics are compatible with those required by the Department of Defense Strategic Sustainability Plan and Department of the Army sustainability requirements, such as energy use intensity, water use intensity, solid waste reduction and guiding principles for sustainable design. Practice



Army Medical Command facilities that received on-site sustainability training along with the Army's designated Net-Zero sites. (U.S. Army Graphic)

Greenhealth provides training on the application process with experts available to address questions, and will modify its application in future years to accommodate some of the unique requirements for federal agencies. The medical command will continue to leverage Practice Greenhealth's expertise as it reviews last year's data and expands the reporting requirement to the entire command.

The Army Medical Command also has learned that sustainability success is closely tied to the sustainability efforts of its host installations. Energy, water and waste information is often collected for the installation as a whole, so the Health Readiness Platform must work closely with their host Directorates of Public Works to accurately document energy and water use, utility costs and solid waste disposal tonnage.

Even more critical, several of the required sustainability goal areas will require Army Medical Command facilities to support the installation goals, as the command cannot individually implement the necessary actions. For instance, renewable energy development typically

will require infrastructure and planning efforts in coordination with the installation and its utility provider. As a tenant, the medical command seeks to actively collaborate with its hosts for sustainability success. Its new sustainability policy specifically recognizes and encourages active collaboration. The formalization of program goals, roles and responsibilities is a critical enabler for the Army Medical Command's continued momentum in sustainability implementation.

POC is Elizabeth Keysar, keysare@ctc.com

Keysar is an Energy and Sustainability Policy analyst with Concurrent Technologies Corp., Kathryn LaHaye is the Sustainability Program manager with Headquarters, U.S. Army Medical Command, and Karrie A. Fristoe, a retired colonel, is the chief executive officer with Double Eagle Innovations.

2015 Practice Greenhealth Award Winners	
Greenhealth Emerald Award:	Evans Army Community Hospital (ACH), Fort Carson
Circle of Excellence in Energy:	Bassett ACH, Fort Wainwright
Greenhealth Partner for Change Award:	Carl R Darnall Army Medical Center (AMC), Fort Hood Madigan AMC, Joint Base Lewis McChord Bassett ACH, Fort Wainwright Bayne-Jones ACH, Fort Polk Blanchfield ACH, Fort Campbell Reynolds ACH, Fort Sill Winn ACH, Fort Stewart



Fort Hood breaks ground for Army's largest renewable energy project

by Todd Pruden

FORT HOOD, Texas -- Fort Hood, federal and local officials broke ground here during a Jan. 28 ceremony for a massive energy project for the installation.

The ceremony, fittingly on a sunny and windy day in Central Texas, marked the beginning of the largest renewable energy project in the Army to date.

"Well, I expected it to be sunny in Texas, but I didn't quite expect this much wind," said Katherine Hammack, assistant secretary of the Army, Installations, Energy and Environment. "So, it is a wonderful thing and it certainly emphasizes the reason why we have this project here."

The project, the largest and first of its kind, will include both an on-post solar farm and an off-site wind turbine farm, which has the capacity to generate 65 megawatts of electricity for the installation and save taxpayer dollars.

Maj. Gen. John Uberti, III Corps and Fort Hood deputy commanding general, said during the course of the contract awarded to Apex Clean by the Defense Logistics Agency, the Army will avoid paying approximately \$168 million.

"Not only will we gain a sustainable energy source, supplying nearly half of our energy needs, but it will be at a lower price than the power generated by fossil fuels," Uberti said. "It is fitting that the largest project of this type is at Fort Hood, Texas, because as I'm learning, everything in Texas is big."

"There are a lot of firsts here. It's the first hybrid project, wind and solar, in the Army, it's the first to combine on-site and off-site energy and it is the largest," Hammack said. "As was said, everything is bigger in the state of Texas, so right now Texas has the distinction of contributing the most to renewable energy in the Army."

Brian Dosa, Fort Hood director of Public Works, said the solar farm will consist of more than 63,000 solar panels covering 132 acres.

"Maybe a different way to look at that is that's equivalent to about 10 football fields with end zones of solar panels," Dosa said.

According to Mark Goodwin, president



Katherine Hammack (center), assistant Secretary of the Army for Installations, Energy and Environment, along with others, digs up a shovel-full of dirt during the Jan. 28 groundbreaking ceremony for the Army's largest renewable energy project on West Fort Hood. (Photo by Kelby Wingert)

and chief operating officer, Apex Clean energy, the off-site wind turbine farm will be located in Floyd County, Texas.

"We have approximately 20 turbines and they are on a collection string that connects into an interconnection substation and then that connects to the grid," Goodwin said, "and then we have a partner utility that will take the power from the wind farm and deliver it to the base. So, it is putting power onto the grid and then what Fort Hood is doing, they are reaping the benefit as a big savings in what they are paying now."

Goodwin said the upstart capital of the project will be \$100 million, but Hammack said there are more benefits from the project than simply saving taxpayer money during the course of the contract.

"What we want to do is make sure we're utilizing all the resources that are available," Hammack said. "We want to make sure that the fossil fuels that we do use are used for our mobility, where you have fewer choices. We have choices in the energy used to power our installations."

Rep. John Carter, Texas 31st Congressional District congressman, agreed there are more added benefits.

"Using renewables makes sense on

military posts throughout the country," Carter said. "More importantly, and what we're all about here at Fort Hood, it frees up money to be able to make better Soldiers here on Fort Hood. So, if it's cheaper energy, it gives us more money in our pockets to spend on training up the best warriors in world."

Hammack noted that the federal government is the largest energy user in the United States, and that the Army is the largest facility energy user.

"Last year, [the Army's energy bill] cost us \$1.3 billion, and when we look at this project here that is going to save money across the term of the contract for the Army, that is money that we can put elsewhere, to critical missions, and that's important to us," Hammack said. "I'm proud of the work we've done so far and I look forward to the Army continuing to lead by example in energy efficiency and in renewable energy projects."

POC is Todd Pruden, 254-287-9495, william.t.pruden.civ@mail.mil

Pruden is a public affairs specialist with the Fort Hood, Texas, Public Affairs Office. Kelby Wingert is the sports editor of the Fort Hood Sentinel.



Greenhouse ‘living collections’ promote cloning for preservation

by Larry Abbott and Matthew Keir

SCHOFIELD BARRACKS, Hawai‘i – The Army, as a federal agency, has an Endangered Species Act responsibility to conserve endangered species on its training lands and prevent harm from Army activities, including training. Thus, the Army in Hawai‘i does its fair share of endangered plant conservation work. The O‘ahu Natural Resources Program in Hawai‘i has two biological opinions from the U.S. Fish and Wildlife Service, which outline a recipe for stabilizing endangered plants.

The flora of the Hawaiian Islands are one of the most unique in the world. Nearly 90 percent of flowering plants and close to 75 percent of ferns native to Hawai‘i are found only here.

Due to habitat loss and degradation from an onslaught of invasive (nonnative) species, the native flora is also critically imperiled. Approximately 10 percent of native plants are already extinct and more than 30 percent of the remaining species are listed as endangered by the U.S. Fish and Wildlife Service.

Reasons for the decline of native plants are numerous: fire; browsing and trampling by non-native animals, such as pigs and goats; competition with aggressive weeds; and destruction of seeds and seedlings by rats and slugs. All contribute new pressures on native plant species.

With 39 endangered plant species currently in its care, the O‘ahu Natural Resources Program is minimizing and eliminating these threats by preventing destructive wildfires, installing fences, controlling weeds and reducing numbers of rats and slugs around important populations.

When these measures alone are not enough to restore populations and to further reduce the risk of a species going extinct, collections of seeds or cuttings from plants are brought in for cultivation in the O‘ahu Natural Resources Program greenhouses. These clones – exact genetic replicas of the wild plants – make up the



Natural resources management technician Chris Lum uses flagging tape to support an endangered Hawaiian mint, *Stenogyne kanehoana*, on a trellis within the O‘ahu Natural Resources Program rare plant nursery in Schofield Barracks, Hawai‘i. (Photo by Matthew Garma)

greenhouse “living collection.” Sheltered in the safety of the greenhouse, the genetic material of plants in the living collection will not be completely lost when wild plants die.

Collecting from plants in all of the known populations of each species is critical to ensuring enough genetic diversity has been secured to build strong populations in the next generation. If too few plants, or “founders,” are used, the next generation could become inbred, leading to a loss of fitness and important traits, and ultimately to extinction of the species.

Much like a collection of rare tigers, the living collection in the greenhouse must be managed so no genetic diversity is lost. As more plants are brought in from the field, they add to the living collections and the strength of the next generation.

Since 2001, the O‘ahu Natural Resources Program has been collecting from all known populations of Hawai‘i’s state flower, the ma‘o hau hele (*Hibiscus brackenridgei* subsp. *mokuleianus*), a federally listed endangered species. Staff have visited populations on Army, state and private lands many times to build a living collection held at the program’s greenhouse at Schofield Barracks. More than 100 founders have been secured by

collecting cuttings from wild plants, and these collections have been maintained in cultivation for more than 14 years.

In 2007, a wildfire in Waialua killed most of the ma‘o hau hele in this area, including all of the plants clonally represented in the program’s living collection. Because they had been secured in the greenhouse before the wildfire, these plants were available for use in a restoration project to build a new population in the mountains above Waialua after the fire.

For a few plant species, the greenhouse living collection is all that is left. *Stenogyne kanehoana* is a native plant in the mint family that has only been found in three places in the Wai‘anae Mountains of O‘ahu. This very rare species is now considered to be “extinct in the wild”. All of the known populations in the mountains have died, but plants kept in the greenhouse living collection are still alive and thriving.

Thanks to successful collections when the plants were first found and years of dedication by the program’s greenhouse staff, this species has been saved from complete extinction by a greenhouse living collection. During the last several years, the O‘ahu Natural Resources Program

(See *Greenhouse*, page 37)



Fort Buchanan's unique environment helps endangered species

by Victor Rodriguez Cruz and Francisco Méndez

The U.S. Army Garrison Fort Buchanan, the only military installation in the Caribbean, provides common-level support for Army, Army Reserve and several National Guard, Marine and Navy Reserve units in Puerto Rico. Approximately 90 acres of the small installation's 746 acres are conservation areas preserved as habitat for the federally endangered Puerto Rican Boa (*Chilabothrus inornatus*). The remnant natural areas provide habitat for flora and fauna, including species with special conservation status, constituting a significant habitat in an urban setting.

The installation also boasts an unusual geological feature locally known as a

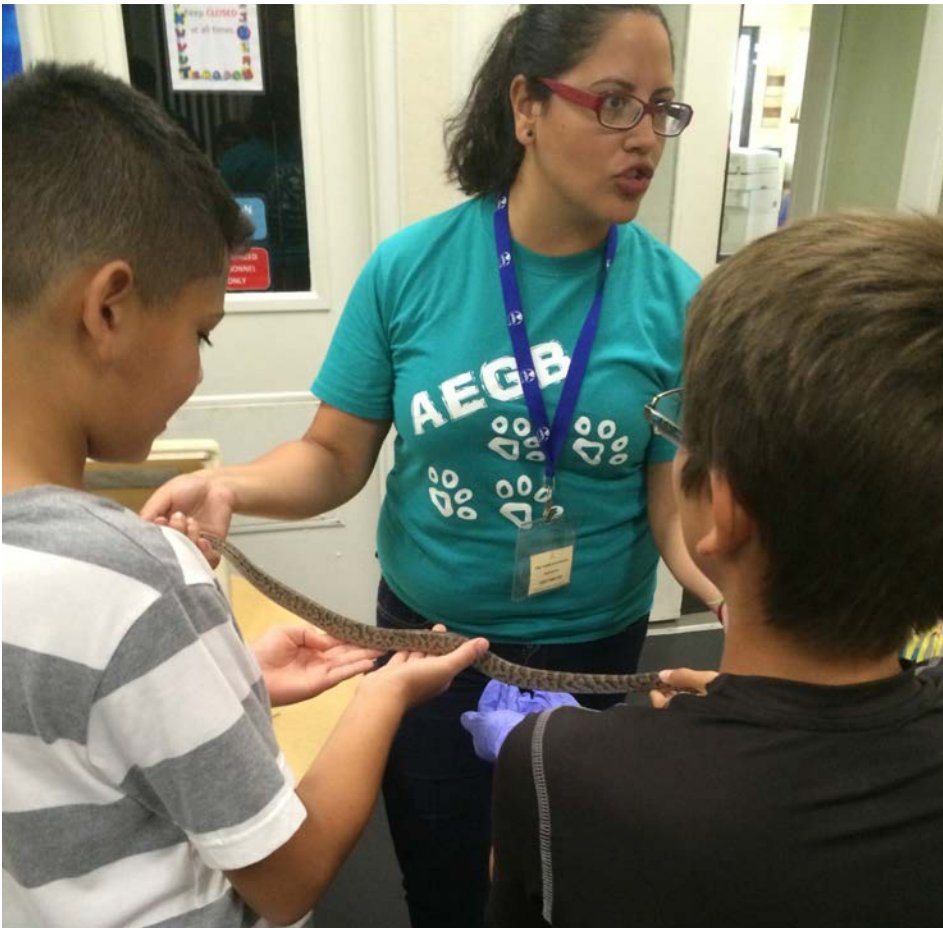
"mogotes" or limestone hill. The carbonate rock hill formation is one of only a limited number of "mogotes" within the San Juan Metro area. The "mogotes" harbors unique botanical assets including a population of the federally listed endangered "Palo de Rosa" (*Ottoschulzia rhodoxylon*, rosewood tree). Roughly 30 acres of the "mogotes" are preserved rosewood tree and Boa habitat.

To help preserve these areas and species, Fort Buchanan applies its Integrated Natural Resources Management Plan's holistic approach that is implemented in accordance with its Sustainability & Environmental Management System. The sustainability management system

identifies significant environmental aspects arising from the installation's mission and strategically provides the framework for eight Environmental Management Action Plans. These action plans establish objectives, targets, potential environmental/organizational impacts, performance indicators, and task/action items the garrison uses to control, manage and measure outcomes and auto-evaluate plan progress; towards installation readiness, mission sustainability and community resilience.

The specific task for Environmental Management Action Plan 7(a), Endangered Species Management, applies the natural resources plan as guidance, and uses its recommendations for preserving and enhancing the installation's ecological resources and function; improving wildlife habitat, and implementing soil and water conservation, as well as promoting aesthetic enhancement and beautification. To meet the environmental management plan's goals and requirements, the Natural Resource Conservation program establishes specific working groups for each plan that provide quarterly reports on progress, successes and challenges of the plans.

By integrating the Directorate of Public Works Master Planning Division into the natural resource conservation working group, the combined team is helping define the ecologically sensitive areas that need to be preserved as wildlife habitat during the planning phase, which enables the installation to meet its future development plans while conserving natural resources. Obtaining the cooperation of federal and state wildlife agencies through a Memorandum of Agreement for the conservation of endangered species is another significant benefit resulting from the working groups. The memorandum, approved for fiscal years 2009-2019, establishes the framework for the cooperative relationship between the garrison, the US Fish and Wildlife



Boa tagging project volunteers provide reptile and amphibian ecological workshop for students enrolled in summer camp. (Photo by Victor Rodriguez)

(See Fort Buchanan, page 37)



(Fort Buchanan, continued from page 36)

Service, and the Puerto Rico Department of Natural and Environmental Resources allowing implementation of conservation measures. The memorandum improved the Installation's coordination capability with

Preliminary population estimates show the installation population is about three snakes per acre and demonstrates that the snakes have relative affinity to the habitats of their initial capture.

both agencies.

The Passive Integrated Transported Tag program marks a major milestone achievement for the conservation program. The Puerto Rican Boa conservation measures, implemented in 2013, helped provide valuable and reliable long-term data for monitoring and assessing the status of the boa population within the installation.

The environmental division staff developed and implemented this program through cooperative agreements with the Fish and Wildlife Service, the Puerto Rico Department of Natural and Environmental Resources, the U.S. Army Corps of Engineers Engineer Research and Development Center in Champaign, Illinois, and the University of Puerto Rico Mayaguez Campus. The study uses radio-telemetry technology in addition to the tags to assess Fort Buchanan's boa population and to monitor the species' habitat use and activity patterns.

During the award period, the study tagged 38 snakes and radio tracked six. Preliminary population estimates show

the installation population is about three snakes per acre and demonstrates that the snakes have relative affinity to the habitats of their initial capture. Data also suggests relocated snakes have a tendency to return to place of capture. This data helped the environmental division improve the "Standard Operations Procedure for the Capture and Relocation of the Puerto Rican Boa."

As part of the boa conservation initiative, volunteers from several local universities assisted in educating installation personnel, housing residents, students and the general public on boa conservation. Last summer, the environmental division coordinated with the Directorate, Family and Morale, Welfare and Recreation Youth Services Program to provide an ecological workshop for students enrolled in its summer camp. The workshop consisted of a PowerPoint presentation titled "Conservation of Reptiles and Amphibians; USAGFB", and included an exhibition of the fauna found within the installation.

The presentation made students aware of

the boa's current protected status and the need of preserving its habitat. The students worked with a juvenile boa under the supervision of researchers, receiving hands-on experience weighing and measuring the specimens, and learning the techniques used to tag and track snakes.

The workshop was considered a success. "I need to say that the feedback I received from the staff and kids was amazing! They would have stayed longer working and asking questions. Thank you so very much. I believe our youth learned and had fun with your conference and your 'friends'. Thank you so very much," said Aida I. Aguilú, the youth service director.

POC is Anibal Negrón-Rodríguez, 787-707-3575, DSN: 740-3575, anibal.negron1.civ@mail.mil

Victor J. Rodriguez Cruz and Francisco Méndez are both environmental protection specialists with SOL Solutions, LLC, Fort Buchanan, Puerto Rico. 🍁

(Greenhouse, continued from page 35)

has grown hundreds of new *Stenogyne kanehoana* and planted them out into protected native forest areas.

The O'ahu Natural Resources Program greenhouse living collections are a critical part of protecting and restoring populations of federally listed endangered species. The collections provide shelter from threats to rare plants while their habitats can be protected and restored.

Large, genetically diverse collections are needed to produce strong plants in the next generation, and they must be maintained in perpetuity. Once wild populations are restored, become established and are thriving again, the living collections can be retired.

Until then, the O'ahu Natural Resources Program greenhouse staff will work to ensure that no important founders are lost and will continue to maintain strong living collections.

POCs are H. Kapua Kawelo, 808-655-9189, Hilary.K.Kawelo.civ@mail.mil and Celeste Hanley, 808-656-7741, celestev@hawaii.edu

Larry Abbott is a plant propagation assistant, O'ahu Natural Resources Program, U.S. Army Garrison- Hawai'i, and Matthew Keir is a rare plant specialist, O'ahu Natural Resources Program, U.S. Army Garrison- Hawai'i. Matthew Garma is senior plant propagation assistant, O'ahu Natural Resources Program, U.S. Army Garrison- Hawai'i 🍁



Fort Drum project tracks white-tailed deer fawn survivorship

by Raymond Rainbolt and Martin Feehan

This year the Fort Drum, New York, Fish & Wildlife Management Program began a collaborative project with Cornell University to study the survival of white-tailed deer fawns in the Cantonment Area. Eighteen fawns were captured, radio-collared, and then they were tracked to gather information on their movements to see if they survived, and if not, to determine what caused their death.

The first fawn was found on May 24, only a few hours after his birth in the Nancy Drive community. The last fawn was captured on Aug. 1. Using hoof growth, the biologists from Cornell University were able to determine the age of fawns at capture and determine the birth season at Fort Drum, which was from May 20 through June 16 with a mean of May 31. All told, 11 males and seven females were captured.

So far, there has been four radio-collared fawn mortalities, three of which were

predations in June and July and the fourth from hunter harvest in October. Genetic analysis techniques will be used in the future to determine the predator species. Additionally, three other fawn mortalities were observed, all of which appeared to be caused by road collisions.

Twelve of the 18 radio-collared fawns were captured under 10 days old and the others were captured at 37 days or older when their changes in behavior increased their visibility. Only four fawns aged five days or younger were captured. This is a major problem because the highest mortality is usually during the first five days of life. Because the majority of fawns were captured at an older age, many mortalities are probably being missed.

To help increase the success rate of finding newborn fawns, Cornell University biologists will be deploying implant transmitters in pregnant does next February and March. They will indicate

that a birth has occurred and the location of implant after they drop out during birth and activate radio transmitters.

Tracking of currently radio-collared fawns has continued through the winter. This past fall Fort Drum Fish and Wildlife Management staff collected tissue samples from all harvested deer from the cantonment area and the training area for genetic analyses to be performed next year by Cornell University. The staff plans to collect tissue samples this coming fall as well.

POC is Raymond Rainbolt, 315-772-9636, Raymond.E.Rainbolt.civ@mail.mil

Raymond Rainbolt is the Fort Drum Fish and Wildlife manager, Fort Drum Public Works Environmental Division, Natural Resources Branch, and Martin Feehan is a graduate student at Cornell University. 🍁



Cornell University graduate student Martin Feehan measures hoof growth to estimate the age of the fawn on Fort Drum, New York. (Photo by Carly Augustyn)



Reserve Command works to conserve northern long-eared bat

by Jonelle Kimbrough and Veronda Johnson

Bats are critical to our nation’s ecology and economy. They consume tons of insects every night and pollinate numerous food plants, thus providing a natural benefit to farmers, foresters and consumers. In fact, some research indicates that bats provide at least \$3 billion in economic value annually.

However, a deadly disease is decimating populations of the northern long-eared Bat in the United States and prompting the U.S. Fish and Wildlife Service to protect these important creatures. As a federal entity, the Army Reserve is also tasked with their conservation – a responsibility that the 88th Regional Support Command is heeding to protect military operations as well as the bats.

The northern long-eared bat is found in several Army Reserve regions, primarily in the 88th and 99th Regional Support Commands and in a more limited range in the 81st and 63rd Regional Support Commands. It also is one of the seven bat species impacted by white-nose syndrome, a fungal disease that has caused the deaths of millions of bats in the northeast. Some affected bat populations have experienced a 99 percent mortality rate.

The presence of threatened and endangered species on military installations can have potentially major impacts on the environment and the mission.

Due to significant population declines caused by the spread of white-nose syndrome throughout the United States and Canada, the U.S. Fish and Wildlife Service announced that it is protecting the northern long-eared bat as a threatened species under the Endangered Species Act of 1973.

The presence of threatened and endangered species on military installations can have potentially major impacts on the environment and the mission. Species losses can cause devastating ecological imbalances, and “significant use restrictions could be applied by the USFWS and enforced under the ESA (Endangered Species Act) if the 88th RSC is not compliant with federal laws” surrounding these species, said Marshal Braman, an environmental protection specialist and Versar contractor with the 88th Regional Support Command.

In an effort to prevent those restrictions, the 88th Regional Support Command completed an informal Section 7 consultation for Indiana bats with the Fish and Wildlife Service, which resulted in the 2013 preparation and approval of an Endangered Species Management Component. In the ESMC, which was revised last year to include the northern long-eared bat, the Army Reserve determined and the fish and wildlife service concurred that military operations “may affect but are not likely to adversely affect” bat populations. Military training, aircraft operations and recreation are covered for all locations.

Other activities including the use of smoke or obscurants, forest management, prescribed burning, pest management and construction also continue but with the implementation of conservation measures that will prevent “take” of the northern long-eared bat,, which the ESA defines as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect any endangered species.”

Fortunately, white-nose syndrome has not yet been detected throughout the entire range of the northern long-eared bat, and the bats and Soldiers have been living in harmony thus far. “Most training activities are on different time schedules from the bats, so there is minimal potential interaction,” Braman said.

Acronyms and Abbreviations	
ESA	Endangered Species Act
ESMC	Endangered Species Management Component
RSC	Regional Support Command
USFWS	United States Fish and Wildlife Service


Bats are most active at dawn and dusk and during the night, but nearly all training normally occurs during the day. In the event that a northern long-eared bat roost tree is encountered on the training area, Soldiers are to identify its location, immediately cease all activities within a 150 foot radius of the tree and report their observations to natural resources personnel, who will then provide direction regarding continued activities, use of the immediate area and subsequent actions.

“The 88th RSC will follow the established measures outlined in the ESMC to avoid potential impacts to the bats and maintain suitable habitat for their continued use,” Braman said.

The Army is considered a leader in the efforts to protect our natural world and the rare plants, insects and animals with which we share our military installations.

The programmatic approach between the USFWS and the 88th RSC to protect a once common bat can serve as a model for future actions, and it will ensure the protection of wide-range species and the conservation of the lands and resources that directly support the men and women who defend our freedom.

POC is Veronda Johnson, 910-850-9492, veronda.p.johnson.civ@mail.mil

Johnson is an Environmental Protection specialist with the Army Reserves Command and Jonelle Kimbrough is a Communications coordinator, Army Reserve Sustainability Programs. 



IMCOM revises protocols for sampling for lead in drinking water

by Richard Morris

The U.S. Army demonstrated in 2013 that it is absolutely committed to the health and safety of Soldiers, Family Members and its Civilian and contractor workforce by sampling drinking water for elevated levels of lead concentrations in 100 percent of Installation Management Command's high risk facilities.

"High risk facilities" are those that provide primary drinking water to the highest risk population, which includes children under the age of six and pregnant women. These types of facilities include Child Development Centers, Youth Centers, elementary schools, and some medical facilities.

In the wake of the Flint, Michigan, water crisis, there's a tremendous amount of technical information and data coming out that relates to IMCOM's 2016 initiative to begin scheduled sampling of high risk facilities. The intent of the scheduled sampling is to ensure that all high risk facilities are updated and sampled at least once every five years in accordance with the draft revisions to Army Regulation 420-1. The regulation's proposed revisions resulted from the 2013 sampling event results.

'The protocol, developed for Flint schools, which IMCOM is now using, reflects the current best science and approach ...'

The Michigan Department of Environmental Quality has been sampling child development centers and schools in Flint using the U.S. Environmental Protection Agency's school sampling protocol, but those protocols have since been revised based on input from EPA's "Flint Safe Drinking Water Task Force" (<http://www.epa.gov/flint>). The task force consists of EPA's corrosion experts.

Since IMCOM also is trying to identify



the contribution of lead from outlets and other potential sources in facility plumbing to determine risk of exposure to lead from drinking water, IMCOM and the U.S. Army Public Health Center have revised the initial and follow-up sampling protocols to reflect these expert recommendations.

By revising the Army's protocols to match the Michigan state protocols, this will significantly increase the total number of samples collected. The protocol developed for Flint schools, which IMCOM is now using, reflects the current best science and approach to identify exposure risk, sources of lead, and effective mitigation actions.

The revised protocols for initial sampling involve collection of two first draw 125 milliliter samples, followed by collection of two flushed 125 milliliter samples (the first collected after a 30-second flush; the second collected after a two-minute flush). Then, in what EPA describes as a way to have accurate data from throughout the school plumbing (not just the points of use) to assess the risk of lead exposure, they collect 10 sequential one liter samples from two to three locations in each facility (one set collected from an outlet close to the service line, one set from an outlet in the "middle" of the facility, and one or more at


distance points).

For follow-up sampling procedures, instead of a first draw and flushed sample, more investigation to try and verify sources of lead is required. Along the same lines as in Flint, depending on which initial samples had elevated lead levels, consecutive one liter samples will be collected.

Basically, follow-up sampling will range from repeating the initial sampling (three, 250 milliliter samples) to sampling 10, one liter sequential samples. The sequential sampling will help verify potential sources of lead deeper in the building plumbing such as lead solder (possibly showing as multiple hits in several samples) or brass components (possibly showing as singular hits in one to two samples).

By executing scheduled drinking water sampling and analysis on a five-year cycle, IMCOM is continuing its commitment to the belief that we absolutely owe it to our military, families, and civilians to ensure they are provided safe, first-rate facilities on our installations.

POC is Richard Morris, 210-466-0571, Richard.I.morris45civ@mail.mil

Morris is the technical team leader, Headquarters, Installation Management Command Public Works Division Environmental Branch. 



Army projects win 7 Federal Planning Division design awards

by Andrea Kuhn

This year the Federal Planning Division has recognized the U.S. Army with seven awards for outstanding Federal planning programs, projects, technical plans, environmental planning projects, and collaborative planning.

The seven awards, considered to be an unprecedented number for one agency, were presented April 1 at the annual American Planning Association training workshop in Phoenix. The Federal Planning Division is a division of the American Planning Association.

Winners were commended for their holistic planning, stakeholder engagement, comprehensive approach, sustainability, and innovative breadth and depth of planning.

Winners are as follows:

Category 1: Outstanding Federal Planning Program: Merit Award to Headquarters Army Materiel Command for the Red River Army Depot, Texas, and McAlester Army Ammunition Plant, Oklahoma, Vision Plan.

Category 2: Outstanding Federal Planning Project: Honor Award to the



A rendering for the Parks Reserve Forces Training Area, Dublin, California, helps link a building's design to the installation's planning standards. The U.S. Army Corps of Engineers is receiving a Merit Award from the Federal Planning Division for its development execution plan for the Parks Reserve Forces Training Area. (Image courtesy of the Urban Collaborative)

U.S. Army Reserve Command for the Fort Buchanan, Puerto Rico, Area Development Plan.

Category 3: Merit Award to the U.S. Army Corps of Engineers for the Fort Knox, Kentucky, South Wilson Area Development Plan.

Category 4: Outstanding Technical Plan or Study: Honor Award to the U.S. Army Corps of Engineers for the U.S. Marine

Corps Forces Reserve Customer Concept Document at Parks Reserve Forces Training Area, California.


Category 4: Outstanding Technical Plan or Study: Honor Award to the U.S. Army Corps of Engineers for the Fort Hood, Texas, Area Development Execution Plan.

Category 4: Outstanding Technical Plan or Study: Merit Award to the U.S. Army Corps of Engineers for the Parks Reserve Forces Training Area Development Execution Plan.

Category 5: Outstanding Environmental Planning Project: Honor Award to the U.S. Army Corps of Engineers for the Parks Reserve Forces Training Area Sustainability Component Plan.

Category 6: Outstanding Collaborative Planning Project: Honor Award to the U.S. Army Corps of Engineers for the Fort DeRussy, Hawaii, Area Development Plan.

POC is Andrea Wohlfeld Kuhn, 202-761-1859, andrea.w.kuhn@usace.army.mil

Kuhn, FAICP, LEED Green Association, is a senior planner with the Master Planning Team, Headquarters, U.S. Army Corps of Engineers. 

Showcase your **STORY**

Would you like to see your installation, agency, program or project featured in the Public Works Digest?

Submit a story by sending it to:

editor.pwdigest@usace.army.mil



Civilian Education System offers leader development, progression

by Russell Dunford

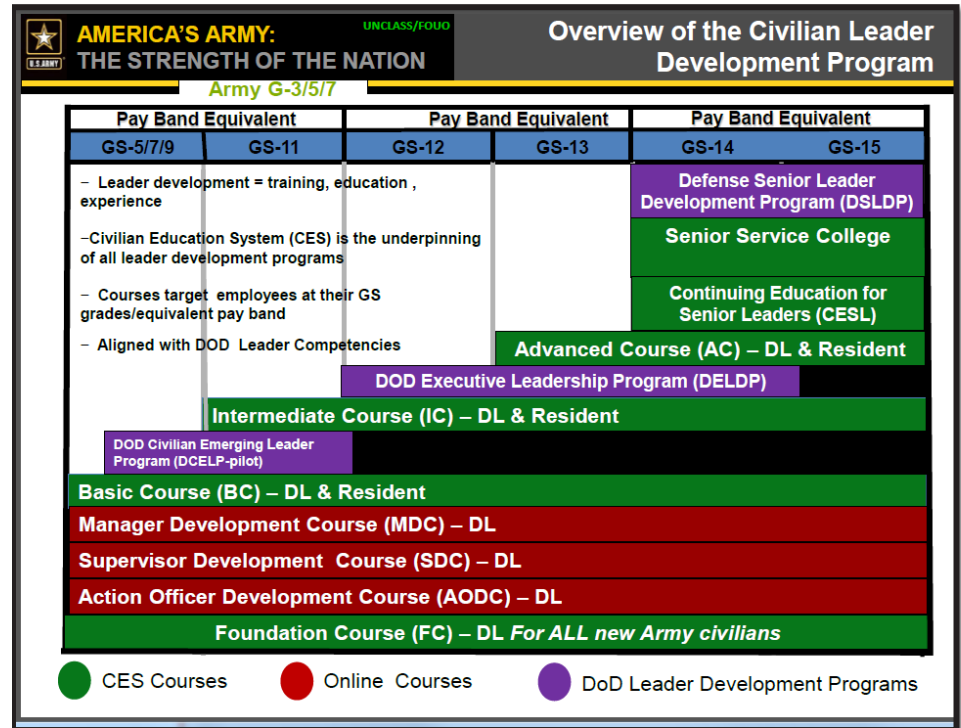
The Civilian Education System or CES is a progressive and sequential leader development program that provides enhanced educational opportunities for Army Civilians throughout their careers. CES is not the Defense Acquisition University nor is it under the guidance of the Defense Acquisition Workforce Improvement Act certification process.

CES provides eight levels of Civilian development courses that are applicable to respective civilian grade levels. Essentially, it is the civilian equivalent of the Army Officer or Enlisted career path professional development defined for one's civilian career. If you are a retired Army Officer or Noncommissioned Officer, you can submit Army Training records and receive credit up to the "Advance Course."

After equivalent credit is given, one must register and complete the one week Civilian Education for Senior Leaders resident course. Regardless of whether equivalent credit is received, you MUST take the distance learning Foundation Course if you entered the civilian workforce after 2006.

Initially I was somewhat perturbed to think I was going to have to take the Foundation Course. I thought, Are you kidding me? I was a steely eyed killer, flew Army aircraft, jumped from airplanes ... I had so many ribbons on my chest when I retired I had one that read "To Be Continued." Then I began taking the Foundation Course and had myself a big ole helping of "humble pie." Quickly I realized, somewhat to my chagrin, that I was indeed somewhat ignorant.

The Foundation Course does for the civilian workforce, what Basic Training does for the new recruit: It strives to instill not only an understanding of the civilian "task, conditions and standards" but the Foundation Course also serves as a means to introduce the civilian workforce to the Army structure and provide a history of "The Army".



Yes, any retired military member will quickly click through the Army structure courses, but I encourage you to take the time and review the information for this is the very information the new workforce is receiving as its knowledge basis. Soldiers have had the Army history and force structure pounded into them for 20 plus years. The new engineer intern or employee has not.

The course I attended was the Civilian Education Senior Leaders Course, or CESL, and it is the Leader Development Program within the Civilian Education System taught by the Army Management Staff College.

I encourage leaders at every level to add the completion of the Foundation Course to the goals list for employees, interns, summer hires, etc. Like me, initially they will not like it, but in the end, they will walk away with an appreciation and better understanding. Worst case is you learn nothing, and you can email the Army Management Staff College to provide feedback on how to improve the course.

One of the first questions asked is Who is going to pay for me to attend a one-week resident course in a temporary duty status? We're broke. It is often said, if you want to know what one values, take a look at his or her check book. In this case, the Secretary of the Army has endorsed and voiced the commitment to training the civilian workforce with funding.

The lead for this action is the Civilian Training and Leader Development Division of the G-3/5/7 that will centrally fund temporary duty for the resident CESL course. Leadership knows the financial constraints units face, but leadership also knows we must maintain a trained civilian work force. Without funding the requirement, nothing will happen. Therefore, other than you being absent from the office, CESL is centrally funded and costs your command nothing for you to participate in the training.

What did I learn? Our guest speakers included Senior Army leadership

(See Fort Civilian, page 43)



(Civilian, continued from page 42)

that one would never get an official call with if he or she tried on their own accord.

All of the senior leaders were genuine and candid in their comments and welcomed the same from the students.

I recommend leadership require any new team member, Civilian, contractor support, intern or summer hire to complete the online CES courses.

Vicki Brown, chief, Civilian Training and Leader Development, is a dynamic speaker who is responsible for not only the CESL course but for the Army Career Tracker that is being implemented. Army Career Tracker very much parallels the Acquisition Corps Record Brief, which the Army Career Tracker calls the Civilian Record Brief. There also is an Individual Development Planning that highlights the training needed for one to be current and qualified in his or her respective career field.

So you are now saying: why do we have Army Career Tracker and a separate Acquisition Corps online career

management tool? Why do we not have one system? Easy, the Acquisition Corps is mandated by Congress to develop and track its workforce career development per the Defense Acquisition Workforce Improvement Act or Defense Acquisition Workforce Improvement Act Certification process. Will we get to one system? I certainly believe so.

Right now, the Army has the goal of every member of the civilian workforce being integrated into Army Career Tracker (<https://actnow.army.mil/>).

Where is the Army and the Civilian workforce headed? Want to know about Senior Leader Management? The Deputy Assistant Secretary of the Army Manpower and Reserve Affairs provided the path ahead.

He told us he understands the challenge that must be addressed: If we invest the time, energy and effort of sponsoring one to attend a Fellowship, or any developmental assignment, then we owe it to this individual to aid in his or her follow-on assignment and not merely leave it to them to float their resume to secure a follow-on position once they finish their education or developmental assignment.

CESL was well worth the investment. The lessons learned, contacts made and collaboration achieved would never have occurred had I not attended this course.

I recommend leadership require any

new team member, civilian, contractor support, intern or summer hire to complete the online CES courses. I think we will all be surprised in the return on this small investment, and it costs nothing to complete the distance learning courses that are solely individually paced.

Additional courses offered by the Army Management Staff College include Action Officers Development Course, Supervisor Development Course, and Manager Development Course. The delivery methods are distributed learning, resident instruction or blended learning, a mixture of both distributed learning and resident instruction.

Interested? Get more information or register for any Army Management Staff College Course at:

Registration: <http://cpol.army.mil/library/train/catalog/ch01-ces5cesl.html>

Civilian Students: <http://www.civiliantraining.army.mil/leader/Pages/CESL.aspx>

Military Students: <http://usacac.army.mil/organizations/cace/amsc>

POC is Russ Dunford, 256-457-5355, CEHNC.Operations@usace.army.mil

Dunford is chief of operations, U.S. Army Engineering and Support Center, Huntsville.

Public Works Digest		
2016 Theme and Deadline Schedule		
Issue	Theme	Deadline
Jan-Feb-Mar	Master Planning, Housing and Barracks	30-Nov-15
Apr-May-Jun	Environment and Sustainability	4-Mar-16
Jul-Aug-Sep	Operations, Maintenance and Engineering	3-June-16
Oct-Nov-Dec	Energy, Water and Waste	2-Sept-16

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

