

Public Works

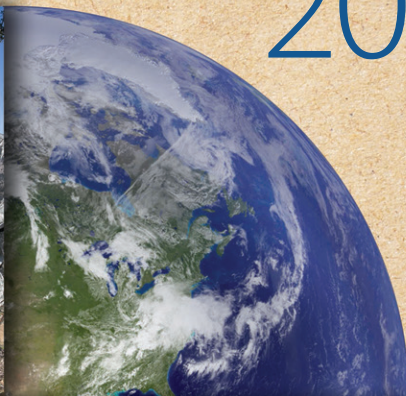
D I G E S T

Volume XXVII, No. 2
April/May/June
2015

ARMY EARTH DAY

2015

ACKNOWLEDGE
THE **PAST**



ENGAGE
THE
PRESENT



CHART
THE **FUTURE**

SUSTAIN THE MISSION. SECURE THE FUTURE.

Assistant Secretary of the Army, Installations, Energy & Environment
www.army.mil/asaiee

ARMY EARTH DAY
aec.army.mil/Outreach/PublicInitiatives/EarthDay.aspx



This Issue:
**Environment and
Sustainability**

Leader Commentaries	3
Secretary of the Army Awards	6
Environment and Sustainability	10
Technology and News	36
Professional Development	42



Public Works DIGEST

Volume XXVII, No. 2
APRIL/MAY/JUNE
2015



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

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

Gregg Chislett

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

Kathye Gerrity-Mililham

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 Aberdeen Providing Ground's "Bay-ACUB", by *Thomas Kuchar and Todd Beser*
- 4 Leadership Emphasis Helping USACE Make Gains in Vehicle Fleet Metrics, by *Belinda Taswell, Antonia Giardina, and Valerie Wimberly*



Secretary of the Army Awards

- 6 Pentagon Recognizes Army Environmental Program Success, by *Cathy Kropp*
- 6 2014 Secretary of the Army Energy and Water Management Awards, by *Paul Richardson*
- 8 Picatinny's CRP: Salvaging History in Rural New Jersey, by *Amanda Hilles*
- 9 Redstone Arsenal CRT gets Creative to Save Rich History Down South, by *Amanda Hilles*



Environment and Sustainability

- 10 Living Buildings - LEED Platinum on Steroids, by *Dr. Jim Hearn, Jeanette Fiess, and Ned Shepherd*
- 11 Work to Upgrade Letterkenny Army Depot Industrial Facilities Underway, by *Debra Valine and Jason Bray*
- 12 Federal Funding Breathes Life into Greens Bayou Flood Damage Reduction Project, by *Sandra Arnold and Kim Jackson*
- 13 Aberdeen Proving Ground Forestry ... On a Mission, by *Jessica Baylor*
- 14 Smokey Bear has Major Impact on Army Training, by *Bob Larimore and Stephen Hudson*
- 15 Renewable Energy Contract Celebrated at Fort Drum, by *Jim Miller*
- 17 Harvesting from Innovative, Collaborative Sustainable Strategies, by *Yamil E. Hernandez and Francisco J. Mendez*
- 18 Feed Dehydrators - an IMCOM Net Zero Initiative, by *Jillian Dunnam and Rich Morris*
- 19 Freshwater Mussels are Jewels of Fort Leonard Wood, by *Kenton Lohraff*
- 20 Hohenfels is Home to Endangered Bats, by *Ron Grantham*
- 21 Fort Carson Combines Hazardous Material, Waste Operations, by *Susan C. Galentine*
- 22 Environmental Cleanup Will Likely Take Decades on Redstone Arsenal, by *Clint Howard*
- 23 U.S. Army Corps of Engineers Maintains Arctic Air Base, by *JoAnne Castagna*
- 24 Army Reserve Expands Net Zero Energy, Water, Waste, by *Amy Solana*
- 25 Army Reserve Comprehensive Water Efficiency Assessments, by *Kate McMordie Stoughton and Jaime Kearney*
- 26 EMS Help Garrison with Natural Resources Management, Wetland Enhancement, by *Pak, I Kyong*
- 27 Virginia Guard Breaks Ground for New Solar Array, by *Capt. Andrew J. Czaplicki*
- 28 Project Preserves Historic Newspapers for Future Generations, by *Adriana Salas*
- 30 Calculating the True Cost of Water, by *Elisabeth Jenicek*
- 31 Site Cleanup Demonstrates Unique Technology, by *Kelly Larson*
- 32 History and Mystery Merge in Laredo Building, by *Margaret Magat*
- 33 Reclaiming Land Close to its Original Condition, by *Cheryl A. Moore*
- 34 West Point's Creative Approach to Low Impact Development, by *Matthew Talaber and Katherine Ogut*
- 35 The Army Reserve Approach to Energy and Sustainability, by *Steve Patarcity*



Technology and News

- 36 FedCenter Logs 10 Years of Support to Environmental Managers, by *Steve Luzzi*
- 37 Major Revision to Regulation Outlining Acquisition, Sales of Utilities Published, by *Bernard Givan*
- 38 Contracts Awarded for Facilities Reduction Work, by *Debra Valine*
- 39 13 Businesses Awarded Utility Monitoring and Control Systems Contracts, by *Julia Bobick*
- 40 IMCOM Implements Web-Based System to Manage Hazardous Materials, Waste, by *Rich Morris*
- 40 Need to Evaluate Historic Farmstead Sites? Here's Help, by *Susan Enscoe, Carey Baxter, George Calfas and Megan W. Tooker*
- 41 Development of IMCOM Environmental Funding Allocation Model, by *Rich Morris*



Professional Development

- 42 Sustainability: A Consideration in All We Do, by *Mary Jo Snavely and Steven Patarcity*





Aberdeen Providing Ground's "Bay-ACUB"

by Thomas Kuchar and Todd Beser

At the end of FY 14 Aberdeen Proving Ground (APG) secured over seven million dollars to continue support of its Army Compatible Use Buffer Program (ACUB). This will allow APG to build upon its success in establishing buffers of compatible use, adjacent to and ecologically adjacent to the Installation.

In 2007 APG partnered with Harford Land Trust (HLT) to purchase a conservation easement, from a willing landowner, on a farm adjacent to the Churchville Test Area (CTA). The farm and CTA lie alongside Deer Creek in northern Harford County and if the farm had been developed into a residential area, the testing ability of CTA would have been greatly diminished, if not vanished all together. DOD and the Army did not want to lose one of the premier test tracks in all of DOD and HLT did not want to see an increase in development on the banks of Deer Creek.

A partnership was formed under the ACUB and DOD Readiness and Environmental Protection Integration Program (REPI) and each side brought 50 percent of the necessary funds to the table. The easement was secured and CTA continues to serve as a premier test track for DOD and the Army.

In 2012 the APG ACUB program was renewed with an emphasis to protect the testing and training mission on APG proper and establish compatible use buffers on both the Western Shore and the Eastern Shore of the Chesapeake Bay.

While not unique to DOD installations on the Chesapeake Bay, bordering open water is rare across the country. This presents a unique set of challenges and opportunities. The open waters of the Chesapeake Bay keep incompatible uses from developing on

our eastern boundary, but they do not mitigate noise from the varying missions being completed on APG. Depending on conditions, the open water can enhance noise effects in certain areas of the Eastern Shore.

Noise and vibration can lead to noise complaints coming in from residents which can lead to restrictions on testing missions that need to be completed. This may create a situation in which missions are being completed in conditions that do not represent the actual condition the Warfighter is encountering. The goal of the ACUB program is to allow our Warfighters to test and train like they fight this further supports the notion that what we do on APG touches every Soldier on the battlefield, every day.

Reestablishing APG's ACUB program expanded APG's partnerships to include Eastern Shore Land Conservancy (ESLC) in order to complete work on the Eastern Shore, while renewing the partnership with HLT for work on the Western Shore. With these partnerships, APG can take advantage of local knowledge of two very different communities and economies. It also allows APG's partners to leverage funds from other local, state and Federal sources to stretch each and every dollar.

The Warfighters are not the only beneficiaries of this program; landowners, partners, communities, and the environment also benefit. Willing landowners can receive compensation and tax breaks, while keeping the ability to work their lands. Our partners further their mission of conserving land within their communities while securing a way of life consistent with their community's vision into the future.

Communities may receive additional open space and in certain cases additional opportunities for passive recreation. The

Acronyms and Abbreviations	
ACUB	Army Compatible Use Buffer Program
APG	Aberdeen Proving Ground
CTA	Churchville Test Area
DOD	Department of Defense
ESLC	Eastern Shore Land Conservancy
FY	Fiscal Year
HLT	Harford Land Trust
JLUS	Joint Land Use Study
REPI	Readiness and Environmental Protection Integration Program
RTDE	Research, Development, Test and Evaluation

environment receives numerous benefits from land conservation efforts. Habitat for threatened and endangered species is protected, riparian buffers and wetlands can be protected and in some cases can be restored. Forests, grasslands and streams can all be protected and continue to provide the ecosystem services needed to help sustain a healthy environment.

Land conservation is such an important measure, President Obama's Executive Order 13508, Chesapeake Bay Protection and Restoration, calls for an additional 2 million acres of land to be conserved within the Chesapeake Bay watershed by 2025. The strategy to achieve this goal specifically calls out the continued and expanded use of the REPI program in the Chesapeake Bay watershed.

APG is not the first Army Installation in the ACUB program, nor are we the first DOD installation to work on both sides of the Chesapeake Bay. Through FY 13, the Army alone has closed 460 transactions for a combined total of \$602 million with \$175 million in Army funds, \$134 million in DOD REPI funds and \$292 million in partner funds to protect 231,562 acres (2014 REPI Report to Congress). Combining the other services and partners, the total ➤



Leadership Emphasis Helping USACE Make Gains in Vehicle Fleet Metrics

by Belinda Taswell, Antonia Giardina, and Valerie Wimberly

As the U.S. Army Corps of Engineers continues to put emphasis on sustainability through increased use of energy savings performance contracts, sustainable acquisitions and decreasing greenhouse gas emissions, one area that has been receiving command-level attention has been reducing its non-tactical vehicle fleet and increasing the use of alternative fuels in those remaining vehicles. And it's starting to bear fruit, especially as more district and division commanders are taking ownership of their sustainability programs.

USACE districts have been working hard during the past several years to reduce the size of its vehicle fleet under the guidance of former Deputy Chief of Engineers Maj. Gen. Todd Semonite,

and the leadership of former USACE Fleet Manager, Eileen Grant, who beat the drum for getting underused vehicles off the district rolls and swapping out the remaining vehicles for those that use alternative fuel such as E-85.

Those advocating reducing the size of the fleet initially encountered resistance, mostly from those used to having vehicles at their disposal even though many were not being used on a regular basis. The biggest concern, though, was making sure that the district's mission would not be hindered or negatively impacted if the number of available vehicles was decreased.

It took command emphasis, good management, education and training and now, USACE can say that it is well on the way to meeting its target of reducing

Acronyms and Abbreviations	
Maj. Gen	Major General
NTV	Non-tactical Vehicle
USACE	U.S. Army Corps of Engineers

fleet petroleum use by 20 percent by the end of this year from 2005 levels. At the end of fiscal year 2014, the agency had reduced its usage by 19.3 percent, a heady percentage considering that as of the end of December 2011, the number stood at -14.3 percent.

But that is only part of the story. Just reducing the size of the fleet isn't enough. The big challenge comes not only in changing out the remaining vehicles to ones that use alternative fuels such as E-85, but making sure that the people driving those vehicles actually fill them up with E-85. ➤

(continued from previous page)

for the REPI program comes to \$891 million with 314,991 acres protected (2014 REPI Report to Congress). With the funding of APG's ACUB program, the Army has once again stepped up and shown its commitment to protecting and restoring the Chesapeake Bay.


With APG's evolving and complex RTDE mission, the ACUB Program is not APG's only weapon against incompatible uses around the installation. We are currently in the middle of a Joint Land Use Study (JLUS) with the surround communities. The JLUS is a well-known tool to bring communities around military installations to the table as partner in supporting the missions of those installations. In APG's case we are working with three surrounding counties and two municipalities on both sides

of the Chesapeake Bay. The diverse communities around the Chesapeake Bay, which make the Chesapeake an exceptional, inviting place to live and work, present unique opportunities in garnering mission support. The benefit of the JLUS is the specifically tailored recommendations which will allow APG to work with each community at the community level. There is no "one size fits all" answer that works in community relationships and the JLUS helps foster these relationships and communication at the community level. APG is looking forward to the recommendations borne from the JLUS and working with each community to implement those recommendations in order to sustain healthy, thriving communities and a world class Army testing installation.

The greatest asset to APG is its people. The Soldiers, civilians and contractors that work here every day are dedicated to providing the Army and DOD the best technologies, defense systems and weapons

systems needed to defend against today's global threats. The greatest natural asset to APG and its people is the Chesapeake Bay. The Chesapeake Bay provides a natural infrastructure upon which the Army has developed a world class research and test installation. The Bay provides recreational and educational opportunities and increases quality of life measures. The Army, DOD and the surrounding communities need to create a culture of sustainability in order to maintain a level of excellence, quality of life and to rehabilitate and enhance the Chesapeake Bay.

POC is Todd Beser, 410-436-0721, todd.m.beser.civ@mail.mil

Thomas Kuchar is the Director of Public Works at the U.S. Army Garrison Aberdeen Proving Ground, Maryland. Todd Beser is the ACUB Program Manager, Directorate of Public Works, Environmental Division, Aberdeen Proving Ground, Maryland. 



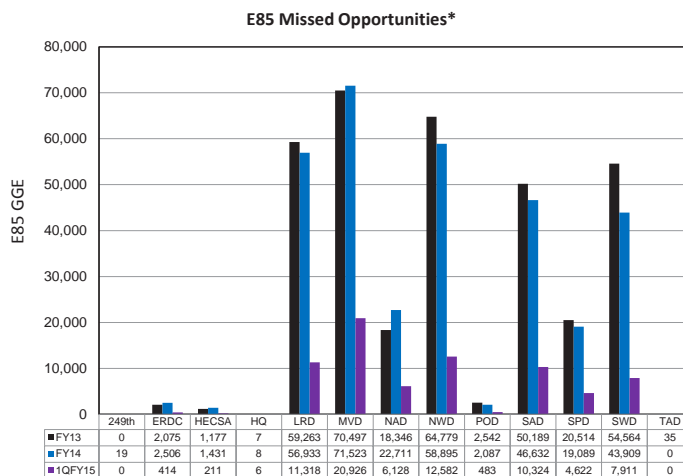
(continued from previous page)

In August, a message was sent to the field noting that the federal Office of Management and Budget is looking for 5 percent of our overall fuel use to be alternative fuel, and in fiscal year 2013, the agency stood at 0.6 percent. The way to ensure that the agency actually becomes green and stays green in meeting the non-tactical vehicle metric is to change the focus to increasing the use of alternative fuel. Additionally, Section 701 of the Energy Policy Act 2005 requires that all dual-fueled alternative fuel vehicles in the federal fleet be operated on alternative fuel 100 percent of the time when there is access to it.

This has led the agency to stress the need to reduce what's called "missed opportunities," in other words, times when an alternative fuel vehicle was fueled with conventional fuel when a station offering alternative fuel was available within five miles. It is also an area where additional work is definitely needed. In fiscal year 2014, Corps of Engineers drivers fueled alternative fuel vehicles with conventional fuel 126,655 times when alternative fuel (E-85) was available within five miles. If the agency reduced those "missed opportunities" to zero, USACE would have consumed 7.5 percent alternative fuel and not only met the fiscal year 2015 goal, but surpassed it to achieve the fiscal year 2017 non-tactical vehicle petroleum reduction target of 24 percent three years earlier!

The agency's Great Lakes and Ohio Rivers Division has led USACE in increasing its alternative fuel consumption to 6.3 percent by heavily promoting not only the use of alternative fueled vehicles, but by providing maps

MSC Updates on NTV Alternative Fuel



If there were no missed opportunities in FY14, USACE would have:

- Consumed 7.5% alternative fuel (target = 5%)

AND

- Exceeded its FY17 NTV petroleum reduction target (24%).

*When an alternative fuel vehicle is fueled with conventional fuel while an alternative fueling station was within 5 miles.

of alternative fuel stations inside vehicle log books and also by having deputy district commanders having to explain to the deputy division commander when opportunities were missed.

At the headquarters level, the emphasis has been on education – sharing tools that can help drivers in the field, such as the Department of Energy's Alternative Fueling Station Locator (www.afd.energy.gov/locator/stations/) to help reduce missed opportunities and increase alternative fuel consumption – and command emphasis.

There also is an increased focus on exploring the purchase and use of electric vehicles especially in those areas where other federal agencies are purchasing and using electric vehicles and where charging stations can be shared, normally in urban areas. Another initiative is the acquisition and use of more compressed natural gas-fueled vehicles, such as one being used by the agency's Chicago

District.

All told, decreasing the size of the non-tactical fleet and increasing the use of alternative fuels are paying dividends for USACE, and not just in the area of reducing greenhouse gas emissions. Real dollars are being saved, money that can be used by the districts for the operation and maintenance of their facilities. It has been a bit of a culture change, but it is taking root and that is helping to further along USACE on its journey toward sustainability.

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

Belinda Taswell is the Deputy Director of Logistics at headquarters, U.S. Army Corps of Engineers; Antonia Giardina is the U.S. Army Corps of Engineers Sustainability Program Manager; and, Valerie Wimberly is a Logistics Management Specialist (Transportation) at headquarters, U.S. Army Corps of Engineers.





Pentagon Recognizes Army Environmental Program Successes

by Cathy Kropp

Army announced the winners of the Secretary of the Army Environmental Awards in January.

These installation and organizations were recognized for their streamlined compliance with historic projects, creative approaches to eliminate or reduce land-use constraints, and development of environmentally friendly replacement chemicals and improved designs for handheld fire extinguishers in Army rotary wing aircraft. They also include exemplary environmental management systems and compliance assurance programs, decreased costs and innovative treatment process for an environmental restoration project, reduced conflicts

between conservation and training goals via the Army Compatible Use Buffer program, reduced energy usage, and increased and improved recycling programs.

The winners of the FY 2014 Secretary of the Army Environmental Awards are:

Natural Resource Conservation (Large Installation category) - Camp Blanding, Florida Army National Guard.

Cultural Resource Management (Small Installation category) - Picatinny Arsenal, New Jersey

Environmental Quality (Industrial category) - Missouri Army National Guard

Sustainability (Non-industrial category) Fort Indiantown Gap, Pennsylvania Army National Guard.

Environmental Restoration (Northeast Cape FUDS Team, U.S. Army Corps of Engineers, Alaska

Cultural Resource Management


(Team or Individual category) - Redstone Arsenal, Alabama

Sustainability (Team or Individual category) - Minnesota Army National Guard

Environmental Excellence in Weapons System Acquisition (Small Program category) - Redstone Arsenal Aviation Weapon Systems IPT

These winners will go on to represent the Army in the Secretary of Defense Environmental Awards Program later this year.

POC for the U.S. Army Environmental Awards is Cathy Kropp, 210-466-1590, Cathryn.L.Kropp.civ@mail.mil

Cathy Kropp is an Environmental Public Affairs Specialist with the Installation Management Command /Army Environmental Command, Fort Sam Houston, TX 78234-7664 

2014 Secretary of the Army Energy and Water Management Awards

by Paul Richardson

Award recipients and command representatives from eight Army installations traveled to Washington, D.C. for the annual Secretary of the Army Energy and Water Management Awards ceremony held at the Pentagon on October 29, 2014.

The Honorable Katherine Hammack, assistant secretary of the Army for Installations, Energy and Environment, assisted by Mr. Richard Kidd, deputy assistant secretary of the Army for Energy and Sustainability, and Lt. Gen. David Halverson, assistant chief of staff for Installation Management, presented

the awards, which included certificates signed by the Secretary of the Army and plaques inscribed with the names of winning team members or individuals.

The awards were presented on behalf of the Secretary of the Army, based on outstanding accomplishments in energy and water management realized during the previous year.

“Today we celebrate excellence in Energy and Water Management on our installations. We are very proud to present some of our heroes who have embraced the principles of Net Zero

and are leading their installations to increased resiliency with energy and water security,” said Hon. Katherine Hammack.

Hon. Hammack issued a challenge saying, “I challenge all the installations and commands not represented here today to refocus their efforts, reach out to their communities and leaders, and use all the tools, skills and enthusiasm I know are such an integral part of the installation management community to ensure that next year they are here and we can celebrate their excellence and innovation. In that way, we will truly ➤



2014 Award Recipients

Small Group

Fort Hood, Texas – Energy Efficiency / Energy Management (Mr. Bobby Lynn, Ms. Africa Welch-Castle, Mr. Edwin Frazier and Mr. Huey Keaton)

Picatinny Arsenal, New Jersey – Energy Efficiency / Energy Management (Mr. Gary Pacella, Mr. James Douglas and Ms. Grisel Robles)

White Sands Missile Range, New Mexico – Renewable / Alternatives (Mr.

Craig Collins, Ms. Irene Beck, Mr. George Dill and Mr. Jose Gallegos)

US Army Engineering and Support Center, Huntsville, AL – Renewable / Alternatives (Mr. Lawrence Michael Norton, Mr. William Irby, Mr. Robert Mackey, Mr. Wesley Malone, Ms. Lisa Harris, Mr. Jason Bray, Mr. Earl Johnson, Ms. Barbara Osterkamp, Mr. Bruce Forsberg, Mr. Andy Long and Ms. Margaret Simmons)

Installation

Presidio of Monterey, California – Energy Efficiency / Energy Management (Mr. Jay

Tulley)

Fort Stewart, Georgia – Energy Efficiency / Energy Management (Mr. Robert Baumgardt, Mr. William Ingram and Mr. Fred Pierre-Louis)

Fort Carson, Colorado – Water Conservation (Mr. Vince Guthrie, Mr. James Casey, Mr. Don Phillips, Mr. James Kulbeth and Mr. Scott Clark)

Individual

Fort Hunter Liggett, California – Energy Efficiency / Energy Management (Mr. Todd Dirmeyer)


develop installations that are Net Zero, resilient and mission ready.”

Details on the award winners’ accomplishments and information on how to participate in the 2015 program may be found at the Army energy web site:

<http://army-energy.hqda.pentagon.mil/awards/secarmy.asp> or in the annual awards guidance memorandum sent to Army land holding commands in early fiscal year 15. The next awards ceremony

is being planned for mid-August 2015 following the Energy Efficiency Exchange event being held in the Phoenix Convention Center in Phoenix, Arizona.

POC is Paul Richardson, 571-256-9763, paul.t.richardson.civ@mail.mil

Paul Richardson is a staff action officer assigned to Energy and Utilities Branch, Facilities Policy Division, Office of the Assistant Chief of Staff for Installation Management. 

Acronyms and Abbreviations

D.C.	District of Columbia
Hon.	Honorable
Lt. Gen.	Lieutenant General
U.S.	United States

Call for ARTICLES

The
July/August/September 2015
issue of the
Public Works Digest
will feature

Operations, Maintenance and Engineering

Deadline is June 5, 2015

Submit articles to
editor.pwdigest@usace.army.mil
202-761-0022



Award Recipients



Picatinny's CRP: Salvaging History in Rural New Jersey

by Amanda Hilles

Nestled in the northern Highlands of Morris County, New Jersey, a goldmine of historic artifacts needed rescue. But because of its location within the 5,853-acre U.S. Army Garrison Picatinny (USAG Picatinny), documenting the gems would need to balance the military's mission with the historic preservation of the cultural resources. Picatinny's Cultural Resources Program (CRP) stepped in and their efforts garnered them a Secretary of the Army Environmental Award in the Cultural Resources, Small Installation category.

The installation's roots date back to the end of the Civil War, when it provided storage space for large quantities of powder and explosives. Since then, its various tenants and missions point to our military's advancement of weapons systems and munitions.

Leading the CRP is Mr. Jason J. Huggan, a registered professional archaeologist who has worked at Picatinny since 2007. So far, 83 properties across five historic districts have been deemed eligible for the NRHP. Among Picatinny's archaeological sites are 22 of Native American origin evidenced as rock shelters, campsites and lithic scatters. Another 32 are historic in nature, ranging from 18th century iron forge

remains, colonial farmsteads and homesteads, 19th century mining sites, as well as stonewalls and associated land tracts.

Functionality of installation's historic properties is critical to the mission's research and development focus. The CRP works extensively with mission tenants to perform adaptive reuse of facilities recognized as historic properties. For example, the CRP established color standards on structures located within the 600 Ordnance Testing Area Historic District. One such structure was recently reactivated for storage and reuse with appropriate colors and materials that met State Historic Preservation Office standards.

One reason for Picatinny's success was thoughtful preplanning. The installation's Historic Property Component Plan covers expected outcomes for 2013 through 2018, while the Integrated Cultural Resources Management Plan covers 2014 through 2019. These and other documents, including a master planning oriented programmatic agreement, ensure streamlined cultural resource management remains in place for the future.

Many stakeholders were involved throughout the process, and the CRP provides them with project-by-project and biennial updates of master planning projects allowing for transparency of the Arsenal's Section 106 compliance.

Picatinny successfully executed several mitigation projects, including establishing historic district viewsheds and signage, salvaging bricks from historic buildings for reuse as part of Picatinny's Pollution Prevention Plan, and coordinating a traveling museum exhibit.

Their most recognized project is the creation of a historic district narrative website which includes historical accounts of structures, professional photographic documentation and original building plans. Audio clips

Acronyms and Abbreviations	
CRP	Cultural Resources Program
NRHP	National Register of Historic Places
USAG Picatinny	U.S. Army Garrison Picatinny


from interviews with current and former employees provide accounts adding to the already rich and historically relevant content. The site is a digital inventory of all historic district structures and documents those slated for demolition. Compared to the conventional method of such documentation, the website saved over \$250,000 and helped eliminate ongoing safety issues at abandoned facilities earlier than anticipated. The site earned Picatinny a 2013 New Jersey State Historic Preservation Award.

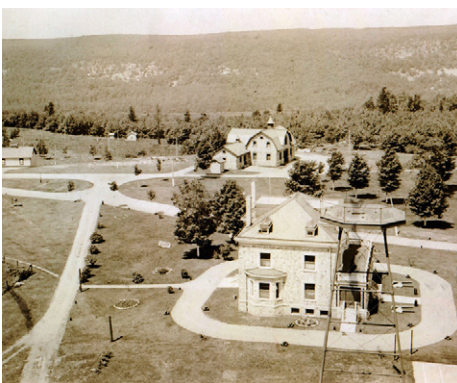
In addition to the website, public outreach efforts include tours of the Arsenal, Walton Burial Ground and artifact curation room for the Picatinny workforce and new employees, as well as public and local organizations. On Memorial Day, events honor Revolutionary War soldiers laid to rest at the Walton Burial Ground.

The Arsenal's CRP is also responsible for managing the Revolutionary era Walton Burial Ground located on post. During 2012 and 2013, the CRP photographed each gravestone in the cemetery and is now trying to ascertain the identity of the 100-150 souls buried there.

The CRP's focus for the coming years includes additional historic building surveys, archaeological evaluation of sites at risk by future development, ongoing documentation of cultural resources and continued identification of Walton Burial Ground occupants.

The CRP's future also includes competing in the Secretary of Defense Environmental Awards later this year.

Amanda Hilles is a contracted writer for U.S. Army Environmental Command. 



Pre-1918 view of Buildings 3250 and 3316 located at the former Lake Denmark Naval Ammunition Depot, Picatinny Arsenal. (Photo courtesy of the National Archives)



Redstone Arsenal CRT gets Creative to Save Rich History Down South

by Amanda Hilles

Covering 38,125 acres, the Redstone Arsenal (RSA) in Alabama is a research and development installation with a rich and robust cultural history. Prior to Army acquisition in 1941, the area included rural communities of yeoman, tenant, and sharecropper farms centered around large plantations. Approximately 550 families were displaced when the Army purchased the land before World War II. The RSA went on to contribute to the U.S. space program in the 1960s.

To document, preserve and share this rich history, Redstone's Cultural Resources Team (CRT) supplemented appropriate funds with grants and volunteer efforts by establishing cooperative programs with partners outside the gates and generating community interest.

"Public involvement with cultural preservation efforts is a fundamental aspect of the success of the Cultural Resources Team," said Redstone Garrison Commander Col. Bill Marks. "By raising

awareness of the importance of these sites, we can generate participation from people within the community to help preserve our past for future generations."

The CRT was so successful at meeting RSA goals that their efforts won a Secretary of the Army Environmental Award in the Cultural Resources Management Team category, and they will later compete in the Secretary of Defense Environmental Awards competition.

How did the CRT accomplish so much? The team developed an Integrated Cultural Resources Management Plan (ICRMP) in 2013. One way the team mitigated research costs was by relying on innovative historic imagery, LiDAR data and predictive modeling to re-delineate recorded archeological sites and conduct targeted re-surveys of areas presenting conspicuous gaps in site density, dramatically reducing inadvertent discoveries. The CRT conducted rescue excavations on six historic sites that were eroding along the Tennessee River bank along the southern boundary of RSA. Most work was performed in-house, resulting in cost savings.

The RSA also partnered with the Alabama State Historic Preservation Office to preserve structures on post eligible for listing on the National Register of Historic Places (NRHP). Restorations and repairs (within NRHP standards) of historic buildings rely on Legacy Funds, so there was minimal cost to the Garrison. Certain historical structures placed on the demolition list are first scoured for historically salvageable materials, and descendants of original owners are invited for a final viewing before the demolition. Grants awarded to the CRT include \$1,886 from Legacy National Public Lands Day and a \$500 research grant from the Alabama Archaeological Society.

Oral archival history represents the bulk of significant information from rural historical sites. The proposal to reevaluate 142 historic sites that date from the late 19th to early 20th for NRHP eligibility could save the Army nearly \$6,390,000 on archaeological evaluations. Volunteer

Acronyms and Abbreviations	
Col	Colonel
CRT	Cultural Resources Team
ICRMP	Integrated Cultural Resources Management Plan
NRHP	National Register of Historic Places
RSA	Redstone Arsenal

labor provided by students, professors, service members, civilian volunteers, unpaid interns and the CRT could save \$30,000-\$50,000 annually.

The ICRMP opens another historical chapter for the area, as it includes prehistoric context and environmental descriptions, including paleontological resources. The RSA works closely with 16 federally recognized Native American tribes and completed inventories of all cultural and potentially cultural items of relevance within the RSA collection. In 2013, the CRT completed an inventory of human remains collected since 1990; it included an extensive examination of unanalyzed bone from earlier projects. Repatriation and reburial occurred October 29, 2014.

To generate public interest in the archaeological resources, the CRT worked with the Archaeological Institute of America to develop community education events on International Archaeological Day. The 2013 event attracted 50 participants but swelled to over 300 attendees in 2014. Other outreach and education efforts include geocache field trips, college credit and unpaid internships, online outreach, public library exhibits, improved public access, and outreach to descendants of minority populations displaced by Army acquisition of the land.

RSA's Cultural Resources division includes 971 archaeological sites, 1,434 individual historical architectural structures, 715 structures from the World War II era and 717 from the Cold War era.

Amanda Hilles is a contracted writer for U.S. Army Environmental Command. 



A prehistoric shell pit lies exposed in the Tennessee River bank prior to rescue excavation by Redstone Arsenal Cultural Resources staff. (Hoksbergen, Redstone Arsenal Cultural Resources Program)



Living Buildings - LEED Platinum on Steroids

by Dr. Jim Hearn, Jeanette Fiess, and Ned Shepherd

Teams composed of USACE Districts, contractors, and Army Installations are successfully developing and improving delivery of High Performance Sustainable Buildings (HPSB). These buildings often achieve Gold and Platinum Leadership in Energy & Environment Design (LEED) ratings even though Corps contracts only require a Silver rating and the Government does not pay extra for the higher rating. When LEED Platinum is achieved on a facility, we thought it to be the apex of successful sustainable construction. As if LEED Platinum weren't success enough, picture LEED Platinum on steroids! During a meeting between Mr. Richard Kidd, DASA (E&S), and Mr. Jason McLennan (visionary and founder of the Living Building Challenge [LBC] and International Living Future Institute [ILFI]), they began to envision what it

might look like for the Army to pursue Living Building concepts in our projects. Given the geographic proximity of the Northwestern Division (NWD) and Bullitt Center offices, Mr. Kidd encouraged NWD to explore what might be possible in terms of prudent investment and innovative design.

Mr. McLennan founded the Living Building Challenge in 2006 after working with the LEED rating tool for many years as a principal architect at the firm BNIM. The LBC challenges design and construction teams, "to move beyond merely being less bad and to become truly regenerative," that is, construct a building that produces more than it uses, treats more than it is responsible for, and uses waste that is already in the waste stream. The LBC calls on citizens to, "reconcile the built environment with the natural environment, into a civilization that

Acronyms and Abbreviations	
HPSB	High Performance Sustainable Buildings
LEED	Leadership in Energy & Environmental Design
DASA E&S	Deputy Assistant Secretary of the Army, Installations Energy & Environment, Energy & Sustainability
LBC	Living Building Challenge
ILFI	International Living Future Institute
NWD	Northwestern Division
USACE	U.S. Army Corps of Engineers
RPMP	Real Property Master Plan
RPPB	Real Property Planning Board

creates greater biodiversity, resilience, and opportunities for life with each adaptation and development."

Unlike the LEED rating tool, which is composed of prerequisites that all projects must comply with and credits that teams can choose to pursue, the LBC sets every requirement as a prerequisite. The LBC identifies 20 "Imperatives" in the categories of place, water, energy, health and happiness, materials, equity, and beauty. On arriving at the Bullitt Center (IFLI headquarters), you will notice the photovoltaic panels installed on the roof and overhanging beyond the building footprint and the concrete ping pong table installed in the small courtyard. Other than these features, the building looks relatively standard from the outside to a casual observer. Not only do the solar panels meet the building's annualized energy needs, they add energy to the electrical grid. The building's entire sewage waste is composted in the building's basement. All water is collected and recycled for irrigation. The triple paned windows are operated automatically as part of the building's heating and cooling system, have a unique opening mechanism that ensures window seals have a longer life but still allow occupant manual control. All materials used in the project were reviewed against the extensive LBC "Red List" of chemicals not permitted in



General view of Bullitt Center looking from across East Pike Street - Note roof profile extending over sidewalk to allow an increased number of photovoltaic panels to be installed on the roof.



Work to Upgrade Letterkenny Army Depot Industrial Facilities Underway

by Debra Valine and Jason Bray

Work is underway at Letterkenny Army Depot that will modernize depot infrastructure, cut energy use by approximately 28 percent, reduce water usage by nearly 50 percent, and generate at least \$4.1 million in annual energy and operational savings.

The \$43.6 million Energy Savings Performance Contracting (ESPC) project



Letterkenny Army Depot painters prepare to de-mask a freshly painted ground mobility vehicle inside a paint booth similar to the booths being upgraded as part of a \$43 million project to make improvements to the infrastructure on the depot. (Letterkenny Army Depot)

at the Pennsylvania depot was awarded by the U.S. Army Corps of Engineers, Engineering and Support Center, Huntsville, to Honeywell in August 2014. Work started in December 2014 and is expected to be complete by the end of 2016.

The project is expected to save the Army Materiel Command depot nearly 14.8 million kilowatt-hours of electricity each year – enough energy to power more than 1,360 homes on average, and an environmental benefit of cutting an estimated 72 million pounds of carbon dioxide each year, which is equivalent to removing more than 6,300 cars from the road.

An ESPC leverages third-party financing to make comprehensive energy and water efficiency improvements on facilities or implements new renewable energy capabilities at no upfront cost to the garrison. During the 23-year term of the contract, a portion of the contractor-guaranteed savings will pay for the project.

“These improvements will allow the

Acronyms and Abbreviations

ESPC	Energy Savings Performance Contracting
------	--

depot to meet and exceed current energy requirements in Executive Order 13423, “Strengthening Federal Environmental, Energy and Transportation Management,” signed by President Bush January 24, 2007,” said Rodney Gettig, Letterkenny’s director of public works. The Executive Order established energy reduction goals of 30 percent energy and 15 percent water reduction by the end of 2015.

“Construction will take about two years,” Gettig said. “Several things will be going on simultaneously. Lighting projects started the first week of February. Some projects cannot be started until warmer weather.”

When finished, the improvements will not only save on energy and water consumption, but also help provide continuous support to warfighters. “Obviously the more efficient operations can be the more output Letterkenny achieves,” said Jason Bray, Huntsville

(continued from previous page)

Living Buildings or their components. The list of sustainability features in this facility goes on and on. In addition to all these sustainability features, the building is attractive!

Another contrast with the LEED certification process, LBC projects must operate for a minimum of 12 consecutive months prior to evaluation of many of the Imperatives. Alternatively, LEED projects are allowed to submit once the project has achieved substantial completion. By waiting 12 months, the LBC ensures buildings are operating to meet the identified Imperatives. The Bullitt Center may be unique, but it is not alone. Currently, over 250 buildings

are certified or being certified around the world.

What does this mean for the Army and our projects? How can the LBC process help us make our facilities more resilient, use less energy, and provide better & more productive living and working space for our Soldiers, civilians, and families? Those questions are exactly what the Corps team is continuing to explore with Mr. McLennan, his team and our partners at Joint Base Lewis–McChord. From hosting training sessions to conducting building financial analyses regarding LBC implementation or even working on a pilot living building project, there are many ways to work together building or renovating healthier and more sustainable Army facilities for our great Soldiers, civilians, and family members.

All quotes taken from the Living Building Challenge 3.0 document, found here: http://living-future.org/sites/default/files/reports/FINAL%20LBC%203_0_WebOptimized_low.pdf

POCs are Dr. Jim Hearn, 503-808-3820, James.j.hearn@usace.army.mil; Jeanette Fiess, 206-764-3655, Jeanette.m.fiess@usace.army.mil; and, Ned Shepherd, 309-912-3103, Ned.A.Shepherd@usace.army.mil.

Dr. Jim Hearn, is the director of Regional Business with the Northwestern Division of the U.S. Army Corps of Engineers. Jeanette Fiess is the sustainability and energy program manager with the Northwestern Division of the U.S. Army Corps of Engineers. Ned Shepherd is the energy and sustainability division engineer with the Northwestern Division of the U.S. Army Corps of Engineers.



Federal Funding Breathes Life into Greens Bayou Flood Damage Reduction Project

by Sandra Arnold and Kim Jackson

The U.S. Army Corps of Engineers Galveston District and Harris County Flood Control District will start work on the Greens Bayou Flood Damage Reduction Project in north Harris County this year due to \$8 million in start-up funding allocated in the federal fiscal year 2015 budget for the Corps' Civil Works program.

"The Greens Bayou Flood Damage Reduction Project includes approximately 3.7 miles of channel conveyance improvements from Cutten Road to Veterans Memorial Drive and approximately



Work will start on the Greens Bayou Flood Damage Reduction Project this year.

108 acres of stormwater detention storage," said Shakhar Misir, USACE Galveston District project manager for the Greens Bayou project.

The Corps is the lead agency on the \$55 million Greens Bayou project and expects to start construction later this year on the first phase of excavation of the stormwater detention basin adjacent to Greens Bayou near Antoine Road and the Sam Houston Tollway. West Greens Drive bisects the basin, dividing it into two parts, but it will function as a single flood damage reduction feature. Stormwater detention basins help to reduce flooding damages by safely storing excess stormwater during heavy rain events and slowly releasing it back into the bayou as water levels recede.

Misir said the Corps is preparing to enter into a Project Partnership Agreement with the Flood Control District for the estimated four- to five-year project construction period. That estimated schedule is contingent on funding by both the federal government and the HCFCD.

Under a Project Partnership Agreement,

Acronyms and Abbreviations	
HCFCD	Harris County Flood Control District
USACE	U.S. Army Corps of Engineers

the district will manage, design and build the project; and after construction is completed, will plant grass on disturbed areas of the bottom and sides of the channel and native trees where appropriate along the bayou's banks and on earthen benches constructed in the channel. Trees and grasses will be planted in and around the basin, with wetland plants placed in low areas as part of the landscaping. These features will create wildlife, water quality and recreation opportunity benefits. The HCFCD will buy land, easements and rights-of-way; relocate utilities and then operate and maintain the project after construction. The cost share will be approximately 75 percent federal and 25 percent local.

HCFCD Executive Director Michael D. Talbott said this project is a prime example of what happens when the Corps and flood control district partner to reduce

(continued from previous page)

Center's project manager. Letterkenny refurbishes military vehicles and electronic guidance systems used by Armed Forces around the world.

"Our reduction in energy use makes us a better deal for the tax payer long term in terms of saving money for services required by our nation's military," Gettig said.

"This project does not currently include any renewable energy measures; however, the depot just recently installed solar panels on three of our main production buildings to offset heating requirements, and has undertaken studies for the use of wind power, heat pumps and methane gas, however no decisions have been made on those projects," Gettig said.

According to Bray, this is the second Army ESPC project to incorporate industrial process savings.

"Industrial process is making the process more efficient. At Letterkenny, the blast booth was causing delays because the depot had to subcontract this operation out, which meant sending the parts outside the depot and waiting for them to come back before work could be finished," Bray said. "The upgraded blast booth will remove that step from the process."

The first industrial process project awarded was Rock Island Arsenal, Illinois. The \$61 million infrastructure modernization project at the Rock Island Arsenal Joint Manufacturing and Technology Center kicked off with a groundbreaking ceremony March 19, 2014. The project will support critical infrastructure improvements at the industrial

facility that will cut energy use by approximately 35 percent and generate up to \$5.3 million in annual energy and operational savings. The three-phase project is expected to be complete by May 2017.

The Huntsville Center is the Corps of Engineers' Center of Expertise for ESPC and manages 85 to 90 percent of the Army's ESPC portfolio.

POC is Jason Bray, 256-895-1514; Email Jason.a.bray@usace.army.mil

Jason Bray is a project manager in the Energy Division, Installation Support and Programs Management Directorate, U.S. Army Engineering and Support Center, Huntsville. Debra Valine is the chief of Public Affairs, U.S. Army Engineering and Support Center, Huntsville.



Aberdeen Proving Ground Forestry ... On a Mission

by Jessica Baylor

There are many challenges to forest management at Aberdeen Proving Ground, Maryland; the biggest challenge is short-term thinking versus a 50-year management plan.

APG, when built in 1917 on the shores of the Maryland's Chesapeake Bay provided the nation with a site for testing Army materiel. At the same time, the Edgewood Arsenal was established to provide a site for the development, production and testing of chemical warfare materiel. The two were officially joined as Aberdeen Proving Ground in 1971. Today, the more than



Tree planting along the bay.

72,500-acre installation houses facilities to perform cutting edge research, development, testing and evaluation of Army materiel and is home to firing ranges, engineering test courses for wheeled and tracked vehicles, two airfields and nearly 300 miles of road. In addition to its 18,000 acres of forestland, APG's natural resources include more than 36,000 acres of water or wetlands and an average of 50 active bald eagle nests each year. According to APG records, from 1932 to 1963 forest cover at the installation increased at a rate of more than 146 acres a year. From 1992 to 2011, that rate grew to 225 acres per year.

The forestry mission at APG is to create and sustain military testing and training landscape and important priorities of the APG forestry program that include sustaining the bald eagle habitat and native oak dominated forests. APG's goals of enhancing biodiversity, forest health, water quality and wildlife habitat, and maximizing the production of forest products and ecosystem services all while simultaneously

Acronyms and Abbreviations	
APG	Aberdeen Proving Ground
CZMA	Coastal Zone Management Act
INRMP	Integrated Natural Resources Management Plan

sustaining a military mission testing and training landscape, are guided by a 50-year Forest Management Plan, which is a component of the installation's Integrated Natural Resources Management Plan.

Although the bald eagle is no longer on the list of threatened and endangered species, it is still protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act, both of which prohibit killing, selling and harming eagles, their nests or eggs. In the late 1970s to early 1980s, there was one nesting pair on the installation. Today, on average, there are more than 50 active nests each nesting season. APG is losing shoreline (potential nest) trees at an alarming rate.

APG foresters request funding for ➤

(continued from previous page)

flooding risks.

"The Greens Bayou Flood Damage Reduction Project will bring much needed relief for nearby homes and businesses that have suffered flooding," said Talbott. "The district's strong partnership with the Corps allows us to leverage local tax dollars to achieve significant results."

Talbott thanked the Office of the Assistant Secretary of the Army for Civil Works for recognizing the need and for this important project, and for its commitment to the Harris County region. He said the HCFCD would continue to work with its governing body, Harris County Commissioners Court, to allocate local funding needed to keep the project moving.

Supportive efforts by the Greens Bayou Corridor Coalition, which was formed

out of a need to reduce flooding impacts in the 212-square-mile Greens Bayou watershed, played an important role in the Greens Bayou Flood Damage Reduction Project moving forward. In 2009, the Greens Bayou Corridor Coalition launched a strategic advocacy effort to help secure federal funding for the federal project.

"The approval of funding for the federal project is the culmination of many years of hard work," said Mike Castro, chair of the Greens Bayou Corridor Coalition's Public Policy Committee and a coalition board member. "The project demonstrates what can be accomplished when community volunteers, government stakeholders and concerned citizens focus their combined efforts on a worthy endeavor. The project will have a demonstrable positive impact on the quality of life for residents who live within the Greens Bayou watershed."

Since 1986, the HCFCD has acquired several regional stormwater detention basin

sites in the Greens Bayou watershed, totaling 2,200 acres. To date, one basin has been completed and excavation has started on several others. The HCFCD will complete two more basins in the next few years with matching grant funding from the Federal Emergency Management Agency. The first is being excavated on Greens Bayou near Kuykendahl Road and Ella Boulevard and the second on a section of the bayou located just east of Interstate 45 and north of Greens Road.

POCs are Sandy Arnold, 409-766-3005, Sandra.Arnold@usace.army.mil and Kim Jackson at Kimberlye.Jackson@hcfcd.org

Sandy Arnold is the chief, Public Affairs U.S. Army Corps of Engineers Galveston District. Kim Jackson is the Harris County Flood Control District Communications Department Manager with the Harris County Flood Control District.



Smokey Bear has Major Impact on Army Training

by Bob Larimore and Stephen Hudson

In 1944 when Smokey Bear was launched as an advertising mascot to educate the U.S. public about the dangers of forest fires, no one would ever have dreamed



Smokey Bear

the initiative would have so much impact. What was intended to be a positive effort to protect America's citizens from wildfires has turned out to be a devastating blow to American ecosystems and has negatively impacted the Army mission.

The public's anxiety and concern regarding fire has resulted in fewer fires, but that has led to the inevitable catastrophic fire that causes major impacts from smoke and asset loss and can interrupt military training. Although military training activities generate wildfires (from incendiary devices) on a regular basis, the continued historic suppression of these fires has not allowed forests and rangelands to burn on a regular, natural interval. Fuel loads continue to build up and leave conditions favorable for the next ignition source to set off a wildfire. As a result, the Army pays annual claims to compensate for wildfire suppression costs, property damage and smoke impacts. During the past three years, claims have totaled more than \$30 million and that may seem bad, but the greatest impact is to military training. When Soldiers start wildfires, they are required to stop training, secure the area, protect assets

Acronyms and Abbreviations	
DPTMS	Directorate of Plans, Training, Mobilization and Security
FY	Fiscal Year
IMCOM	Installation Management Command
U.S.	United States

and call for suppression assistance. Training delays can take from several minutes to hours, or in extreme cases, days. When training resumes, conditions are still primed for ignition of another wildfire, and the process starts over.

Very little is known about how much training time is actually lost to wildfires at Installation Management Command (IMCOM) installations, but range managers would say it is significant. Data collected at Fort Sill, Oklahoma, supports that claim in that 10,262 recorded training man hours were lost in FY13 during a below average wildfire year. Not every IMCOM-managed installation is comparable to Fort Sill, and it may or may not represent the IMCOM average. But if it does, expanding this average to IMCOM's many installations with Soldiers, acres and wildfires, the

(continued from previous page)

restoration of oak forests initiatives each year in order to execute projects found within APG's Forest Management Plan. Challenges to natural regeneration of oaks include intense deer pressure and thick invasive species to include microstegium and Japanese barberry. APG is home to 14 species of native oaks. It is important to restore and sustain these oak dominated forests so bald eagles have adequate habitat in 50 years and to sustain the overall health of the Chesapeake Bay through the many ecosystem services that forests provide.

Thick paw-paw and invasive species, such as microstegium, covering the forest floor do not allow for natural regeneration. Because APG is losing a lot of its larger oaks, the intent is to open it up, focus on the seed source and jump start natural

regeneration. APG foresters have been creating canopy gaps within forest stands so when APG is required to plant trees for mitigation, interplanting of oaks can occur in these forest stands thereby increasing the natural regeneration occurring in the forest.

APG foresters may not have to resort to interplanting solely to jump start regeneration. Due to a Memorandum of Agreement executed between APG, the Maryland Department of Natural Resources Forest Service and the Maryland Critical Area Commission, interplantings qualify as mitigation, aiding APG's efforts to comply with the Coastal Zone Management Act, one of the many federal laws to comply with at APG.

At the same time APG's foresters are working to restore oaks, they're also trying to control sweetgum. An early successional species, the tree often encroaches on

the installation's firing and testing ranges. APG houses many monoculture sweetgum stands that are even-aged. The preference is for more uneven-aged, sustainable stands.

The APG foresters must think in 50-year increments for sustainable forest management, and the testing and training mission must respond to in-theater needs that are constantly changing, sometimes on a daily basis. The challenge is working together to find a solution where both mission and healthy forest management occur simultaneously.

POC is Jessica Baylor, 410-436-7198, Jessica.M.Baylor.civ@mail.mil

Jessica Baylor is an environmental protection specialist in the Directorate of Public Works Environmental Division, Natural Resources Program.



Renewable Energy Contract Celebrated at Fort Drum

by Jim Miller

Fort Drum, New York and Re-Energy Black River LLC (ReEnergy) celebrated the signing of a renewable energy contract in a ceremony October 30, 2014, at Fort Drum. Under the terms of this contract known as a Power Purchase Agreement (PPA), Fort Drum will purchase all of its electricity for the next 20 years from ReEnergy's Black River power plant located in Fort Drum's cantonment area. The 20-year contract is the largest of its kind in the Army to date, with Fort Drum becoming the first Army installation to receive 100 percent of its electricity from a renewable energy source. The PPA is a formal contract between the Army and the private sector to provide renewable energy. There is also some public/private partnership at work in facilitating this project.

The Black River power plant historically burned coal and was recently acquired and retrofitted by ReEnergy to burn biomass (wood chips), a locally produced and

renewable energy source. Excess power produced by the plant beyond what is consumed by Fort Drum is sold into the regional power grid helping the local community by alleviating strain on the power grid. Because the power plant is securely located within the installation boundary and produces electricity from a locally derived fuel source, the contract is of landmark significance in that it provides an unprecedented level of energy security. Fort Drum's national defense missions have now become less vulnerable to power interruptions and upsets, such as disruptions that are possible during natural disasters like Super Storm Sandy.

Feedstock for the power plant is derived from forest debris and waste, crops grown on marginal agricultural land and storm debris generated within a 50-mile radius of the plant. These materials are all renewable because new plants and trees will continue to grow and replenish the feedstock. The improved market for

Acronyms and Abbreviations	
GHG	Green House Gas
LLC	Limited Liability Company
PPA	Power Purchase Agreement

previously low value wood now enables Fort Drum land managers to economically harvest shrub land to increase maneuver training space on the installation. Wood harvesting also is being performed to improve habitat for the Golden Wing Warbler, a bird species of special concern that lives on Fort Drum. To use a baseball analogy to describe this success story, a "triple play" of benefits is now occurring as a result of the PPA: increased use of secure renewable "green" energy, improved military training through maneuverability enhancement and habitat conservation for birds through the creation of early successional habitat.

The October ceremony was co-hosted by the Honorable Katherine Hammack, Assistant Secretary of the Army for

(continued from previous page)

cost of wildfire and wildfire suppression is astronomical.

So what can be done? Fight fire with fire. Reducing fuels loads by prescribed burning areas under appropriate conditions can provide major benefits. Due to requirements of the Endangered Species Act, many installations have been legally mandated to prescribe burn. The results have been tremendous, not just for the endangered species, but for the Army training mission as well. What we have learned is that Army trainers really like the outcome. Results in the southeastern United States indicate training areas have been improved and are being maintained in desirable conditions for training. Wildfire frequency has also been reduced considerably and has contributed to a decrease in training interruptions. Prescribed fire has proven to be a win-win for both endangered species and military


training.

Is it easy to implement prescribed burning? No! It is risky, takes a lot of planning, training and many years of learning, but the benefits are enormous. The potential and realized benefits to military training and cost savings from claims have already been identified. Other benefits have resulted in the form of a health and safety standpoint to Soldiers. Prescribed fires have reduced the number of poisonous plants and nuisance insects, opened areas for maneuverability and improved visibility of potential hazards.

"Prescribed burning in our training areas is essential to training support," said Jim Pearson, chief, Training Division, Directorate of Plans, Training, Mobilization and Security (DPTMS), Fort Stewart. "Understory and midstory control are key to our Armored Brigade Combat Team and Infantry Brigade Combat Team being able to train in our forests. Secondly, controlled burning reduces the fuel load so that we

can fire tracers and use pyrotechnics 24/7, 365 days a year, even during drought or dry conditions without fear of an out-of-control wild fire. We average firing several million rounds of tracers a year. During my time in the DPTMS (since 1995), we have never lost a training day to wildfires. I attribute this to the controlled burning program. As our training tempo is back to normal, and we are firing a million to 1.5 million rounds a month, it is essential that controlled burning continue in order for me to support the home station training tempo."

POCs are Bob Larimore, 210-466-0574, robert.k.larimore.civ@mail.mil and Stephen Hudson, 706-544-7075, stephen.j.hudson.civ@mail.mil

Bob Larimore is the Natural Resources Program manager for Headquarters, IMCOM, G4 (Logistics). Stephen Hudson is the lead forester with the Land Management Branch at Fort Benning. 



(continued from previous page)

Installations, Energy and Environment and Brigadier General Michael Howard, acting senior commander of 10th Mountain Division and Fort Drum. In addition to the speeches delivered by the ceremony co-hosts, guest speakers included New York Senators Charles Schumer and Kirsten Gillibrand; Brigadier General Mark McLeod, commander, Defense Logistics Agency-Energy; Richard Kidd, Deputy Assistant Secretary of the Army for Energy & Sustainability; and Larry Richardson, ReEnergy's chief executive officer. During the event all speakers described the profound significance of the energy contract from both the perspective of acquiring increased energy security and the large scale use of renewable energy. Several of the speakers described the recently signed energy contract as a model of energy security for other installations to follow. In addition to providing improved energy security, other significant benefits of the project were described by the speakers including enhancing Army and state initiatives to reduce Green House Gas (GHG) emissions, improving the health of the forest through practicing sustainable harvesting techniques, reducing dependence on foreign oil and fossil fuels, and the creation of more than 200 local jobs required to harvest feedstock and operate the plant.

Prior to the plant's conversion from coal to biomass, the coal plant was a significant

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



Wood chip truck unloading operation, Black River Power Plant, Fort Drum

source of GHG emissions. When fossil fuels such as coal are burned, they release carbon and toxic metals like mercury that have been trapped for millions of years. The additional carbon released to the atmosphere previously was unavailable underground. By contrast, burning biomass releases no more GHG's than what are produced by natural process such as crop and plant decay resulting in a net gain in GHG emissions. The Fort Drum Environmental Office estimates that converting the electrical generating plant to biomass will reduce GHG emissions by as much as 86,000 metric tons of carbon dioxide equivalent emissions per year.

The positive attributes of the PPA such as improved energy security, the use of renewable energy to produce 100 percent of Fort Drum's electricity and decreased GHG emissions are all significant benefits to the Army and nation. The cost of energy purchased from the biomass plant under the PPA for the first four months of the plant's operation have been roughly on

par with the cost of purchasing electricity on the open market, which is the way Fort Drum historically purchased electricity.

Another advantage of the PPA is the ability to more accurately forecast and budget for energy bills. High market volatility within the energy sector (rapidly rising and falling prices) has traditionally made it difficult for resource managers to accurately plan for out-year electrical costs. The uncertainty associated with forecasting electricity costs has been virtually eliminated under the fixed-rate structure of the PPA. When one considers the "triple play" of benefits provided by the PPA, plus the fact electricity costs under the PAA have stayed on par with open market costs, the Fort Drum PPA looks to be a home run for the Army!

POC is James M. Miller, 315-772-5269, james.m.miller352.civ@mail.mil

James Miller is the chief of the Environmental Division, Fort Drum, New York. 🍁



Harvesting from Innovative, Collaborative Sustainable Strategies

by Yamil E. Hernandez and Francisco J. Mendez

Much more than an environmental goal, sustainable practices can be applied to everyday operations. Sustainable practices seek to preserve and secure available resources so that they are available for other generations, but it also applies to financial resources. Every dollar the Army spends in utility services is one less dollar available to enable its military and facilities maintenance mission. In turn, every dollar the Army spends in reducing its energy and water use intensity lessens its dependence on volatile outside utility services providers.

In recognition of constrained funds, the U.S. Army Garrison Fort Buchanan, Puerto Rico (USAGFB), used a sustainability strategy that leveraged third-party financing and new military construction funds to modernize its infrastructure, enhance its energy security, lower its energy use intensity and ensure a resource efficient garrison operation. Additionally, in support of the Army's Net Zero Goals and as a result as of the USAGFB's selection as a Net Zero Water Pilot Installation, sustainability has been incorporated and instilled as an organization principle in all its management operations to enable mission readiness. As a result of this, a water reduction strategy focused on leak reduction, water intensity reduction, rain water harvesting and alternative water source usage has been implemented. Under this strategy that benefits from using third-party financing through an

Energy Savings Performance Contract to finance project implementation cost, we have been able to identify and correct distribution system leaks, retrofit plumbing fixtures with Environmental Protection Agency Water Sense compliant high-efficiency fixtures at 210 facilities and install a non-potable groundwater well, a potable water well and 10 new rainwater harvesting systems to offset potable water usage resulting in overall reductions of 36.6 million gallons of water per year.

By applying sustainable strategies and efficiently using our available resources, we will be able to offset utility served potable water through our recently installed wells. The potable water well will be able to provide up to 70 gallons per minute providing approximately 19 percent of our daily potable water requirement. The calculated savings potential to the Army from all current water saving projects is calculated at \$936,000 per year at the current combined water and sewer rate of \$19.50 per gallon, in addition to an overall reduction of 6.8 megawatt hours in energy savings and 14 kilotons in greenhouse gases. These achievements are the harvest of sowing innovative sustainable strategies into our environmental stewardship objectives, along with embedding the Army Sustainability Strategy, the Installation Management Campaign Plan, Executive Orders 13423 and 13514, and the Army Net Zero Initiative goals under the USAGFB Sustainability and Environmental Management System (SEMS). The SEMS program ensures a solid foundation that will lead us to comply with national goals and to become a Net Zero Energy, Water and Waste Installation.

Although, sustainability was initiated as a program, nowadays it is core to all support activities intended to carry on our mission: "To provide standardized services and sustainable infrastructure in support of the Armed Forces and the diverse Fort Buchanan community. Our organizational traits include visionary leadership that promotes an environment that supports

Acronyms and Abbreviations	
DPW	Directorate of Public Works
SEMS	Sustainability and Environmental Management System
USAGFB	United States Army Garrison Fort Buchanan

high performance and continuous improvement. In light of this, the Directorate of Public Works, through its support services, is committed to sustaining operational readiness and efficiency in order to remain relevant and improve the quality of life of our serviced community. As the only military installation in the Caribbean, we provide support and unique enhanced operational capabilities to Department of Defense operations in the area: Army, Army Reserve, Puerto Rico National Guard, Marine and Navy Reserve units in Puerto Rico. The SEMS has provided a framework for decision making regarding current and future impacts that can easily serve as a model for peer installations.

Back in October 2014, the White House Council on Environmental Quality honored Fort Buchanan by recognizing DPW Environmental Division Chief, Anibal Negrón-Rodríguez, as a 2014 GreenGov Presidential Awards Sustainability Hero for his leadership and accomplishments in meeting the goals of President Obama's Executive Order 13514 "Federal Leadership in Environmental, Energy and Economic Performance." This award recognizes Negrón's persistence and commitment to fostering innovative and collaborative sustainability strategies which lead to a resource efficient installation that serves as a model for all.

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

Yamil E. Hernandez and Francisco J. Mendez are environmental protection specialists with the Environmental Division, Directorate of Public Works, USAG Fort Buchanan, Puerto Rico.



Tanks in place at building 606, PXtra store.



Food Dehydrators - an IMCOM Net Zero Initiative

by Jillian Dunnam and Rich Morris

In October 2010, the Honorable Katherine Hammock, Assistant Secretary of the Army for Installations, Energy and Environment, created the Army Net Zero Initiative. The intent of the Army Net Zero approach is for an installation to consume only as much as it produces in the course of a year in terms of water, waste and energy. Several installations across the Installation Management Command (IMCOM) enterprise have been taking steps to implement initiatives that achieve reductions in waste within one of the three categories.

Fort Lee, Virginia, for instance, has made significant strides in solid waste reduction strategies. At the end of 2013, Fort Lee's Environmental Management Division partnered with the Defense Commissary Agency and the Joint Culinary Center of Excellence (JCCoE) to purchase and install food waste dehydrators at three locations. The dehydrators take the food waste, which accounts for about 22 percent of all solid waste at Fort Lee, and reduce its original volume by 86 percent into a product that can be repurposed. Food waste is comprised of consumer food waste (plate waste), leftover waste and food preparation waste. In 2014, after installation of the dehydrators, 163 tons of Fort Lee's food waste was diverted from landfills.

One of the three locations at Fort Lee that is currently operating an Ecovim

Dehydrator is a dining facility (DFAC) that is Certified Gold in Leadership in Energy and Environmental Design. After only six months into the pilot project, the installation saw a 50 percent reduction (3,500 pounds) in organic waste per week delivered to the landfill from this one location. This technology reduces fees paid by the installation in dumpster tipping costs, labor to manage the greater volume and landfill capacity lost. It also moves IMCOM closer toward achieving the Army Net Zero Solid Waste goal.

The byproducts of the dehydration process are a sterile, dry granular organic material and water. The organic material is currently being tested and analyzed for use as a nutrient-rich soil amendment suitable for organic farming, landscaping or as animal feed/feedstock. Virginia State University (VSU) is providing the research assistance in determining the beneficial uses of the organic byproduct. Detailed nutrient analyses also have been performed on the material itself by a certified analytical laboratory. These results are being used to determine the possibility of using the product as animal feed/feedstock. Fort Lee is still in the research phase of determining uses for the material. Based on the nutrient analysis that Fort Lee has received on the dehydrated material, VSU has proposed to use it for feed for small ruminant animals. They also will enhance their current research for its use as compost or fertilizer to cultivate vegetables.

After reviewing the success of the Ecovim technology at limited facilities on Fort Lee, Headquarters, IMCOM, consulted with Headquarters, Army Sustainment Command (HQ ASC), and

Acronyms and Abbreviations	
ASC	Army Sustainment Command
DFAC	Dining Facility
FY	Fiscal Year
HQ	Headquarters
IMCOM	Installation Management Command
JCCoE	Joint Culinary Center of Excellence
LEED	Leadership in Energy and Environmental Design
VSU	Virginia State University

decided to expand the application of the Ecovim technology as well as other proven technologies for food waste reduction to other IMCOM installations' DFACs. In FY15, the HQ IMCOM is investing in the Ecovim technology to place a dehydrator in every JCCoE kitchen and post DFAC at Fort Lee as well as 26 DFACs on Fort Jackson, South Carolina. HQ IMCOM plans to make investments in this technology at several other IMCOM installations as funding becomes available. The goal of these investments in existing DFACs is to inform and influence the modification of the Army standard design for DFACs to include a pulper and dehydrator or other food waste reduction equipment. Savings realized from these gains can be reinvested in the installation to meet the needs of Warfighters and their families.

POCs are Carol Anderson, 804-734-5071, carol.l.anderson50.civ@mail.mil and Mike Andres, 210-466-0590, michael.r.andres.civ@mail.mil

Jillian Dunnam is an air quality specialist at Fort Lee, Virginia and Rich Morris is a resource team leader at HQ IMCOM. 



Two dehydrators in Fort Lee's Certified LEED Gold Dining Facility

Public Works Digest		
2015 Theme and Deadline Schedule		
Issue	Theme	Deadline
Jul-Aug-Sep	Operations, Maintenance and Engineering	5-Jun-15
Oct-Nov-Dec	Energy, Water and Waste	28-Aug-15



Freshwater Mussels are Jewels of Fort Leonard Wood

by Kenton Lohraff

Fort Leonard Wood (FLW), Missouri, is home to around 62,000 acres of Ozark Mountains with karst features including sections of two main streams: the Big Piney River and the Roubidoux Creek. These streams run through parts of the installation and provide unique habitats for some equally unique organisms such as freshwater mussels and also directly support several vertebrate species of conservation concern including amphibians such as Eastern Hellbender and the Common Mudpuppy and fish species such as Blacknosed Shiner, Plains Topminnow and Bluestriped Darter.

Mussels are excellent bioindicators and their continued presence is a sign of good water quality and overall health of the aquatic environment in which they live. Mussels are filter feeders, long-lived and tend stay in one location throughout their adult lives so monitoring and maintaining their populations is essential to proper environmental stewardship and sustainability. Many freshwater mussel species are declining at alarming rates throughout their ranges. The Spectaclecase, known to occur on FLW, was listed as federally endangered in 2012.

The life cycles of our various native mussel species are quite complex,



Freshwater mussel shells

requiring a host fish to transform the larval form, glochidia, attached to gills or fins, and disperse the juvenile mussels into suitable substrate where they mature. Some mussel species require specific fish species as hosts and have developed intricate mimic forms and display behaviors that resemble prey items to attract the proper host fish species. For some species, including the endangered Spectaclecase, the host species is unknown. All mussel species found on FLW are native except one invasive exotic species – the Asian clam which is quite ubiquitous and its life cycle does not include fish hosts.

In 2012 Directorate of Public Works biologists at FLW monitored abundance and distribution of 25 different species of mussels including Spectaclecase and three other species listed as species of conservation concern in Missouri: Elktoe, Northern Brokenray and Black Sandshell. FLW biologists conducted a complete survey of mussels focusing primarily on the 10 river miles of the Big Piney River and 10 river miles of the Roubidoux Creek that run through FLW. They also found several mussel species residing in FLW lakes and ponds.


Within the installation boundaries, FLW biologists found 24 mussel species in the Big Piney River and noted new locations of the endangered Spectaclecase. The Spectaclecase shares similar habitats as the Eastern Hellbender requiring features such as swift flowing water, large rocks, gravelly substrate, little fine sediment and good water quality. They found 15 mussel species in the Roubidoux Creek documenting three new species in the Creek: Lilliput, Yellow Sandshell and Pondmussel. FLW freshwater mussel species are also surprisingly varied in size and appearance ranging from the Giant Floater up to a foot long, to the tiny adult Lilliput mussels which reach around 1 inch long.

Acronyms and Abbreviations	
Bioindicators	Biological indicators
FLW	Fort Leonard Wood

Previous mussel surveys on FLW have documented species diversity but the recent survey was conducted by FLW biologists who were able to conduct a comprehensive installation-wide inventory and document new mussel locations. Some stream sections were not able to be previously surveyed because of ongoing military training activities or temporal constraints. The local FLW biologists were able to be flexible with scheduling and timing to search difficult access areas. Their efforts documented one particular new mussel bed in the Big Piney River which was extremely diverse including 17 species of mussel shells and 13 species of live mussels. In the Roubidoux Creek the FLW survey crew was able to survey a lower (downstream) section of the installation which had not been searched before. The Roubidoux Creek is a losing stream where flow goes sub-surface in sections and experiences reduced surface flow in mid-sections but surface flow increases (and mussels reappear) in the downstream sections of the installation.

Most military training on FLW does not directly impact the mussel populations within the streams but we stay vigilant to protect watersheds and water quality by reducing erosion and runoff and to protect these unique natural resources – our diverse freshwater mussel species.

POC is Kenton Lohraff, 573-596-0131 ext. 67605, kenton.m.lohraff.civ@mail.mil

Kenton Lohraff is a wildlife biologist in the Natural Resources Branch, Environmental Division, Directorate of Public Works, Fort Leonard Wood, Missouri. 



Hohenfels is Home to Endangered Bats

by Ron Grantham

There are well over 3,000 different species of flora and fauna on the Hohenfels Training Area (HTA) in Germany, but certainly the most exciting creature there is the Greater Horseshoe Bat. They are so-named from the horseshoe shaped nose “leaf,” with which bats detect objects through reflected sound.

Many people may have heard about this beautiful little bundle of fur, but only a few may know that the species is extremely endangered in Europe. Therefore, the Greater Horseshoe Bat has been the subject of widespread conservation activities by the Bavarian government, the Federal Forest Service and the U.S. Army Garrison Bavaria Environmental Division. Under the guidance of renowned bat expert and project manager Rudolf Leitl, they are doing their very best to provide updated areas to breed, roost and hibernate, as well as find forage.

In 1992, a nursery roost was found in an old building in the small town of Hohenburg located right outside HTA. The building was repaired and the

nursery roost optimized in recent years. Since then, the population has increased year after year. An additional nursery roost has been made available on HTA in the former village of Lutzmannstein.

Furthermore, renovations have recently been completed on the cellars of several buildings in the former villages spread throughout HTA. These cellars are very important because they provide a uniformly cool place for the bats to hibernate during the winter and to sleep during extremely hot summer days and especially in autumn and spring.

Since 2012 there has been an ongoing EU- LIFE+ project that is funded with 50 percent by the European Union (EU) and another 40 percent by the Bavarian Nature Fund and the Hirschwald Nature Park. The U.S. Army and the German Federal Forest also support this project, which covers an area of approximately 2.8 acres on HTA. There, the habitat has remained relatively unaltered and provided excellent conditions for the bat. It is the first time an active military training area is part of a LIFE+ Project in Germany. As part of the project, fruit trees have been planted as a joint effort to increase the amount of insects, which are the bats’ main food source. LIFE is the EU’s financial instrument supporting environmental, nature conservation and climate action projects throughout the EU. Since 1992, LIFE has co-financed some 4,171 projects contributing to the protection of the environment and climate


Furthermore, grazing programs in cooperation with local farmers from around Hohenburg have been implemented. Thus, a breed of red cattle helps keep the meadows free from bushes and trees, so that a plethora of insects can thrive there. Several dung beetle species are especially supported due to the manure left behind by the cattle and are a favorite food source of the horseshoe bat.

Acronyms and Abbreviations	
EU	European Union
HTA	Hohenfels Training Area
USAG	U.S. Army Garrison

Did you know?

- The colony of Greater Horseshoe Bats at Hohenburg is the only one in Germany.
- Horseshoe bats can reach an age of over 30 years.
- They have their first baby, called “pup,” when they are 5-6 years old. They give birth to only one pup per year and can skip a year, too. They take good care of their offspring and show them everything they need to know to survive.
- Bats hibernate in caves. During hibernation, a bat’s body temperature lowers and their metabolic rate slows, meaning they use less energy and can survive on the fat they have stored up for the winter.
- Some of the caves are located on HTA. These caves are extremely important to the livelihood of the bats because they provide a solemn place to rest and the temperature remains constant.
- About 90 percent of the Grafenwoehr and Hohenfels Training Areas have been identified as a Natural 2000 nature sanctuary under the European Birds and the Fauna-Flora-Habitats Directives. A “military reservation” provision in nature protection law applies for military training areas so that the nomination may not impair current and future military use.

POC is Dr. Albert Boehm, DSN Europe 314-466-2458, albert.boehm1.in@mail.mil

Ron Grantham is an environmental protection specialist with the Directorate of Public Works, Environmental Division, USAG Bavaria-Grafenwoehr, Germany. 



Greater Horseshoe Bat. Photo by Rudolf Leitl



Fort Carson Combines Hazardous Material, Waste Operations

by Susan C. Galentine

Managing hazardous materials and waste is becoming an even stronger team effort at Fort Carson, Colorado, by co-locating separate Directorate of Public Works (DPW) Environmental Division and Logistic and Readiness Center (LRC) functions with regard to managing, storing and disposing of products harmful to the environment.

The LRC's Hazardous Material Control Center (HMCC) at the northern end of the installation will move operations next to the DPW's Hazardous Waste Storage Facility (HWSF) located downrange by summer 2015.

The HMCC, which manages hazardous materials purchased for use

on the installation, will operate on a campus-type setting side-by-side with the HWSF, which is responsible for management and disposal of residual hazardous waste left over from unit operations and expired products.

The vision of these interconnected interests working out of the same site was driven by the need for a new, expanded HMCC location, which yielded the added benefit of simplifying things for Soldiers requesting hazardous products and disposing of the waste generated by their use.

Construction efforts currently underway for the HMCC's move include expanding the current HWSF site to include a new 80-by-80-foot warehouse facility and concrete pads to accommodate storage of both hazardous materials and waste.

When co-location of the HMCC and HWSF missions is completed, units will have a one-stop-shop place to drop off waste, receive new material and recycle all empty containers, said Don Sullivan, manager of the HWSF.

Among the benefits of the move will be improved communication and coordination between the two organizations in advance of Colorado Department of Public Health and Environment annual inspections, said Carlos Rivero-deAguilar, chief of the DPW Environmental Division.

The LRC and DPW operations neighboring each other come at the same time the Army is launching implementation of the Enterprise Environmental, Safety, and Occupational Health Management Information System (EESOHMIS) database developed for the U.S. Air Force. The database is designed to assist in material management, tracking of product shelf life and provide data for use in installation annual Toxic Release Inventory reporting.

Acronyms and Abbreviations	
DPW	Directorate of Public Works
EESOHMIS	Enterprise Environmental, Safety and Occupational Health Management Information System
HMCC	Hazardous Material Control Center
HWSF	Hazardous Waste Storage Facility
LRC	Logistic Readiness Center
TSDF	Treatment, Storage and Disposal Facilities

The EESOHMIS system will record all products coming onto the installation and checked out to units, supporting LRC and the DPW reporting requirements. The database will also help in tracking the disposition of hazardous waste. Both organizations have historically used separate database systems.

Once EESOHMIS is in place, the DPW will have easy access to data on hazardous materials and where it is located on post to fulfill their annual federal Toxic Chemical Release Inventory reporting, said David Kelley, DPW Environmental Division Resource Conservation and Recovery Act Program manager. Hazardous materials storage reporting is a requirement of the Emergency Planning and Community Right-To-Know Act to better prepare in the event of a catastrophic event.

The ultimate goal of both organizations using EESOHMIS is to have better data on what hazardous materials are on the installation and how much is ordered by the units to help reduce overstocking of products, which can then become expired before use and require costly disposal as hazardous waste, Kelley said.

The HWSF processes roughly 66,000 pounds of hazardous waste each year, 40,000 of which is sent to a TSDF for recycling, burning as fuel in a cement kiln or final disposal in a landfill. Only around 3,000 pounds is ultimately disposed of in a TSDF landfill after all



Solvent distilling is one of the hazardous waste management operations handled by the Fort Carson Directorate of Public Works Hazardous Waste Storage Facility. (Galentine)



Environmental Cleanup Will Likely Take Decades on Redstone Arsenal

by Clint Howard

Redstone has one of the largest cleanup programs in the Army. Chemical weapons remain buried along with many other contaminants that await cleanup. RSA has 405 cleanup sites within its 38,000 acre border. To date, 175 of those sites have been cleaned up and/or have been determined to require no further action at this time.

The program is managed with a 13 person team in the Restoration Branch, with an estimated cost to complete of over \$1 billion. Due to the possible impact to human health and the environment, we each take our jobs very seriously. Approximately 2/3 of the installation is in woods, wetlands, flood plains, and a wildlife refuge and is bordered by 10 miles of river frontage along the southern boundary. RSA is also bordered on 3 sides by huge urban population/s. The cities of Madison, Huntsville and Triana have a combined population of nearly 230,000 residents, so, environmental stewardship is a responsibility we don't take lightly. Cleaning up the sins of our past so that our children and future generations will have a better community to grow up and live in is very important to us and the Army, as is the reclaiming of land for DOD use.

RSA was originally purchased in 1941 for manufacturing of chemical weapons and other ammunition and ordinance for use in WWII. Such weapons included blister agents, choking agents, blood agents, incendiary bombs, smoke bombs as well as conventional bombs and weapons. Gas masks and other associated safety gear were also manufactured here. When WWII ended, the US military collected chemical weapons from Nazi Germany and Japan, as well as from British and American

stockpiles. Approximately 1 million CWMs that were marked for storage or disposal were processed at RSA. Some of the material was burned or blown up and what remained was stacked in trenches and buried.

The identification of environmental sites on RSA began in the late 1970s and resulted in a listing on the NPL in 1994. Initially RSA was under CERCLA and RCRA but the issuance of the 2010 Hazardous Waste Permit by ADEM moved the cleanup solely under the purview of RCRA and ADEM's authority. Types of sites identified were, debris disposal areas, manufacturing areas, MEC Disposal areas, sewage and storage.

We have 17 potential CWM sites that many believe will be getting cleaned up long after our retirement. In a 2012 report, the NRC called RSA "the largest and most challenging" of the buried CWM sites. Intrusive investigation for the CWM is scheduled to start in 2015. Disposal is due to be completed sometime in the 2040's and that's a conservative target. Based on estimates, the team expects it could pull out as much as 388,000 munitions or partial munitions from the trenches. Of that, an estimated 20,000 to 25,000 buried CWMs could still be intact and an estimated 600,000 nonlethal munitions containers could also be buried here. The good news is that no chemical agents have been detected in soils or groundwater so far.


Even though the CWM program is a huge concern, the biggest and most expensive cleanup issues involve solvents, propellants and other contamination associated with production and demilitarization of chemical and conventional weapons and missile and

Acronyms and Abbreviations	
ADEM	Alabama Department of Environmental Management
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CWM	Chemical Weapon Munitions
DOD	Dept. of Defense
ERH	Electric Resistance Heating
NPL	National Priorities List
NRC	National Research Council
MEC	Munitions and Explosives of Concern
RCRA	Resource Conservation and Recovery Act
RSA	Redstone Arsenal
WWII	World War II

rocket manufacturing. The two (2) main types of cleanup methods for solvent removal include ERH of the soil and dig and haul offsite to an approved landfill. RSA has had very good success with the ERH system because of the tight clay soil conditions. Other types of future remediation efforts like in-situ & ex-situ anaerobic bioremediation treatment will be used as well.

Our goal is to clean up all the sites to residential use standards, even though in many areas that will not be financially plausible. Some areas will just have to be capped, fenced off or have some other type of land use restriction put on it and will never be able to be used again.

POC is Clint Howard, P.E., 256.842.3702, joseph.c.howard1.civ@mail.mil

Clint Howard, P.E. is a civil engineer, Installation Restoration Branch in the Environmental Management Division, Directorate of Public Works at Redstone Arsenal, Alabama. 

(continued from previous page)

other recycling or reuse is exhausted. Recyclable hazardous waste includes batteries, fluorescent bulbs, off-spec fuel and latex paint.


Operations at the HWSF include:

- bulb crushing,
- shop towel exchange program,

- aerosol can puncturing,
- oil filter crushing,
- heptanes solvent distillation in support of the Army's Oil Analysis Program on post,
- collection and disposal of petroleum soil contaminated soil known as "dry sweep",
- accepting batteries for disposal or recycling and

- limited recycling of scrap metal, plastic and cardboard.

POC is Susan Galentine, 719-526-4320, susan.c.galentine.ctr@mail.mil

Susan C. Galentine, is a public relations contractor in the Fort Carson Directorate of Public Works Net Zero. 



U.S. Army Corps of Engineers Maintains Arctic Air Base

by JoAnne Castagna

It is 9 p.m. and 2 degrees in Thule Air Base located in the northwestern corner of Greenland in the Arctic Circle. A team of engineers from the U.S. Army Corps of Engineers is haggard after a long overnight flight that was followed by a day of visiting projects. They were about to call it a day when they decide to visit the base's museum. They step out of the sharp cold air into a warm building where they are greeted by a pleasant woman wearing a parka. She enthusiastically shows them around and tells them that she has been living and working at the remote base since the 1960s.

On display is base memorabilia including photos of visiting dignitaries, a large round radar screen and a wooden sled used by the native Inuit people with a manikin wearing a fur hunting outfit. She asks them if they want to see an old film strip about the base. The film shows how the base was secretly and quickly constructed in the early 1950s because the United States felt a foreign threat. In record time, massive amounts of supplies, equipment and 120,000 men were transported to Thule to construct the base. This enormous effort, which included the Army Corps, was an incredible feat that was fueled by the country's intense need to preserve the American way of life. It seemed fitting that the team saw this film and met this devoted woman that night because it reminded them of why they were there.

For decades the U.S. Army Corps of Engineers, New York District has constructed facilities for the base, under extreme Arctic conditions. These projects have included aircraft runways, dormitories and medical centers. Presently, they are constructing two much needed dormitories.

Thule Air Base – “Two Lee” – is the U.S. Armed Forces' northernmost installation that was established to perform national security. The Air Force performs several missions there including monitoring U.S. airspace for foreign missiles.

To perform these missions, hundreds of

active-duty U.S. Air Force personnel and American, Danish and Greenlandic civilian contractors are stationed there. Quality housing is needed for these individuals to keep them safe from the harsh weather and to keep their moral up in this remote area of the world.

The two dormitories were designed by the New York District and are being constructed by Danish contractors with the Army Corps supervision. Greenland is a province of Denmark.

The dorms will be ready for occupation in 2015 and are replacing old structures that were constructed in the 1950s. One of the dorms will house 54 and the other will house 48 people.

The dorms are being constructed using techniques that will help them withstand the harsh Arctic elements. Techniques include using special arctic foundations, steel frames, insulated panel exteriors and pitched metal roofs. Construction in the Arctic can be challenging due to severe weather and limited daylight, which requires the use of unique building techniques and fast-paced construction.

One of the challenges is ice. Most of northern Greenland is covered with permafrost, which is permanently frozen ground – ranging from 6 to 1,600 feet in depth. Because of permafrost, both dorms are being constructed with a special Arctic foundation. This foundation will be elevated. If buildings are not constructed off the ground, the heat from inside the building can melt the permafrost, making the ground unstable and causing buildings to sink.

Another challenge is limited daylight. Because of Thule's proximity to the North Pole, it has 24-hours of sunlight from May through August and 24 hours of darkness from November through February. Construction is then limited to the summer and autumn months, May through October, because there is sufficient sunlight and temperatures are bearable to work in. Temperatures can reach 40



The 54 person dormitory under construction. (Castagna)


degrees Fahrenheit. During the rest of the year, there is no sunlight and the weather is too severe to work outdoors. Temperatures can drop as low as minus 30 degrees Fahrenheit.

It is also only during the summer months that shipments of building materials and fuel can be received via cargo. During the summer, Greenland's iced shipping lanes can be broken up to allow supply ships into port. Greenland is locked in by ice nine months out of the year.

Since work needs to be performed rapidly, most of the building materials are prefabricated elsewhere before being shipped in. Prefabricating the parts helps the workers to rapidly perform the construction. These materials include concrete foundations, structural steel, insulated metal walls and roof panels.

Right now its winter in Thule, so the dorms' outer shells must be completed so that interior work is not interrupted during the winter months. This interior work will include constructing mechanical, electrical, plumbing and fire protection systems that are designed to withstand extreme frigid sub-zero temperatures.

POC is JoAnne Castagna, 917-790-8219, joanne.castagna@usace.army.mil

JoAnne Castagna, Ed.D., is a public affairs specialist and writer, New York District, U.S. Army Corps of Engineers. 



Army Reserve Expands Net Zero Energy, Water, Waste

by Amy Solana

In 2012, the Army initiated a Net Zero (NZ) program to establish NZ energy, water, and/or waste goals at installations across the United States. In 2013, the U.S. Army Reserve expanded its program to cover all three categories at different types of Reserve Centers (RCs) across five regions. Projects identified at 10 pilot sites resulted in an average savings potential from recommended measures of 90 percent for energy, 60 percent for water and 83 percent for waste.

The analysis included three implementation scenarios for each of the energy, water and waste goals at the 10 pilot sites. Although energy, water and waste results are presented separately, interactive effects of the various recommendations were considered.

Of the 10 sites, four showed that it could be cost-effective to achieve NZ energy; nine showed potential for achieving NZ in energy, six in water, and six in waste; seven sites were recommended to achieve NZ in energy, two in water, and four in waste.

The ability to economically achieve NZ energy is related to cost of energy, but high energy costs do not guarantee cost-effective NZ energy. Utility requirements for battery backups to renewable energy systems often result in poor economics. NZ water requires high-maintenance processes, including rainwater catchment

and wastewater treatment that do not result in positive dollar savings. Monetary savings for NZ waste is limited because waste bills are only reduced with renegotiation of the waste contract, for fewer dumpsters or fewer pickups.

The allocation of the \$42.9 million in recommended projects by assessment category. Renewable energy and microgrid projects require the most funding. Waste projects require minimal funding because costs typically are limited to recycling and composting bins.

Nearly \$1.3 million of annual savings were identified for the 10 sites, through utility bill and operation and maintenance reductions. Common recommendations include the following.

Energy:

- Conservation: Education, Building Energy Monitor (BEM) program
- Energy efficient technologies: light emitting diode lighting, Building Automation System installation and/or retuning
- Renewable energy: Solar photovoltaic and water heating
- Microgrid: Grid-tied or off-grid

Water:

- Conservation: Education, BEM program
- Water efficient technologies: Plumbing, vehicle wash high-pressure spray nozzles
- Alternative water: Rainwater harvesting
- Treat wastewater onsite and send back to the regional watershed

Waste:

- Waste management program: Diversion plan with infrastructure establishment, occupant education and tracking of progress
- Source reduction: Electric hand dryers in bathrooms, reusable utensils and dishes
- Diversion: Recycling and composting
- Community waste-to-energy (WTE) plants

Acronyms and Abbreviations	
BAS	Building Automation System
BEM	Building Energy Monitor
NZ	Net Zero
RC	Reserve Center
WTE	Waste-to-energy

The small size of RCs compared to an installation restricts some technology options for NZ, but also presents opportunities. For example, solutions that provide substantial heating or cooling are not needed. Similarly, WTE plants require significantly more waste than any of these sites generate, so an onsite solution is not practical. Conversely, the water demand of a smaller site can be more easily met with fewer rainwater harvesting system components, minimizing complexity.

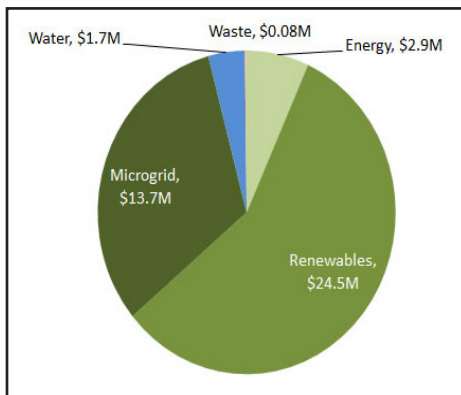
Due to transient occupancy, engagement of the personnel on site can be difficult. Because there are few weekday staff but high weekend occupancy, equipment operation and sizing requires careful consideration.

Achieving NZ is often not life-cycle cost-effective for both large and small NZ sites. Favorable conditions for NZ include high utility costs (and no natural gas), security or service reliability concerns and regional/local supply issues. Recommendations that provide near-NZ solutions are also useful because valuable projects can still be implemented without fully reaching NZ.

Any NZ site will need the following to be successful:

- A champion at the region headquarters to implement projects and foster top-down institutional changes
- A facility coordinator who has NZ actions included in official duties and fosters individual behavior changes
- A BAS to effectively monitor and continuously retune sites

The NZ analyses provide a regional context for site-specific energy, water and waste opportunities, which considers the RC's impacts on the local community ➤



Recommended Projects Total Capital Cost by Category



Army Reserve Comprehensive Water Efficiency Assessments

by Kate McMordie Stoughton and Jaime Kearney

The Army Reserve has partnered with the Pacific Northwest National Laboratory (PNNL) to develop comprehensive water assessments for numerous Army Reserve Centers in all five regions including the Pacific islands and Puerto Rico, and at Fort Buchanan, Puerto Rico, and Fort Hunter Liggett, California. The objective of these assessments is to quantify water use at the site and identify innovative water efficiency projects that can be implemented to help reduce water demand and increase efficiency. Several of these assessments have focused on a strategic plan for achieving net zero water to help meet the Army's Net Zero Directive. The Army Reserve has also leveraged this approach as part of the energy conservation investment program (ECIP), energy savings performance contracts (ESPCs), and utility energy service contracts (UESCs).

The Army Reserve reduced its potable water use intensity by 30 percent in fiscal year (FY) 2014 from a FY 2007 baseline, which doubles the target set by Executive Order 13514. The key to the Army Reserve's success is taking a comprehensive

(continued from previous page)

as well as the impact of regional factors on the RC.

It is recommended that two RCs achieve NZ in all three categories (energy, water and waste) at this time, and the remaining eight sites can achieve significant savings as well as NZ in some categories. Several projects have already been started, and this may prove to be the most comprehensive federal NZ program to date.

POC is Amy Solana, 503-417-7568, amy.solana@pnnl.gov

Amy Solana is the Net Zero Lead for the Army Reserve Installation Management Directorate Energy and Sustainability Team, Pacific Northwest National Laboratory.

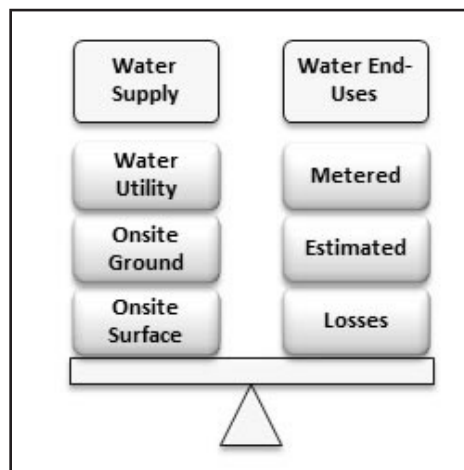
approach. The following process can help Army facility managers use a similar approach to create comprehensive water projects.

The first step will help you understand the components that make up your water use and can reveal patterns that can help determine usage such as cooling water demand or irrigation:

- Collect and review monthly water and sewer bills, on-site water production data, and sub-metered data; collect data for at least one year
- Determine your water and sewer marginal utility rates, which represent the volumetric charge for water supplied and wastewater treated
- Conduct a walk-through survey of major water-using equipment to gather information on this equipment

The next step compares water supply to water use and uncovers how much water is being consumed and lost throughout the system. Steps include:

- Quantify annual water use baseline from the historic data collected in step 1
- Quantify annual water use for each major piece of water consuming equipment as result of gathering sub-metered data and information in the walk-through survey in step 1
- Compare the total annual supply to the total annual equipment water use.



Acronyms and Abbreviations	
ECIP	Energy Conservation Investment Program
ESPC	Energy Savings Performance Contracts
FY	Fiscal Year
PNNL	Pacific Northwest National Laboratory
UESC	Utility Energy Service Contracts
NCO	Non-Commissioned Officer
SGM	Sergeant Major

The difference between these two values may represent potential losses in the systems or water use in equipment or processes that were not uncovered during the walk-through survey. If the difference between these two numbers is greater than 15 percent, further investigation of water uses and a leak detection survey of the distribution system are recommended. The water balance identifies the largest end-uses to target efficiency improvements.

The third step is to identify efficiency opportunities. When developing water efficiency projects, make sure to consider a wide range of options including:

- Distribution systems audits, leak detection and repair
- Water-efficient landscaping and irrigation
- High efficiency plumbing fixtures
- Boiler/steam system and cooling tower water management improvements
- Water-efficient commercial kitchen equipment
- Water-efficient laboratory and medical equipment

Learn more at:

Federal Energy Management Program: <http://energy.gov/eere/femp/federal-water-efficiency-best-management-practices>

WaterSense: <http://www.epa.gov/watersense/commercial/bmps.html>

The fourth step is to perform an economic analysis to determine if the projects are life-cycle cost effective. In this analysis, use the marginal water and sewer rates identified in step 1. Be sure to



EMS Helps Garrison with Natural Resources Management, Wetland Enhancement

by Pak, I Kyong

U.S. Army Garrison - Red Cloud (USAG-RC) is headquartered in the South Korean city of Uijeongbu, approximately 25 miles north of Seoul, and is the “tip of the spear” for forward deployed Soldiers serving on the Korean Demilitarized Zone. USAG-RC performs its mission in concert with our stewardship responsibilities to protect and conserve the environment as defined by the Korean Environmental Governing Standards and Garrison Environmental Management System (EMS). USAG-RC is dedicated to identifying and achieving EMS goals, and one of the top priorities is to preserve natural resources and protect habitats favorable to reproduction and survival of indigenous plant, fish and wildlife.



Natural Resource Survey Team is conducting winter migratory birds survey in December 2014. (Chu)

In 2014, USAG-RC and Area I conducted natural resources surveys to determine and maintain the presence of any endangered wild animals and plants and Republic of Korea (ROK) species designated as natural monuments.

A noted local professor, Dr. Cho Sam-Rae from Kongju University, and his survey team were invited as surveyors and provided a comprehensive threatened and endangered species study for fauna on the installation. This team identified various endangered species and/or natural monuments of Korea – such as common kestrel, bean goose, black vulture, goshawk and alpine bullhead at Camp Casey. The main creek flowing through Camp Casey is a sensitive habitat area occupied by abundant natural resources and requires special management and protection.

Therefore, the natural resources coordinator of the Directorate of Public Works (DPW) Environmental Division initiated a natural resources habitat management project to improve that ecosystem and enhance associated wetland for birds, fish and other aquatic wildlife along the creek.

At first, channelization of the creek and site grading work were done to remove overgrown weeds and avoid strong odors resulting from a nearby wastewater

Acronyms and Abbreviations	
DPW	Directorate of Public Works
DMZ	Demilitarized Zone
EMP	Environmental Management Plan
EMS	Environmental Management System
NRC	Natural Resources Coordinator
ROK	Republic of Korea
U.S.	United States
USAG-RC	U.S. Army Garrison - Red Cloud
USFK	U.S. Forces Korea

effluent stream and stagnant stormwater. This work included construction of a designed pond to provide retention time for settlement of suspended solid from wastewater and storm drainage. According to local biologists, the addition of indigenous fish to the pond and rearrangement of aquatic plants would improve the habitat for a variety of species as well as bring about sustainable landscaping. Thirty stone moroko fish will be released to the pond and additional submerged plants such as bulrush, Russian iris, yellow iris and scouring rush will be applied along the pond this spring. The result will provide a wide range of aquatic plants and enhance natural water purification.

On the upper stream of the pond, a concrete fish ladder was constructed ➤

(continued from previous page)

also include other related costs, such as energy and operations and maintenance changes as a result of the proposed project. Also, determine and use the annual escalation rates of the cost of water and wastewater.

Lastly, develop a plan on how to implement projects. Elements of this plan can include a prioritization of projects based on targeted end-uses or distinct areas of the site. The

implementation plan should include methods to measure and verify savings and related operation and maintenance requirements to ensure long-term savings.

By following these steps in water efficiency project development, an innovative and comprehensive approach can be used to increase efficiency and optimize water use. The Army Reserve has been successful at using this approach and incorporating water projects alongside energy projects into ESPCs, UESCs and

ECIP projects.

POC is Kate McMordie Stoughton, 720-379-3511, katherine.mcmordiestoughton@pnnl.gov

Kate McMordie Stoughton is the Water lead for the Army Reserve Installation Management Directorate Energy and Sustainability Team, Pacific Northwest National Laboratory. Jaime Kearney is an Army Reserve Water action officer with the U.S. Army Reserve Command.





Virginia Guard Breaks Ground for New Solar Array

by Capt. Andrew J. Czaplicki

The Virginia National Guard conducted a ceremony to break ground on a new solar array that provides power and energy security to the 183rd Regiment, Regional Training Institute (RTI) on Fort Pickett, Virginia, October 14, 2014. The ceremony marks the construction of the Virginia Guard's first alternative energy project.



The Virginia National Guard conducts a formal ceremony to break ground on the new solar array that will provide power and energy security to the 183rd Regiment, Regional Training Institute at Fort Pickett, Virginia. (Gatti)

The new \$2.2 million, 488 kilowatt solar array will be a 10,000 square yard solar field consisting of nearly 2,000 individual solar panels and will provide the RTI with nearly 80 percent of its daytime energy needs. This field is estimated to produce 712,000 kilowatt hours per year and will be installed adjacent to the RTI campus. Additionally, the project has a guaranteed return of investment exceeding \$2.6 million over 25 years.

The project is expected to be completed in late March 2015.

“The biggest thing we need to highlight is the opportunity that we have here in terms of making ourselves energy independent,” said Brig. Gen. Timothy P. Williams, the adjutant general of Virginia. “It is also making us more in line with what the commonwealth requires of us as the National Guard.”

Williams thanked members of the Fort Pickett-based Virginia Army National Guard Facilities Management Office, the Fort Pickett Garrison, the National Guard

Acronyms and Abbreviations	
Brig. Gen.	Brigadier General
Capt.	Captain
DMA	Department of Military Affairs
RTI	Regional Training Institute

Bureau and the surrounding city and county municipalities for their support and attendance at the ceremony.

Since 2008, the Virginia Department of Military Affairs (DMA) has invested more than \$42 million in energy efficiency and renewable energy to help achieve its goal of becoming net zero by 2030. To that end, the Richmond-based Schneider Electric developed a net zero energy master plan for the DMA. The expected benefit to the DMA over the next 25 years is greater than \$52 million in total cost avoidance.

Governor Terry McAuliffe published Virginia Executive Order-16 on June 4, 2014, which established the Virginia Energy Council. Contained within the order are detailed plans to revise the

(continued from previous page)

to facilitate natural fish migration in October 2014 because a water reservoir dam blocked or delayed fish movement. This fishway now enables fish to pass around the barrier dam by swimming and leaping up a series of circles into the waters on the other side.

Findings of the endangered species surveys and project status were presented to the garrison via the Environmental Quality Control Committee. Trainers, troops, units, range control and DPW all worked with the environmental staff to ensure that all they do supports and enhances the installation mission and natural environment.

Another important part of the Environmental Division's mission is to educate the Soldiers and the public on

the existence of endangered species on USFK installations and on management guidance for preservation of natural resources. The NRC and her staff completed an extensive endangered species inventory with students of Seoul National University and a contractor and provides natural resources awareness training via quarterly Environmental Officer and EMS Awareness training.


The installation has a plan in place to work with Cho, leader of the natural resources survey team, to support educational opportunities on his field survey experience, wildlife animal traits and natural resources management guidance to the garrison staff.

These all activities are captured in FY14-15 EMS objectives and targets to reduce negative environmental impacts associated with natural resources management and

enhance ecosystem in our installation. The NRC staff plans to continue its work and to employ new ideas, like creating an environmental tour with students of local elementary school to the enhanced wetlands in conjunction with Earth Day in April.

Through these efforts, the Environmental Division staff will help maintain military readiness, improve quality of life for Soldiers and staff, strengthen community relationships and improve the Army's reputation as a good stewardship of ROK natural resources.

POC is Dr. Roland E. Langford, DSN 315-732-6537, roland.e.langford.civ@mail.mil

Pak, I Kyong is an environmental engineer in the Conservation Branch, Environmental Division, USAG Red Cloud Area I. 



Project Preserves Historic Newspapers for Future Generations

by Adriana Salas

As a way to preserve U.S. Army Garrison White Sands Missile Range’s (WSMR) rich history, the Directorate of Public Works Environmental Division’s Cultural Resource Program has initiated a new and exciting approach that will preserve 40 years of the Range’s historic newspaper issues and make them available for public online access the newspaper first began publication March 16, 1950, as *Wind and Sand*. It became *The Missile Ranger* in 1967.

WSMR Stewardship Archeologist Bill Godby came up with the idea when he learned that issues that date back to the 1950s were stored locally at the Public Affairs Office (PAO). PAO staff had been hoping to scan and archive the issues for many years and was pleased to support the project. Godby contracted Epsilon Systems Solutions Inc. to scan and digitize the issues into low and high

resolution Portable Document Format documents, as well as prepare all the original newspapers for archival storage at the Fort Bliss Curation Facility in El Paso, Texas.

The scanning project serves many functions that help satisfy National Historic Preservation Act Section 106 obligations. As a research tool, Godby indicates that it “greatly enhances research efforts required for adequate historic context development and National Register eligibility determinations.”

As WSMR moves forward with new technology and missions, remnants of the past are left behind, including unused and abandoned buildings. They then become candidates for the U.S. Army Facilities Reduction Program, managed by the U.S. Army Corps Engineers, Engineering and Support

Acronyms and Abbreviations	
DPW	Directorate of Public Works
NHPA	National Historic Preservation Act
PAO	Public Affairs Office
WSMR	White Sands Missile Range

Center, Huntsville. Most of the facilities identified are Cold War era buildings and infrastructure.

Godby identified the project in 2013 as a perfect opportunity to offset the loss of historic properties. Working closely with the New Mexico State Historic Preservation Officer, the project serves as significant mitigation for this loss, again meeting the legal requirements of Section 106 of the NHPA. Most importantly, on the human side, Godby notes, “The newspaper is a wonderful opportunity to reach out to people about WSMR’s history, including

(continued from previous page)

2010 Energy Plan and recommend structural and procedural changes to the Virginia Department of Mines, Minerals and Energy to better meet the needs of Virginia and the United States.

Virginia currently ranks 26th in the country for renewable energy generation, providing 5.1 percent of the country’s total renewable energy production.

Presidential Executive Orders 13423 and 13514 have directed energy efficient requirements on all federal buildings and installations, resulting in a 30 percent decrease in energy use index by 2015 and a net zero design for 100 percent of new construction by 2020.

“The Virginia Department of Military Affairs and the Virginia Army National Guard began their work to meet these mandates by first

conducting energy audits on all facilities and developing a thorough scope of work to improve the efficiencies of energy consuming systems, like heating and air conditioning, and lighting,” said Clifton C. White, deputy facilities management officer, Virginia Army National Guard.

“We partnered with both Schneider Electric and Pepco Energy Systems, using the Commonwealth’s Energy Savings Performance Contract model for the work. Since 2006 we have completed \$42 million in energy and facility upgrades, installing much more efficient systems and controls and will realize an annual savings (cost avoidance) of more than \$610,000.”

“By replacing many systems in our buildings that had failed, were failing or had simply met the end of their useful life, we were able to rejuvenate our facility inventory, having a majority of our National Guard facilities across

the Commonwealth being built in the 1950s and 1960s,” White said. “These projects will see a return on our investment of over \$52 million during the life cycle of these improvements.”

In 2009, the White House formally announced that October would be known as “National Energy Awareness Month” to reinforce the importance of energy to the nation. The Department of Defense subsequently adopted the observation and incorporated an additional “Energy Awareness Week” to focus specifically on military service energy. In 2012, the theme was changed to “Energy Action Month.”

POC is Capt. Andrew J. Czaplicki, 804-236-7706, ngva.pao@mail.mil

Capt. Andrew J. Czaplicki is the Public Affairs Officer at the Joint Force Headquarters in Virginia, Sandston, Virginia



(continued from previous page)

the buildings, the missions and most importantly, the people that worked at WSMR 65 years ago.” Godby believes there will be a good deal of interest from both former employees and their relatives to revisit the rich WSMR past they were part of.

In December 2014 the implementation of the newspaper website was completed. Epsilon Systems Solutions Inc. assisted in its development and is presently hosting the collection where a searchable database has been designed to allow for keyword searches as well as viewing issues by date. Additionally a “flip page” has been incorporated to simulate the feel of the original newspaper for those who just want to browse. Future plans for the paper include creating a kiosk at

the WSMR museum to allow visitors, often retired employees, to view the paper during their visit. The papers will also be shared with the New Mexico State University Special Collections library as a resource for student and faculty research.

Along with gaining historical knowledge of old WSMR, the newspaper provides highly significant local content for viewers as they are provided a glimpse of what life was like over 50 years ago in Las Cruces, New Mexico, through the many local advertisements of businesses long forgotten.

“For anyone who lived in Las Cruces, I think it brings back that old Las Cruces that people knew,” Godby said. “For the younger generation this is a past that they really don’t know about, and it’s a

great way to learn about the Las Cruces their parents and grandparents grew up in.”

Historic issues of the Wind and Sands and The Missile Ranger newspaper can be viewed online at <http://www.wsmrhistoric.com>. Efforts are underway to find a home for the newspapers on the WSMR public webpage. There are still numerous data gaps that Godby hopes can be filled through the public’s efforts. Godby and his team are looking for any issues that were published within the 1950s.

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

Adriana Salas is a staff writer in the Public Affairs Office, White Sands Missile Range, New Mexico.



The screenshot shows the website for the White Sands Missile Range historic newspapers. At the top, there is a navigation bar with links for HOME, ABOUT, SEARCH, DATES, ADVERTISEMENTS, and USEFUL LINKS. The main content area features a large article titled "A Presidential Visit to White Sands Missile Range" with a black and white photograph of President John F. Kennedy speaking to a crowd. To the left of the article is a sidebar with the heading "WSMR Digitizes 40 Years of Range Newspaper!!" and text describing the digitization project. To the right is a section titled "Missing Papers" with a call to action for missing issues. Below the article is a search form with fields for "Search By Word or Phrase:", "Search By Year:", and "Search By Date:", along with "Search", "Clear", and "Advanced Search" buttons. On the far right, there is a "Contact Information" section for Bill Godby.

Screen shot of website for White Sands Missile Range, New Mexico, historic newspapers



Calculating the True Cost of Water

by Elisabeth Jenicek

Installation potable water supply is often undervalued when compared to higher cost energy. Low water pricing leads to long payback periods for water investments and can lead to waste and inefficiencies. Fort Leonard Wood, Missouri, personnel sought to identify the true cost of water to the installation. This led to an investigation of Army water utility rates and the calculation methods. The price of water at an installation is determined either by the source utility or, where installations supply their own water, by governing Army policy for calculating utility resale rates. These rates are then used in billing reimbursable customers and vary by customer class.

In contrast to price, the value of water is influenced by the degree of availability. Water is typically undervalued when considering water stress, both seasonal and chronic, in many regions of the United States. Fort Leonard Wood sustainability planners were looking for the cost of water. In this context, the cost of water is the sum cost of all inputs required for its provision. These costs are derived from summing inputs from each stage of the supply process: source, transport, treatment and provision to customer or user.

When taken as an average, the cost of potable water to Army installations was \$5.16 for every thousand gallons (Kgal) for fiscal year (FY) 2013. (Water reuse and industrial, landscape and agricultural water categories are reported separately to the Army Energy and Water Reporting System.) While total Army potable water use has declined since FY 2007, the unit cost of water rose by nearly 75 percent.

Water rates in the United States increased by 4.9 percent annually between 1996 and 2012.

Water cost varies between installations for a number of reasons. For installations that purchase water from a local utility, unit price trends are regionally based on factors ranging from the water source (surface, ground, reuse), the cost to operate water and wastewater treatment facilities, and the degree of infrastructure reinvestment by the utility supplier.

For installations that withdraw, treat and distribute their own water, the true cost of water will be closely linked to the age and condition of water infrastructure. Treatment plants and distribution systems that require large inputs of energy, material and repairs cost more to operate. The unit price passed on to reimbursable customers is higher.

Guidance for setting water rates at installations is found in the Interim Guidance on the Calculation of Rates for the Sale of Utilities Services and Utilities Contracts Invoicing/Billing. The guidance includes a spreadsheet template for ease of use. Categories captured in the formula are operation cost, system losses, energy cost, capital charges and overhead costs in support of the treatment and supply of drinking water.

Operation costs include operations and maintenance labor, chemicals, service orders and major construction charged to the water plant and distribution system. System losses include the estimated leakage rate. Energy cost includes average head plus friction, cost of power per kilowatt-

Acronyms and Abbreviations	
FY	Fiscal Year
Kgal	Thousand Gallons

hour, rate of pumping and annual hours of use. Capital charges refer to the original cost to construct the water treatment plant and distribution system; any major improvements also add to the capital value of the plant. Overhead costs cover administrative services.

There are several relevant discussion points on the topic of Army installations capturing the full cost of water. It is imperative that installations account for all of the operations and maintenance costs incurred by the water system. This requires that service orders and work orders are classified correctly when reported or completed.

There may be additional costs to the drinking water treatment and distribution system that don't show up as operations and maintenance. One example is disposal of treatment by-products such as sludge. At Fort Leonard Wood, this totaled \$23,333 per year for a 12-year time frame. It is important that the energy burden of the water system is fully accounted for. This requires careful attention to any changes in, for example, pump efficiencies or operating hours from year to year.

A last point is the outcome of charging some customer classes at a rate less than the full cost of water calculated in the "B" rate, that is, the rate that is charged only to non-government customers. The net effect of under-charging for water can be seen in the following example. Estimated water use by Residential Contracting Initiative housing at the example installation is 0.62 million gallons per day. The difference between the "C" rate – the rate that is specified for RCI housing – and the "B" rate is \$409 per day for total lost revenue of \$150,000 per year.

Understanding the true cost of water is a motivator for becoming as water efficient as possible in order to minimize losses that can be controlled. The realization that all non-government tenant utilities

Rate	Per Kgal	Difference from "B"	Customer Class
B Rate	\$1.39149	\$0	Non-Federal
A Rate	\$1.12685	\$0.26464	Federal
	\$0.72709	\$0.6644	AAFES
C Rate	\$0.73160	\$0.65989	MFH & MWR
Local Prevailing	\$2.25		

Water rate categories for Fort Leonard Wood



Site Cleanup Demonstrates Unique Technology

by Kerry Larson

Cleanup efforts on the former motor pool site at the U.S. Army Engineer Research and Development Center (ERDC) in Vicksburg, Mississippi, were recently completed and incorporated some new, cutting-edge technology, making the process more environmentally friendly and economical.

The motor pool operation used mechanics to perform maintenance and repairs on vehicles and heavy equipment from the early days of the Waterways Experiment Station until 1996, when the station transitioned to leased and rented vehicles and equipment. The motor pool building served a variety of other purposes, including logistics offices, until 2009, after which time it remained empty until its demolition in 2012.

The ERDC enlisted the assistance of the U.S. Army Corps of Engineers, Omaha District and its Environmental Remediation Branch to conduct a three-phase cleanup project on the motor pool site.

The key component of the cleanup was the Vapor Energy Generator (VEG) soil remediation system at the site. The patented VEG technology houses a completely enclosed treatment chamber within which the soil and associated contaminants are heated by introducing steam at temperatures as high as 1,100 degrees Fahrenheit into the chamber. As an internal auger rotates the soil, the steam causes contaminants to be released and captured by a vacuum system inside the enclosed treatment chamber. The captured



Twenty-five hundred cubic yards of soil were excavated, treated for contaminants and replaced.

gases are then run through a series of patented acid gas and emission-reducing filters before being routed back to the generator to be burned as fuel to run the treatment system.

Using this process, the plant actually uses less and less fuel as project time goes on. The system operates completely on recycled water, making it environmentally friendly. Most significantly, once the contaminated soil is treated – in this case to achieve non-detectable levels for all chemicals of potential concern at the site – the clean-treated soil is then placed back into its original location and compacted for reuse, eliminating the need and expense of offsite transportation and disposal of soils at a landfill.

At ERDC, the need to purchase fill soils was eliminated through full reuse of treated soils, and the organization's liability for contamination was eliminated through complete treatment rather than by transporting contamination to a landfill, where ERDC would remain responsible for its ultimate fate.

All of these accomplishments occurred while achieving remediation carbon footprint reductions on the order of 80 percent over the transport and disposal of soils at an off-site landfill.

"Using this soil remediation system resulted in the removal and on-site treatment of a significant amount of contaminant mass that otherwise was slated for disposal at a landfill," said Douglas Simpleman, project manager with the Omaha District. "As a result, fully treated soils were reused on-site without restrictions, generating significant reductions in cost,

Acronyms and Abbreviations

EPA	Environmental Protection Agency
ERDC	Engineer Research and Development Center
VEG	Vapor Energy Generator

liability, vehicle traffic through residential areas, and significant reductions in carbon dioxide and other atmospheric emissions that would otherwise have occurred throughout the soil remediation process."

The full treatment and reuse of soils also helps minimize the potential for future groundwater impacts from chemicals leaching through soils, thereby aiding groundwater treatment activities in achieving site closure.

"The soil contamination at ERDC presented an interesting scenario," Simpleman said. "The chlorinated-contaminated soils were below Resource Conservation and Recovery Act characteristic waste levels, but the levels were above migration to groundwater risk-based screening levels. They were contributing to a small groundwater plume at the site. As such, we understood soils would have to be cleaned up to below migration to groundwater risk-based screening levels."

"We have been working with the U.S. Environmental Protection Agency (EPA) for years on a variety of cleanup issues around the facility, actually since 1988," said Jerry Haskins, chief of the ERDC Safety and Environmental Management Office. "Ultimately, our goal is to have EPA approve our recommendation of 'no further action' for the old motor pool area. That approval will come after several rounds of groundwater sampling demonstrate that any contamination has been reduced to a very low level."

POC is Kerry Larson, 601-634-2553, kerry.larsen@usace.army.mil

Kerry Larson is a public affairs specialist with the Engineer Research and Development Center in Vicksburg, Mississippi. 

(continued from previous page)

are subsidized to some extent provides strong justification for engaging tenants in an active conservation program.

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

Elisabeth Jenicek is a senior research mechanical engineer at the Engineer Research and Development's Construction Engineering Research Laboratory in Champaign, Illinois. 



History and Mystery Merge in Laredo Building

by Margaret Magat

It was said to be a jailhouse that once housed Pancho Villa, or was it? For anyone who loves a mystery, not to mention history, Building 36 (also known as Building 53) of the 63d Regional Support Command's Colbern Memorial USAR Center in Laredo, Texas, is an intriguing case full of mistaken identities, fading maps and old-fashioned detective work.

The subject of an Environmental Assessment, Building 36 is within the boundaries of old Fort McIntosh which was a result of the U.S.-Mexico War of 1846 to 1848. Originally named Camp Crawford, Fort McIntosh was among a handful of forts along the Rio Grande established to protect against attacks from marauders and to patrol the border. In 1975, Fort McIntosh was declared a National Register of Historic District and is also known as archaeological site 41BW11 with prehistoric components. From its early days, Fort McIntosh was the social center of Laredo, an integral part for many of the older residents of the Laredo community who continue to harbor affectionate memories of the place. It was at the Fort that families could find entertainment watching soldiers at the Parade ground or where children could skate on its broad, smooth sidewalks. The Fort was where the women of Laredo met, mingled, and

married enlisted men. Now the younger generation of Laredo is also familiar with the Fort as well, as it is now part of the Laredo Community College.

Almost all the historical background that is available on Building 36 typically notes that the building was constructed circa 1870 and that it was a "guardhouse." From the outside, the one-story building may indeed look like a guardhouse or a jail, as its windows have bars. But its looks could be deceiving.

In 2005, the building's overall condition was investigated in order to provide renovation estimates. There are tantalizing clues in the structure itself. The design of the 4" x 10" slots in the brick walls is how one would mount a beam for support of weight above putting vertical force on the wall. These slots would be the support of a mezzanine used for storage, not flimsy jail cells for a guardhouse. The lack of any evidence showing interior walls also supports this theory. Why does it have bars at the windows? Perhaps it was to keep people out and secure the contents of the building. In a pinch, it could have also acted as a temporary place for people to be locked up, but not a very secure one. Another clue is available at the back of the building, at the top of its door where a faded, dotted sign represents the number "36." But the number is hard to see except at certain angles and is most visible during dusk. In a 1940s map of the Fort, P-36 is identified as a "Quartermaster's warehouse." The building itself is located at the back of the Commissary, built in 1890, which has been renovated and is part of the Fort McIntosh Historic District.

If these clues are not enough, an oral history interview with 90-year-old Laredo resident, Elizabeth Gill, would certainly help fill in any gaps. Mrs. Gill was a resident of Fort McIntosh during


Acronyms and Abbreviations	
RSC	Regional Support Command
U.S.	United States
USAR	United States Army Reserve

the 1930s, and was interviewed for her extensive historical knowledge. When shown a picture of Building 36, Mrs. Gill identified it as a warehouse, citing what was told to her and also what was known by the generation before her.

With all these clues, Building 36 was most likely built to be a storage warehouse. Obviously, it is important to figure out what the building was, but from a preservation standpoint, it ultimately does not matter. It may be easier to preserve a jailhouse rumored to have once incarcerated Pancho Villa (since disproven by historian Dr. Jerry Thompson) rather than a quartermaster's warehouse, but the fact remains that Building 36 is eligible to be on the National Register of Historic Places and has to undergo a process. This includes consultation with grass roots organizations, local citizens, and the Texas State Historical Commission. In November 2014, the Webb County Historical Commission also invited the 63d RSC to present information during their monthly meeting. The first public meeting for the building was held on January 14, 2015.

Additional information and references used in this article are available from the author. Contact information is included below.

POC is Margaret Magat, 650-526 9727, annamargaret.r.magat.ctr@mail.mil

Margaret Magat is the cultural resources program manager (contractor support), 63d Regional Support Command. 



Building 36



Reclaiming Land Close to its Original Condition

by Cheryl A. Moore

The silhouette of oil rigs pumping through the night encompasses the North Dakota landscape.

But when an oil/gas well is no longer producing and is ready to be plugged and abandoned, the well site needs to be reclaimed and restored as close as possible to its original condition. This includes identifying, segregating, and removing contaminated soils from the site before and during the re-vegetation/re-contouring process.

The Omaha District has developed an Oil and Gas Management Plan to address current and future reclamation requirements for non-producing oil wells on Corps project lands. In 2012 when Petro-Hunt approached the Garrison Project office in Riverdale, North Dakota asking for requirements to begin reclamation of two old well sites there were no Corps guidelines or standards for Oil and Gas Reclamation. “It was definitely a learning process and an experience as far as balancing Corps and operator interests,” said Hattie Payne, former Natural Resource Specialist, Garrison Project.

The Garrison Project used guidelines from the State of North Dakota, Industry Best Management Practices and other collaborative agencies such as the United States Forest Service, Bureau of Land Management, and the Environmental Protection Agency. Older wells did not include a reclamation plan as part of the Application for Permit to Drill, so the Corps relies upon the State of North Dakota standards.

The company submitted a reclamation plan and they were required to clean out the drilling mud from where they drilled the well, known as the reserve pits. These well facilities were located in a relatively flat area along Lake Sakakawea. “One of the challenges was not being aware what these sites looked like pre-construction,

and all the activities taking place during its use,” said Payne. One well site was drilled in 1955 and the other site in 1980, requiring an investigation to uncover the unknown about these sites. Payne pointed out that an investigation may not be needed for wells drilled more recently.

The investigation on the Petro-Hunt site revealed three live pipeline corridors running through one of the well sites, making cleanup tricky. “The lesson learned here is you will not have perfect cleanups, but acceptable clean ups,” said Payne. “Considerable quantity and funding was expended to clean up this location,” said Casey Buechler, Lake Manager, Garrison Project Office.

Payne said that since these facilities were very old and Texaco, (the original company), did not use liners for their operations area, tank battery, or reserve pits, it was decided that a Subsurface Soil Assessment needed to be performed to determine if soils on the surface or subsurface were impacted. She said that oil and gas operations by nature can be messy.

A work plan was developed for a Limited Phase II Subsurface Soil Assessment and once that was performed a Reclamation Work Plan was developed based on those Phase II results. The work plan consisted of the sundry notices, location, geology, site safety plan, utility clearances, sample location maps and description of how the soils would be sent to labs and analyzed.

Native seed mixes will be certified weed free and approved by the Corps prior to applications. Seed, fertilizer, and mulch will be distributed by appropriate methods as dictated by the topography on the site. Payne said, “Analysis from initial soil sampling will be used to determine fertilizer application rates.”

Now that initial work is done on the



Hattie Payne, Natural Resource Specialist, tests soil for petroleum contamination. (Hanson, Petro-Hunt L.L.C.)

well sites and the journey to the oil and gas process is ongoing, the sites will be monitored for erosion and vegetation management for a minimum of three years.

Reclamation will be considered accomplished by the Corps when there is a weed-free establishment of 90 percent vegetative cover, consisting of grasses and nutritious flowering plants known as forbs. “This is the last phase for our agency. Reclaiming the land restores many Natural Resource values such as wildlife habitat, recreation, and native plant communities. It’s our objective to return the land to a condition similar to that which existed prior to disturbance, and the company has worked hard to accomplish that objective,” said Buechler.

POC is Cheryl A. Moore, 402-995-2418, Cheryl.a.moore@usace.army.mil

Cheryl A. Moore is a public affairs specialist with the U.S. Army Corps of Engineers, Omaha District.





West Point's Creative Approach to Low Impact Development

by Matthew Talaber and Katherine Ogut

Over the past two years, the United States Army Garrison at West Point has been embarking on a comprehensive long-term Master Planning approach to address stormwater run-off. Traditional stormwater management practices such as retention ponds, holding tanks, and mechanical filtration systems have been used to treat, transport and discharge stormwater from buildings parking lots, and impervious surfaces and are often hidden behind chain-link fences or in underground collection systems. Although these conventional practices can effectively handle stormwater on site, they tend to not fully integrate with or enhance the landscape. As more laws and regulation regarding the environment, stormwater and sustainability emerge, it is imperative that Master Planners stay ahead of the curve and effectively plan for these changes, while taking into consideration limited space and the surrounding landscape. West Point has begun to implement the use of Low Impact Development (LID) and Green Infrastructure (GI) to address stormwater by integrating strategic site design with thoughtful landscape planning.

Efforts evolved into a Stormwater Management Plan (SWMP) that incorporates LID/GI practices such as bio-retention, porous pavements, and gray-water reuse in unique and innovative ways that weave seamlessly into West Point's beautiful and historic scenery. These practices not only effectively treat stormwater at the source, but also enhance the campus atmosphere and visitor experience. As part of the SWMP, West

Point chose two areas to further develop and design that would demonstrate effective stormwater management through the use of LID/GI practices while improving the aesthetic appeal and overall function of the sites.

Area selection was based on three key principle objectives. First, the site must have an actual stormwater run-off volume that has the ability to by-pass the sewer system and be infiltrated back into the natural environment, or be utilized for re-use. Second, the site must be highly visible and located in a public space that is frequently visited, traversed, or enjoyed by the cadets and community. Last, and most importantly, the sites must show that the use of LID/GI practices would reinvigorate the landscape and provide an increased aesthetic value.

The first site was the area of the First Class Club (FCC). The FCC is in the vicinity of the historic Trophy Point landscape and is the hallmark of the cadet and visitor experience at West Point. This location boasts beautiful views of the Hudson River Valley, is home to the USMA Senior Class social gatherings, and sees over 2 million visitors a year. With steep slopes and run-off from surrounding impervious surfaces, this site was a prime location to incorporate LID. Concept designs now contain several practices including terraced grass seating with waterfall style bio-retention, foot-bridges extending over constructed dry-creek beds that expose and transport run-off during rain events, and reconfiguration of the walkways to incorporate porous pavements and improve the flow of foot traffic. The design also includes benches, seating areas, and interpretive signage for the community to learn, enjoy and re-think stormwater run-off.

The next area that was chosen for advanced design was the historic Buffalo Soldier Field (BSF) site. BSF is mixed-use area that is home to several entities including athletic fields, administrative

Acronyms and Abbreviations	
BSF	Buffalo Soldier Field
FCC	First Class Club
GI	Green Infrastructure
LID	Low Impact Development
SWMP	Stormwater Management Plan
USMA	United States Military Academy

offices, community recreation facilities, an automotive shop, and the Buffalo Soldier monument. It's also located directly next to West Point's main visitor entrance and sees heavy vehicular traffic. The LID plan developed for this site not only addresses high stormwater run-off and combined sewer infrastructure; but also tackles traffic flow, parking re-configuration and relocation and enhancement of the monument. LID concepts integrated into the site include strips of porous pavement, roof drain disconnects into stormwater planter boxes, and separation of a combine sewer line that drains rainwater into a cistern that supplies a monument reflection pond.

By examining areas affected by stormwater run-off and envisioning campus improvements the SWMP successfully incorporated LID/GI stormwater management while enhancing the landscape for the surrounding community. West Point is demonstrating that LID stormwater management can be both functional and aesthetically pleasing. Phasing for the construction of the First Class Club has begun and elements of LID have been integrated into future projects including the Cadet Barracks Upgrade Program and the West Point Middle School redevelopment.

POC is Katherine Ogut, 845-938-6329, Katherine.Ogut@usma.edu

Matthew Talaber is the director of Public Works at U.S. Army Garrison West Point. Katherine Ogut is an environmental protection specialist ORISE, at the U.S. Army Garrison West Point.





The Army Reserve Approach to Energy and Sustainability

by Steve Patarcity

Egon Spengler: There's something very important I forgot to tell you.

Peter Venkman: What?

Spengler: Don't cross the streams.

Venkman: Why?

Spengler: It would be bad.

Venkman: I'm fuzzy on the whole good/bad thing. What do you mean, "bad"?

Spengler: Try to imagine all life as you know it stopping instantaneously and every molecule in your body exploding at the speed of light.

Ray Stantz: Total protonic reversal.

Venkman: Right. That's bad. Okay. All right. Important safety tip. Thanks, Egon.



Crossing the energy streams generated from an unlicensed Nuclear Accelerator is a “bad thing” (or so we’re informed) and certainly no one would disagree that that the total cessation of life in the universe could in anyway be construed of as “good”. Humor aside, the analogy here that focusing on just one single energy stream is “good” but crossing additional streams is “bad” may be just how we have been looking at Energy and Sustainability programs. Single focus (or ‘streams’) aren’t the solution to achieving success in Sustainability. What will work are multiple streams that cross and mutually support each other for mission completion. The Army Reserve’s

Sustainability Campaign Plan (ARSCP) seeks to cross those streams to achieve a Sustainability Informed Culture – not just in Energy, but also in Waste, Water, Sustainable Transport and other critical areas.

The development of the Army Reserve’s Sustainability Campaign Plan (ARSCP) has been a long and arduous process. Initially, our Energy Security Implementation Strategy (ARESIS) was drafted in the Fall of 2010, but went through numerous reviews and adjustments that delayed implementation. By early 2013, a strategy, vision and guidance to attain unity of effort/unity of action to achieve objectives had still not been approved by senior leadership. While the ARESIS was deployed as a draft document, the AR landholding installations, Mission Support Command (MSC) and Regional Support Commands (RSC) remained without a path to success. This was compounded by geographic dispersion and multiple mission requirements (which many times differ, based on our regional focus).

We began with a very early realization in 2013 that a ‘stovepiped’ and stand-alone energy strategic plan was not the sole solution. While we were responding to missions and working other sustainability programs, such as water and waste along with full participation in the Net-Zero Pilot Program, there was no “crossing of the streams” or synchronization of

the multiple Lines of Effort that mark a comprehensive and overarching Sustainable Campaign. We saw clearly that Energy was but one component of Sustainability for the AR.

After the identification of a lack of synchronization, the decision was made that a first step was to revamp the ARESIS into a more user friendly document through revision of Energy Security Goals (ESG). In September of 2013, the AR Sustainability Team held an off-site strategic planning conference in Alexandria, Virginia assisted by contract personnel from Plexus Scientific, Inc. and the Department of Energy’s Pacific Northwest National Laboratory (PNNL). This session laid the ground work to revamp and mature the ARESIS.

After approval of our Sustainability Governance and Energy Strategy in December of 2013, we developed a base Operations Order (OPORD) for the overall AR Sustainability Campaign. While this may seem a little ‘backwards’ as a technique to develop the campaign, i.e, establishing a component of the plan instead of building the base first, we decided to get the already ‘90 percent’ solution for Energy to the field and then tackle the other aspects of Sustainability.

With the Base OPORD for the ARSCP tentatively approved, we then identified the total components of the Campaign. All of the elements are mutually supporting components of the ARSCP, yet they

Acronyms and Abbreviations	
AR	Army Regulation
ARSCP	Army Reserve Sustainability Campaign Plan
ARESIS	Army Reserve Energy Security Implementation Strategy
ESG	Energy Security Goal
MSC	Mission Support Command
OPORD	Operations Order
PNNL	Pacific Northwest National Laboratory
RSC	Regional Support Command



FedCenter Logs 10 Years of Support to Environmental Managers

by Steve Luzzi

October 2014 marked the tenth year that the Federal Facilities Environmental Stewardship and Compliance Assistance Center (FedCenter) has served as an essential resource for government environmental managers. Released in the fall of 2004 with a mission to assist federal civilian agencies with their efforts to meet their environmental compliance needs, FedCenter today serves both the public and private sectors, and is visited more than 1,000 times each day by its rapidly growing list of members.

FedCenter is a joint initiative of the U.S. Environmental Protection Agency's (EPA's) Office of Enforcement and Compliance Assurance (OECA),



the Army Engineer Research and Development Center's Construction Engineering Research Laboratory (ERDC-CERL) and the Office of the Federal Environmental Executive (OFEE.) The purpose of the center, located at <https://www.fedcenter.gov>, is to provide an all-services technical and compliance assistance tool to help federal environmental officials better address their environmental needs. FedCenter is managed and operated by ERDC-CERL and is governed and supported by a consortium of 15 federal agencies.

FedCenter currently provides a wide variety of information and services to its members. Included is information on program development (such as green procurement, electronics stewardship or fleet management), policy and guidance, best practices, lessons learned, and, pollution prevention and environmental training opportunities. The center also provides a "regulatory watch" tool for monitoring and tracking draft and final federal regulatory information, and a "facility regulatory tour" containing federal and state regulatory requirements for activities common to federal facilities. Members can elect to subscribe to any

Acronyms and Abbreviations	
EPA	U.S. Environmental Protection Agency
ERDC-CERL	Engineer Research and Development Center's Construction Engineering Research Laboratory
FedCenter	Federal Facilities Environmental Stewardship and Compliance Assistance Center
OECA	Office of Enforcement and Compliance Assurance
OFEE	Office of the Federal Environmental Executive

information area and receive e-mail notification of new information in varying frequency and format.

In addition to providing a "one-stop shop" for program area and regulatory information, FedCenter also offers collaboration and reporting tools for member workgroups or communities of practice. These tools help agencies manage their program plans and documentation needs, as well as help them manage their environmental inventories and meet various upward reporting requirements. Membership to FedCenter is available to all federal employees and their partner organizations free of charge.

The center is directed by a board representing 15 federal agencies who meet quarterly to discuss and prioritize FedCenter activities. These agencies jointly share, govern and support financially the center's wealth of information and services offered to each agency, and as a result of this partnership, FedCenter has become an indispensable environmental information exchange within the federal community who benefit greatly from this unique pooling of government knowledge, expertise and resources.

The FedCenter team has earned numerous awards over the years, including a White House Closing the Circle Award in 2008, honoring the

(continued from previous page)

are in themselves stand alone strategic documents to implement sustainability programs under the overall campaign. Key elements of the ARSCP are still being developed. The campaign components will be added to the OPOD as Appendices to Annex C (Operations) and supporting plans and documents as Tabs and Enclosures to the Appendices where appropriate.

Our campaign still has a long way to go and indeed, Sustainability is very probably a never-ending process. This makes our operations difficult to "phase", as various sub-strategies

will be under different phases and timelines. However, we believe that success in sustainable operations for the AR rests on "crossing the streams" of all related programs in a well-planned Sustainability Campaign, ensuring mutual support, synchronization by all organizations and unity of effort.

POC is Steve Patarcity, 703-806-6723, steven.a.patarcity.civ@mail.mil.

Steve Patarcity is a strategic planner and program manager for the Sustainability Team, Facility Policy Division, Army Reserve Installation Management Directorate, Office of the Chief, Army Reserve.



Major Revision to Regulation Outlining Acquisition, Sales of Utilities Published

by Bernard Givan

The long-awaited revision to Army Regulation 420-41, Acquisition and Sale of Utilities Services, is now available. The Army Publishing Directorate formally released the updated regulation March 3, 2015. The extensive revision and update comes as significant changes in energy policy and technology have evolved over the past 20 years since the regulation was last revised in 1990. The revised regulation goes into effect April 3.

AR420-41 establishes Department of

the Army policies, responsibilities and mandatory procedures for the acquisition and sale of utilities and related services for continental United States military Army facilities. Its intent is the acquisition of life cycle cost-effective utility services commensurate with facility requirements and the sale of utilities and related services to garrison reimbursable customers.

The proponent of the regulation is the Chief of Engineers. Updating the AR-420-41 was a U.S. Army Corps of Engineers effort shared between Headquarters (Rafael Zayas, retired) and the Engineering and Support Center, Huntsville (Bernard Givan and Bob Hennessee). The revision implements electricity procurement requirements of the Energy Policy Act of 2005, Executive Order 13423, Executive Order 13514, Department of Defense Instruction 4170.11, and the DOD 4140.25-M chapters pertaining to the competitive acquisition of electricity and natural gas.

Utility acquisition and sales responsibilities are explained from the Assistant Secretaries of the Army down to the installation utility sales officers.

Chapter 3 provides guidance on the acquisition of utilities (electricity, natural or manufactured gas, water, sewage, thermal energy, chilled water, steam, hot water

Acronyms and Abbreviations	
AR	Army Regulation
DOD	Department of Defense
TN	Technical Note

or high temperature hot water) services. Renewal energy, onsite generation, demand response and energy financial incentives are included with regard to the most recent Army policy.

The cost recovery of utility sales to Army facility customers is extremely important for an Army facility as well as the Army. Chapter 4 is dedicated to providing detailed policy and guidance to the recovery of government costs for utility services delivered.

In 1992 the TN420-41, Guidance for Calculation of Rates for the Sale of Utilities Services, was published to provide technical guidance with the development of reimbursable rates for the sale of utilities services by Army installations. The Interim Guidance, Calculation of Rates for the Sale of Utilities Services and Utilities Contracts Invoicing and Billing Services, was released in 2012 to supersede the TN420-41. The Huntsville Center's Commercial Utilities Program is further developing an enterprise application that will take utility provider bills and produce invoices for facility customers based on AR 420-41 guidance and data from the meter data management system.

Here are some AR420-41 highlights:

- Updates responsibilities for the acquisition of utilities services and the sale of utilities and related services to conform to Army Installation Management Transformation
- Updates general Army policies for acquiring and selling utilities and services
- Incorporates energy related statutes and executive order requirements related to the purchase of utility services from renewable energy, demand




(continued from previous page)

team's efforts for creation of an online environmental management system reporting tool to help federal agencies meet the Office of Management and Budget's annual reporting requirements. Members of this team were also recipients of the EPA's Exemplary Customer Service Award for outstanding leadership, skill and creativity exhibited in development of an underground storage tank compliance reporting system to help federal agencies meet the reporting

requirements of the Energy Policy Act of 2005. The team was most recently recognized by the White House for helping to advance the Administration's goals outlined in the latest Executive Order on Federal Sustainability.

POC is Steve Luzzi, 217-373-5894, Stephen.T.Luzzi@usace.army.mil, or visit <https://www.fedcenter.gov>.

Steve Luzzi is an Operations Research Analyst with the U.S. Army Corps of Engineers, ERDC-CERL in Champaign Illinois. 



Contracts Awarded for Facilities Reduction Work

by Debra Valine

The U.S. Army Engineering and Support Center, Huntsville, awarded contracts to 12 businesses February 6, 2015 as part of a multiple award task order contract (MATOC) that will be used to demolish excess facilities on military installations.

The overall value of the MATOC is \$48 million for a base year and four option years estimated at \$9.6 million each.

This contract is for commercial demolition related services. General work activities performed under this contract for Huntsville Center's Facilities Reduction Program will include planning,



The Facilities Reduction Program removes excess facilities from installations, such as the heat plant shown here. (North American Dismantling Corp.)

coordination, and execution of building and facility removal or demolition. Major aspects of the field work include, but are not limited to, facility abatement and hazardous material removal, demolition, debris management and disposition, and site restoration and cleanup.

Contracts were awarded to:

- All Phase Services Inc.*, Delray Beach, Florida
- ARS Aleut Remediation LLC*, North Augusta, South Carolina
- Atlanta Demolition*, Chamblee, Georgia
- ESA South Inc.*, Cantonment, Florida
- LATA-Sharp Remediation Services LLC*, Oak Ridge, Tennessee
- Micah Group Energy & Environmental*, Lexington, Kentucky
- North Wind Construction Services*, Oak Ridge, Tennessee
- Bhate Environmental Infrastructure, Birmingham, Alabama
- Charter Environmental Inc., Boston, Massachusetts
- NorthStar Demolition and Remediation LP, Baltimore, Maryland
- North American Dismantling Corp.,

Acronyms and Abbreviations	
Corp.	Corporation
Inc.	Incorporated
LLC	Limited Liability Company
LP	Limited Partnership
MATOC	Multiple Award Task Order Contract

- Lapeer, Michigan
- Perma-Fix Environmental Services Inc., Knoxville, Tennessee

The asterisk indicates the company is a small business.

The MATOC establishes a pool of qualified contractors who will be eligible to bid on future projects. Funding and work location will be determined with each task order with an estimated completion date of Feb. 5, 2020.

POC is Allen Shelvin, 256 895-1335, allen.shelvin@usace.army.mil

Allen Shelvin is the Facilities Reduction Program Manager in the Installation Support and Programs Management Directorate, U.S. Army Engineering and Support Center, Huntsville. Debra Valine is the chief of Public Affairs, U.S. Army Engineering and Support Center, Huntsville.



(continued from previous page)

response pricing and environmental concerns

- Identifies considerations for acquiring utilities services from renewable resource projects through energy power purchase agreements
- Updates approval threshold levels for acquisition contracts and adds guidance on waivers or deviations from service related regulations and guidance
- Provides guidance on the sale of electricity from alternate energy and cogeneration production facilities
- Provides guidance on preparing, executing and administering solicitations and contracts for acquiring


utility services

- Provides guidance on acquisition utility contract rate changes
- Establishes the Army Utilities Services Acquisition and Sale Specialist Training and Certification Program
- Removes the reproducible utilities-sale-instrument formats from the regulation and prescribes additional special provision forms for hot water service, fuel oil service, compressed air service, ice service, chilled water service and liquefied propane gas service
- Changes the terms "purchaser(s)" and "tenant(s)" to "customer(s)" and expands the customer classes on the sales of utilities and related services
- Updates and expands the unit cost rates for the sale of utilities and related

services for each customer class

- Provides guidance on recovering incremental costs associated with privatizing an Army utility system and recovering energy savings performance contracting costs, or utility energy services contracting costs, directly related to a government-owned utility generation and/or utility external infrastructure
- Provides guidance on using utility sale meters.

POC is Bernard Givan, 256-895-1275; bernard.w.givan@usace.army.mil

Bernard Givan is the program manager for the Commercial Utilities Program, U.S. Army Corps of Engineers, Engineering and Support Center, Huntsville. 



13 Businesses Awarded Utility Monitoring and Control Systems Contracts

by Julia Bobick

Huntsville Center awarded the last of 13 contractors to the fourth generation of its Utility Monitoring and Control Systems (UMCS) Multiple Award Task Order Contract (MATOC) in January. Representatives from the pool of contractors gathered for a post-award kickoff meeting Feb. 18 at the University of Alabama in Huntsville campus.

“We talk to them as a group about UMCS IV and we walk them through the contract and program management, as well as our small business goals,” said Program Manager Steve Goolsby. Though the majority of the contractors have previously worked with Huntsville Center, Goolsby said it is important to go over performance expectations and share current issues across the various programs and projects under the UMCS MATOC umbrella. The Center’s Electronic Security Systems (ESS) and the Army Central Metering Program also share the \$2.5 billion capacity MATOC, the second largest capacity MATOC at the Center.

During the five-year contract period through January 2020, the 13 companies are now able to compete for task orders to deliver UMCS, Heating, Ventilating and Air Conditioning Systems (to include chillers, boilers, air handling units and ductwork systems installation and/or integration), Supervisory Control and Data Acquisition systems, Fire Alarm Systems,

life safety control systems, chemical / biological / radiological contaminant detection/filtration, utilities (electric/ gas/water) metering and ESS services to Department of Defense and other federal agencies worldwide.

“Customers come to us from around the world with their work requirements and funding, and they hire us as a reimbursable organization to manage projects for them that enhance their capability to achieve the federally mandated energy goals and objectives,” Goolsby said.

Huntsville Center is the U.S. Army Corps of Engineers’ Utility Monitoring and Control Systems Mandatory Center of Expertise (UMCS MCX) to provide quality oversight and technical expertise in the design and installation of UMCS. The UMCS MCX is the backbone to a turnkey program offering comprehensive, professional, high-quality, reliable, cost-effective and cyber secure products and technical solutions for customers.

Huntsville Center followed a new staggered award process for the UMCS IV contract, according to Tonju Butler, the Contracting Directorate Preaward Branch chief. The first three companies, which all had no deficiencies, were directly awarded contracts in August to give the UMCS program the option to use the contract vehicle to meet missions before the end of fiscal year 2014. The previous MATOC’s capacity had been expended. The remaining contractors were awarded in January.

“We also awarded using a combined suite, announcing it as unrestricted but with a \$500 million small business set aside because we felt this was such a great opportunity for small businesses,” Butler said. Up to \$500 million of task orders for the \$2.5 billion capacity MATOC will be open only to small businesses. Both large and small businesses can compete for task orders for the unrestricted pool, increasing

Acronyms and Abbreviations	
ESS	Electronic Security Systems
MATOC	Multiple Award Task Order Contract
O&M	Operations and Maintenance
OMEE	Operations and Maintenance Engineering Enhancement
UMCS	Utility Monitoring and Control Systems
UMCS ECX	Utility Monitoring and Control Systems Mandatory Center of Expertise

the opportunity for small business, she said.

The following five small and eight large businesses were awarded contracts from August 2014 to January 2015. Goolsby said companies could be removed and/or additional companies added to the pool if needed through the on-ramp-off-ramp process, which is subject to the same proposal instructions and evaluation procedures as contained in the original solicitation. This could occur once every 12 months during the contract period, according to Butler.

- Eaton
- EPC Service*
- Evergreen Fire Alarms*
- Exp Federal
- Honeywell Technology Solutions
- Infotec Systems*
- Johnson Controls
- Schneider Electric Buildings Americas
- Secure Mission Solutions
- SEI Group*
- Siemens Government Technologies
- Spectrum Solutions*
- Williams Electric Company
- Small businesses

POC is John (Steve) Goolsby, 256 895-2511, john.s.goolsby@usace.army.mil

Steve Goolsby is the Utility Monitoring and Control Systems Program Manager, U.S. Army Engineering and Support Center, Huntsville. Julia Bobick is a public affairs specialist with the U.S. Army Engineering and Support Center, Huntsville.



OMEE projects include industrial boilers and pumps.



IMCOM Implements Web-Based System to Manage Hazardous Materials, Waste

by Rich Morris

The Assistant Chief of Staff for Installation Management (ACSIM) made a decision in August 2014 for Headquarters, Installation Management Command (HQ IMCOM) and Army Materiel Command to transition from the Hazardous Material Management System (HMMS) to the U.S. Air Force Enterprise Environmental, Safety and Occupational Health Management Information System (EESOH-MIS). The Army software site licenses for HMMS expired March 27. This decision was based on delays in the fielding of the Headquarters Army Environmental System (HQAES) and the fact that hazardous materials management will not be part of the HQAES capabilities. The EESOH-MIS has already met the required Business Enterprise Architecture as well as the Defense Information Systems Agency security and networkability requirements. The Air Force has made the EESOH-MIS available to the Army with no licensing requirements or costs, and the Office of the ACSIM (OACSIM) will centrally fund continued help desk support, so there is no cost to the installations.

The EESOH-MIS is a powerful, web-based system that was designed by the Air Force to replace the HMMS for both hazardous materials and hazardous waste management functions. The contractor was funded by the OACSIM to migrate

all of the HMMS data over to EESOH to maintain continuity of the data. This was already accomplished for every Air Force base that transitioned to EESOH-MIS, so the process should have been relatively consistent and seamless for Army installations, with the exception of Aberdeen Proving Ground, Maryland (APG), because they had developed their own databases to manage hazardous materials and hazardous waste data. APG had its data migrated to and implemented EESOH-MIS Oct. 21, 2014. The AF contractor has successfully completed on-site implementation of EESOH-MIS for hazardous materials and/or waste management at 24 IMCOM garrisons and Walter Reed Army Institute of Research as of March 6, and they are scheduled to complete implementation on 32 more sites May 29.

The OACSIM-funded transition and implementation at IMCOM installations only applied to those that are currently using HMMS. The remainder of IMCOM installations that are either using a commercial off-the-shelf system or some other method to manage either hazardous material or hazardous waste began to implement the EESOH-MIS solution in the second quarter of fiscal year 2015. Fort Sill, Oklahoma, was the first such installation to implement EESOH-MIS to replace their COTS for hazardous waste

Acronyms and Abbreviations	
ACSIM	Assistant Chief of Staff for Installation Management
APG	Aberdeen Proving Ground
BOS	Base Operations Support
COTS	Commercial Off-The-Shelf
EESOH-MIS	Enterprise Environmental, Safety and Occupational Health Management Information System
HMMS	Hazardous Material Management System
HQAES	Headquarters Army Environmental System
HQ IMCOM	Headquarters, Installation Management Command
OACSIM	Office of the Assistant Chief of Staff for Installation Management
USAF	U.S. Air Force

management since their license expired at the end of March 2015. HQ IMCOM plans to implement EESOH-MIS at up to 24 garrisons for either hazardous materials or waste management or both by the end of 2015.

POC is Rich Morris, 210-466-0570, richard.l.morris56.civ@mail.mil

Rich Morris is a Resource Team leader in the Public Works Division, Headquarters, Installation Management Command.

Need to Evaluate Historic Farmstead Sites? Here's Help

by Susan Enscoe, Carey Baxter, George Calfas and Megan W. Tooker

A method developed to classify historic farmstead archeological sites at a Midwestern installation has proven useful for those in the Southeast as well. The Engineer Research and Development Center, Construction Engineering Research Laboratory (ERDC-CERL) used techniques designed for Fort Leonard Wood, Missouri, to help Fort Bragg, North Carolina, assess several abandoned farm sites and comply faster, at lower cost, with the National Historic Preservation Act of 1966.

Military acquisition of vast amounts

Acronyms and Abbreviations	
ERDC	Engineer Research and Development Center
ERDC-CERL	Engineer Research and Development Center, Construction Engineering Research Laboratory

of land for new and expanded training installations during both World War I and World War II naturally included inhabited lands. Most of this habitation was in the form of individual farmsteads. Defence of the Realm Acts from 1914 onward



Machine-cut nail embedded in fence post at Fort Bragg (ERDC-CERL).



Development of IMCOM Environmental Funding Allocation Model

by Rich Morris

The Office of the Assistant Chief of Staff for Installation Management (OACSIM) has developed and utilized the Base Operations Support (BOS) Requirements Model – Environmental Quality (BRM-EQ) to build the Program Objective Memorandum (POM) for recurring environmental requirements for the Army. As an Army Environmental Program (AEP), the BRM-EQ has historically programmed sufficient funding to maintain compliance with federal and state laws and regulations for recurring environmental requirements. However, upon further analysis, it was clear that the BRM-EQ programming calculations are significantly different from individual garrison requirements execution.

In FY14, Headquarters Installation Management Command (HQ IMCOM) Public Works (G4) Environmental Branch acquired support from AH Environmental and their subcontractor, Architecture, Engineering, Consulting, Operations and Maintenance (AECOM), who has spent the past decade building the BRM-EQ for OACSIM. The goal is to refine the algorithms of the BRM-EQ to develop an IMCOM Environmental Funding Allocation Model (EFAM) that will accurately calculate

funding sufficient to support recurring environmental requirements for every IMCOM garrison.

In concert with the EFAM, G4 is developing a project Catalog, similar to the old Environmental Program Requirements (EPR) catalog, that refines the engineering cost estimates and standardizes the level of service for each requirement that will be included in the algorithms. Analysis of environmental requirements build revealed a paradigm of haves and have-nots within the IMCOM community in terms of the level of service procured for some requirement, in particular hazardous waste management and conservation. This variability exists primarily between Forces Command and Training and Doctrine Command installations, but also exists between installations with similar mission and natural/cultural resources in the same region. As such, the EFAM is intended to provide funding at the level of service that is needed to achieve compliance rather than what has historically been provided, a level that exceeds the need. HQ IMCOM G4 will utilize the Project Catalog, along with the specific standardized tasks that build the engineering cost estimates, to develop standardized Performance Work Statements (PWS) for those requirements

Acronyms and Abbreviations	
AECOM	Architecture, Engineering, Consulting, Operations and Maintenance
AEP	Army Environmental Program
BOS	Base Operations Support
BRM-EQ	BOS Requirements Model – Environmental Quality
EFAM	Environmental Funding Allocation Model
EPR	Environmental Program Requirements
EQ	Environmental Quality
FY	Fiscal Year
G4	Logistics
HQ IMCOM	Headquarters, Installation Management Command
MDEP	Management Decision Package
OACSIM	Office of the Assistant Chief of Staff for Installation Management
POM	Program Objective Memorandum
PWS	Performance Work Statement

with the greatest disparities. These PWSes will be provided to all IMCOM garrisons for use and will be used by HQ IMCOM G4 and region staff to evaluate service contract approval packages to determine whether

(continued from previous page)

gave the government wide-ranging coercive powers during wartime, and the Defence of the Realm (Acquisition of Land) Act 1916 provided specifically for the requisitioning of land. Land was requisitioned for airfields, allotments and accommodation for government departments.

As a result, installations across the country contain numerous 18th – 20th century farmstead sites that are the remains of farmsteads. The occupants of all these sites once belonged to communities connected by kinship and social institutions and were displaced. The impact of these farmsteads on the landscape remains visible on installation rangelands and buffer zones, although the occupants are long gone.

Installation land managers must

now determine how best to manage their former homesteads consistent with federal legal requirements. Key among these is the legal requirement to evaluate properties for eligibility to be listed on the National Register of Historic Places. Very little guidance exists, however, on how to manage these sites, and the cost of doing so can become prohibitive.

Based on efforts at Fort Leonard Wood, ERDC-CERL developed guidance on how to systematically evaluate 18th – 20th century farmstead sites. This guidance provides the Department of Defense with a valid and supportable method to rapidly identify the many sites that do not require a full-scale investigation to determine significance, saving time and money in cultural resources stewardship. The guidance also provides a comprehensive perspective on the landscape that would be useful in evaluating new discoveries and making timely, appropriate

mitigation decisions for undertakings involving the installation's historic archaeological resources.

ERDC's Construction Engineering Research Laboratory has published a comprehensive technical report to provide this guidance to installation cultural resource managers. This project was funded by the Department of Defense Legacy Resource Management Program. The final report is available at <http://www.denix.osd.mil/cr/LRMP/FactSheets.cfm>.

POC is Dr. Susan Enscoe, 217-373-4434, susan.i.enscoe@usace.army.mil

Dr. Susan Enscoe is a research geographer at ERDC-CERL in Champaign, Illinois, and served as the project manager. Carey Baxter and Dr. George Calfas are research archaeologists at ERDC-CERL. Megan Tooker is a landscape architect at ERDC-CERL.



Sustainability: A Consideration in All We Do

by Mary Jo Snavelly and Steven Patarcity

If you are an Army Career Program 18 Engineers and Scientists (resources and construction) careerists, the chances are good that sustainability is an important consideration in your daily work. The Army is currently operating under unprecedented demands on its Soldiers, families, civilians, communities, units, systems, and infrastructure. The Honorable Katherine Hammack, Assistant Secretary of the Army for Installations, Environment and Energy (ASA-IE&E) advocated, "It's operationally necessary, it's fiscally prudent, and it's mission essential for us to make sure that we have energy security and can perform our primary mission for the United States." The Army National Guard (ARNG) Director, MG Judd Lyons stated, "It's a lot more than feel good measures. Energy efficiency and sustainability have broad national security, readiness and operational impacts." Finally, Mr. James B. Balocki, Chief Executive Officer for the Army Reserve stated, "The risks to mission effectiveness resulting from possible interruptions of critical power and energy means that we must make energy security a prime consideration in all operations. Sustainability then, is a cost-effective strategy to manage our energy, water, land, and people wisely in order to keep the Army capable, accessible, and innovative in the face of a changing world."

Aligning with a growing body of sustainability-related policies and plans, a growing number of Army CP 18 careerists must be trained in such areas as utilities resilience, conservation-driven behavior change, waste diversion, rainwater management, green procurement, and climate change preparedness. Army Sustainability

teams from across the Army offer a variety of professional development resources for Soldiers and Civilians in light of the evolving landscape of requirements.

In response to a strong DOD and Army command emphasis on energy stewardship, the ARNG Sustainability Team offers several resources geared toward utilities managers, in particular Energy Managers. In 2014, the ARNG Sustainability Team hosted an Energy Summit. This executive session was offered alongside standard training courses ranging from tracking utilities data in AEWRS to conducting energy audits. Last year's event included presentations from Army National Guard leadership, the Army's Office of Energy Initiatives (formerly known as the Army Energy Initiatives Task Force), and DOE's National Renewable Energy Laboratory. Energy Action Month is part of a larger federal initiative that focuses on lowering energy usage and costs while promoting renewable energy projects and initiatives. Units throughout the National Guard have made multiple strides in reducing energy usage and consumption including conversion to solar power and use of cleaner synthetic fuels in aircraft as well as other changes. The event closed with a panel of State Guard leaders discussing successful energy projects and how to overcome challenges along the way. To complement in-person professional development, the ARNG Sustainability Team is drafting a new Energy Manager's Handbook, by updating the existing DOD handbook. This comprehensive guide will clarify the responsibilities of each energy manager and serve as a reference document for Army and AR Energy Managers at any stage in their

Acronyms and Abbreviations	
AEWRS	Army Energy and Water Reporting System
AR	Army Reserve
ARNG	Army National Guard
BAS	Building Automation System
BEM	Building Energy Manager
CEM	Certified Energy Manager
CP	Career Program
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
E&C	Engineering and Construction
EPA	U.S. Environmental Protection Agency
EST	Eastern Standard Time
GKO	Guard Knowledge Online
MG	Major General
POC	Point of Contact
REM	Resource Efficiency Manager
S&E	Sustainability and Energy
USACE	U.S. Army Corps of Engineers

program. ARNG expects this document to be completed and distributed by mid-fiscal year 2015.

The Army Reserve (AR) has initiated similar initiatives for Energy Managers. It has developed a Building Energy Manager (BEM) program which has been initiated at over at 50 percent of AR Installation and Support Centers, which included training a total of 150 non-energy professionals to support and assist in monitoring energy and sustainability at the facility level. The Army Reserve has also expanded and refined its Building Automation System (BAS) to reduce energy and utility use. AR Communications Engagement Programs ensure the force is informed and has the

(continued from previous page)

the garrison PWS complies with the standard level of service.

Beginning FY16, HQ IMCOM G4 intends to employ the new EFAM to allocate environmental funding for recurring requirements across the command to maintain compliance despite the impending 10 percent+ decrease in AEP funding that is expected.

G4 will still collect project information via the Garrison Environmental

Requirements Build as in prior years to allow the Army program execution organizations (Army Corps of Engineers, Army Environmental Command and Public Health Command) to identify requirements that can be centrally executed and achieve economies of scale. Non-recurring (non-modeled) requirements will also be collected although the current projected FY16 funding levels do not appear to be sufficient to fund anything beyond recurring requirements. As confidence in the EFAM is achieved, levels of service across the enterprise are

standardized, and Department of Army Civilians perform more project work in-house vice contracts, garrisons should have sufficient funding to accomplish non-recurring requirements as well.

POC is Rich Morris, 210-466-0570, richard.l.morris56.civ@mail.mil

Rich Morris is a Resource Team leader in the Public Works Division, Headquarters, Installation Management Command.





(continued from previous page)

tools to become “Energy Warriors”.

Monthly, the Army National Guard’s Sustainability Team hosts free online Net Zero Collaboration Calls, which are open to all DOD personnel. Each ARNG Net Zero Collaboration Call is a forum where Sustainability Coordinators, Energy Managers, Solid Waste Managers, and others in the Net Zero community share innovative solutions and common challenges. Each month’s call is led by a different Guard State, Territory, or District. Topics range from data collection methods to effective awareness campaigns. After the calls, resources are posted in Guard Knowledge Online (GKO) (<https://gkoportal.ng.mil/arng/G4/D04/SitePages/Home.aspx>) resource libraries. The Sustainability Guard Knowledge Online (GKO) library contains the ARNG’s up to date repository for policies, plans, outreach poster templates, case studies, and guidance documents. The library is available twenty-four hours a day to all Army personnel. The ARNG Sustainability Net Zero Collaboration Call details are updated on the calendar in addition to other paid and free professional development opportunities such as upcoming public conferences, USACE



Army Major General Judd H. Lyons, acting director of the Army National Guard, addresses those gathered at the Energy Action Month kick-off ceremony at the Army National Guard Readiness Center in Arlington, Virginia. (U.S. Army photo by Sgt. 1st Class Jon Soucy)

training workshops, and DOE and EPA webinars. The Army National Guard shares Army sustainability updates and Guard sustainability news through its public ARNG Sustainability newsletter, “Net Zero News,” also posted on the GKO site.

Headquarters U.S. Army Corps of Engineers hosts a weekly Sustainability and Energy Webinar Series to highlight technical advances, policy issues, and the implementation of sustainability and energy concepts within the Engineering and Construction (E&C) community. Every Tuesday at 1400 EST there is a live presentation on topics of interest to the E&C community and others. They will be recorded and available on the Sustainability and Energy (S&E) Portal website (<https://mrsi.erc.dren.mil/sustain/Pages/Webinars.aspx> under Training > Webinars).

The Army Reserve hosts a monthly Energy Managers collaboration call and periodic Net Zero collaboration calls, and has expanded their outreach program to include water and waste. Once a year, the AR also hosts two strategy sessions to review progress in established goals and accompanying action plans to achieve those goals. Governed by a Sustainability Campaign Plan (of which Energy, Water and Waste are sub-strategies) the AR maintains a SharePoint Site for collaboration efforts and has sponsored

Certified Energy Manager (CEM) training as well as subordinate organization staff augmentation through the USACE Resource Efficiency Manager (REM) contract. See also <http://www.usar.army.mil/resources/ForSoldiers/Pages/Army-Reserve-Sustainability-Programs.aspx>

The ARNG, the Army Reserve and the Active Army will continue to improve and expand its professional development opportunities in order to build a community of CP-18 Professionals who are equipped with a strong knowledge of sustainability concepts, to forge a force more resourceful and resilient. Army Strong!

POC for the Army Career Program CP-18 Engineers & Scientists (Resources & Construction) Proponency Management Office is Lerone Brown, 202-761-1816, lerone.brown@usace.army.mil. POC for the Army National Guard is LTC Anita Vinson-Britman, 703-607-4271, anita.y.vinsonbritman@mail.mil. POC for the Army Reserve is Mr. Eric Loughner 703-806-6791, eric.c.loughner.civ@mail.mil

Ms. Mary Jo Snavely is the Sustainability Specialist for the Army National Guard Directorate in Arlington, Virginia and Mr. Steven Patarcity is the Army Reserve Facility Manager in the Installation Directorate at Ft Belvoir, Virginia.



From the Editor

This issue will be my last Public Works Digest. Thank you for your enthusiastic input over the past few years. I have truly enjoyed learning about and sharing the good work being done throughout the Army Public Works community. It is the sharing of information which has continued to make the Public Works Digest such a great and valuable resource.

As I transition into retirement, I want to thank everyone and acknowledge that I sincerely appreciate the hard work given by each author to benefit the publication and the Army Public Works community. I look forward to continue reading and learning from your articles as you share more experiences and good news in the future. Thank you.

*Kathy Gerrity-Milibram
Managing Editor*

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

