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USACE leads way, garners 2016 FEMP Award

By David San Miguel
USACE Engineering and Support Center Huntsville

Leading the effort to save taxpayers' money and contribute to energy and water efficiency, the U.S. Army Corps of Engineers was recognized with several 2016 Federal Energy and Water Management Awards, Dec. 7.

Dr. Timothy Unruh, director of the Department of Energy's Federal Energy Management Program, presented the awards at a ceremony in Washington, District of Columbia.

Co-sponsored by FEMP and the Interagency Energy Management Task Force, the awards recognize individuals and organizations in each of five categories, including Career Exceptional Service, Contracting, Programs, Projects and the Director's Award.

Of the 30 energy and water management awards presented, the Army received the highest percentage for all federal agencies. In total, it received seven, shared an eighth and significantly contributed to a ninth award.

In addition, the Army garnered the Director's Award for achieving more than $1 billion in performance contracts toward the President's Performance Contracting Challenge, which challenged federal agencies to award $4 billion in performance contracts by the end of 2016.

These contracts represent 1.1 trillion British thermal unit of energy, 359 million gallons of water, and almost $40 million during fiscal 2015.

The energy savings alone are equivalent to removing 48,000 cars from the road or eliminating the average energy use of more than 24,000 households annually.

This success is a result of the exceptional dedication, hard work and customer service of the contracting folks, engineers, project and program managers, office of counsel, and all the other staff, customers and stakeholders that made up the Project Delivery Teams, said Michael Norton, chief, Energy Planning Branch, Energy Division, U.S. Army Corps of Engineers, Engineering and Support Center, Huntsville.

(Photo by Lt. Col. Patrick Dagon)

The U.S. Army Corps of Engineers and the USACE Engineering and Support Center, Huntsville, were recognized with the 2016 FEMP Director's Award Dec. 7. Pictured (l-r) are Randy Shed, Office of Deputy Assistant Secretary of the Army for Energy and Sustainability; Randy Smidt, Office of Assistant Chief of Staff for Installation Management; Margaret Simmons, USACE Huntsville Center; Hon. Katherine Hammack, Assistant Secretary of the Army for Installations, Energy and Environment; Pamela Griffith, Defense Logistics Agency-Energy; Michael Norton, USACE Huntsville Center; and David Williams, USACE Headquarters.

"The program grew from a few awards a year with capital investments of $20-25 million to 16-20 awards of more than $240 million in FY14, and in the $141 million range the last couple years," he said. "The expedited acquisition process they developed and implemented was a team effort allowing the PDT to support not only Army garrisons, but also Navy and, most recently, Air Force bases to meet the PPCC and other energy goals and mandates."

Project awards were presented to the USACE, Mobile District, Tennessee-Tombigbee Waterway in Mobile, Alabama; the Department of the Army; U.S. Army Corps of Engineers; and Fort Riley, Kansas.

In FY15, the Mobile District completed construction projects using the first energy savings performance contract within USACE Civil Works, with an investment value of more than $3 million.

The project was a "proof of concept" initiative, intended to demonstrate the viability of using an ESPC to implement energy conservation measures at a series of small, geographically dispersed facilities, including high-mast lighting at the 10 locks and dams along the 234-mile navigation channel which comprise the Tennessee-Tombigbee Waterway.

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USACE helps exceed the President's Performance Contracting Challenge

Article compiled from various sources

The White House announced Dec. 28 that federal agencies have exceeded its Presidential Performance Contracting Challenge to award $4 billion in energy efficiency contracts by the end of 2016.

The White House made the announcement saying, "Today we are proud to announce that the President's challenge has been exceeded, with 21 federal agencies awarding 340 projects with over $4.2 billion in value."

"This is a big milestone that shows not only how the private and public sectors can work together to achieve joint objectives, (but also) the hard work that agencies put forward to meet an ambitious goal," said Christine Harada, federal chief sustainability officer, in the White House Council on Environmental Quality.

In 2011, President Barack Obama challenged federal agencies to facilitate $2 billion in energy efficiency upgrades to federal buildings. In 2014, the president announced an additional $2 billion goal, resulting in a total of $4 billion in energy efficiency performance contracts through 2016. The Army's commitment toward the goal was to award $1 billion in Energy Savings Performance Contracts and Utility Energy Service Contracts.

Widely recognized as the Army's center of expertise on energy performance contracting, the U.S. Army Corps of Engineers, Engineering and Support Center in Huntsville, Alabama, was instrumental to the Army's success by awarding $869.8 million of the more than $1 billion in energy performance contracts in support of the PPCC. In fact, a team including Huntsville Center and USACE Headquarters earned the Department of Energy's 2016 Federal Energy Management Program Director's Award for their efforts resulting in more than $1 billion in energy performance contracts awards toward the PPCC goal that supported the Army, Navy, Air Force and Civil Works. Huntsville Center's cumulative ESPC and UESC capital investment represents nearly 88 percent of the Army total and more than 25 percent of the $4 billion PPCC.

Under an ESPC, energy service companies compete to finance, design, construct and manage energy projects and maintain the systems long-term. ESPCs range from 10 to a maximum of 25 years, with the energy companies being paid back over the term of the contract from cost savings generated by the energy efficiency improvements they make.

Since FY11, the Huntsville Center has awarded 96 energy performance contracts totaling $1.04 billion supporting the Army, Navy, Air Force and USACE Civil Works.

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(Photo courtesy of USACE Los Angeles District)

According to Lt. Gen. Todd T. Semonite, commanding general and chief of engineers, U.S. Army Corps of Engineers, the Corps continues to be a leader on energy and water efficiencies as well as greenhouse gas reduction. Take the Fort Irwin Weed Army Community Hospital which is slated to become the first Department of Defense medical facility to achieve Leadership in Energy and Environmental Design Platinum certification. This designation is largely due in part to the construction of a solar farm that will provide the hospital with 2.4 megawatts or 100 percent of its projected daily average consumption. In addition, the hospital's roof will feature a solar thermal system to provide hot water for domestic use. Read this issue's EnviroPoints commentary to learn more.

The Corps Environment

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Whenever possible, please enjoy *The Corps Environment* **without using paper.**

USACE leaders in sustainability then, leaders now

By Lt. Gen. Todd T. Semonite
Commanding General, Chief of Engineers
U.S. Army Corps of Engineers

This is my first year as the 54th Chief of Engineers and Commanding General of the U.S. Army Corps of Engineers and I'm energized by the vital initiatives the Corps and our partners have developed and executed together so we can achieve energy security, water conservation, and waste reduction goals. Why? Because sustainability initiatives protect vital ecosystems and ensure the security and prosperity of our nation. Our work supports military readiness, improves the natural environment and boosts the quality of life and resilience for all Americans, including warfighters and their families.

I've been a long-time advocate for incorporating sustainability into everything we do. As a division commander, I established key partnerships to enable federal agencies to engage with regional, state and local stakeholders so as to develop mutually beneficial solutions to common concerns, such as endangered species protection, water supply and distribution, and access to recreation.

As the deputy commanding general of USACE, I led our Strategic Sustainability Committee. We set stretch goals for energy efficiency and greenhouse gas emissions. We implemented a sustainability scorecard meant to track and encourage improvement of key environmental measures. The committee and scorecard has promoted the sharing of ideas to improve the sustainability performance of the whole organization with a view toward cost savings, innovation, and a reduction in energy use and waste streams. I'm pleased to see how many of our sustainability scorecard metrics have changed from red to amber to green. I was thrilled to learn we exceeded the $12 million goal set for Energy Savings Performance Contracts, in our internal operations, by more than $5 million and that we have more projects in the pipeline. We also played a major role in enabling the federal government to surpass the Obama administration's target of $4 billion. President Obama issued the challenge to all federal agencies, asking them to partner with companies to save energy through the Energy Savings and Performance-Based Contracting Investments Initiative. U.S. Army Engineering and Support Center, Huntsville, which is widely recognized as the Army's center of expertise on energy performance contracting, awarded nearly $1 billion in energy performance contracts for the Army.

Our work supports military readiness, improves the natural environment and boosts the quality of life and resilience for all Americans, including warfighters and their families.

Such accolades are no surprise since USACE has applied environmental stewardship, sustainability and resilience fundamentals in planning, engineering, design and construction even before the wave of environmental legislation of the 1970s. Over the last decade, a renewed focus on sustainability and a much greater reliance on systems thinking and alternative financing has emerged. We are relentless in pursuing environmental conservation, sustainability and resilience objectives because we get it. We understand these issues are interdependent and we know how crucial they are to enabling the readiness of our nation, protecting the health of communities across the country, as well as reducing risk and safeguarding economies.

We also understand achieving these objectives requires us to break through barriers and stovepipes within our own organization. Delivering solutions to our nation's fiercest environmental challenges requires us to access the right capabilities, talent, and insight across all our mission areas.

For example, just a few months ago, two USACE projects received GreenGov Presidential Awards, bringing great credit not only to the Corps, but to our U.S. Army Installation Management Command partners as well. We have consistently received at least one GreenGov award in the past five years, but what made this year even more exemplary is that both of the awards we earned recognized multi-disciplinary collaborative teams from separate organizations. The Engineer Research and Development Center Construction Engineering Research Lab and Fort Worth District received the Green Innovation Award for integrating the Net-Zero Planner and the Comprehensive Asset Master Planning Solution Dashboard tools. These planning tools, which were first demonstrated at Fort Hood, Texas, and Joint Base Pearl Harbor-Hickam, Hawaii, allow installation personnel to effectively and efficiently evaluate ways to cut energy consumption and costs as part of their daily workflow.

Sustainability has been an explicit part of the Corps' culture since 2002, when we first adopted our "Environmental Operating Principles." We strive not only to meet federal energy, water and waste reduction targets, but rather think strategically to anticipate the need for adaptation to climate change and extreme weather events.

I was proud to renew the Environmental Operating Principles in my first year as USACE commanding general and recommit our organization to these crucial principles. And let me emphasize these principles are not just for our environmental/ regulatory teammates, they apply to ALL of us – and I consider them a foundation task.

The EOPs are as follows:

- Foster sustainability as a way of life throughout the organization.
- Proactively consider environmental consequences of all Corps activities and act accordingly.
- Create mutually supporting economic and environmentally sustainable solutions.
- Continue to meet our corporate responsibility and accountability under the law for activities undertaken by the Corps, which may impact human and natural environments.
- Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.
- Leverage scientific, economic and social knowledge to understand the environmental context and effects of Corps actions in a collaborative manner.
- Employ an open, transparent process that respects views of individuals and groups interested in Corps activities.

Our Corps is a leader in sustainability, but we can't rest on our laurels. Help us put the Environmental Operating Principles into action and continue to set a world class standard for yourself and your teams. We have come so far, but we have much more work to do.

I have made environmental stewardship a priority in our new USACE Campaign Plan. You will find our environmental commitment more prominently displayed in some of our key mission areas, such as civil works. You will also note that within USACE Campaign Plan Goal 1, we have reset Objective 1c to "Support the nation and the Army in achieving our energy security, sustainability and environmental goals." The intent of this objective is to have one focus within the UCP where we bring together all of our mission areas to foster cross-cutting initiatives.

This objective has three distinct actions:

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Lt. Gen. Todd T. Semonite
Commanding General, Chief of Engineers
U.S. Army Corps of Engineers

ENVIROPOINTS

EnviroPoints

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First, our priority remains on our continued commitment to meet and exceed our federal goals and targets for energy and sustainability. I consider this commitment essential to delivering on our promises. I expect USACE to be recognized as leaders in sustainability as well as enablers for our partners to achieve their sustainability goals. It's not just about energy either – we need to ensure that we put our attention on our water use, sustainable acquisition practices, and continued commitment to reducing waste.

Second, we will fully "walk the talk" by integrating sustainability and our EOPs into all USACE operations and missions. It's one thing to say we consider these principles, it's a very different thing to have measurable criteria and results by which we develop our projects and evaluate our progress. Our sustainability team will be working hard to propose key criteria and monitor and evaluate our success.

Third, we must grow world class sustainability leaders. We must develop a community of sustainability professionals who are chosen for their passion, commitment, knowledge and expertise; sustainability professionals who are leaders among their peers, recognized for their ingenuity and innovation.

For the most part, our current cadre of sustainability managers, across our divisions, districts and centers, has the sustainability mission as a collateral duty. Through the update in the USACE Campaign Plan, we plan to develop a training curriculum and propose options for sustainability accreditation for our professionals. We are still exploring training options and accreditation and are seeking insights from leaders in academia, industry and the non-profit sector. The concepts and principles of sustainability that promote collaboration, systems thinking, and creative problem-solving are attributes we need to develop and cultivate in all our future USACE leaders.

As we work to develop and implement these actions, I encourage you to become involved and contribute your ideas and suggestions. I also encourage leaders at all levels to do the following:

• Seek opportunities for regional partnerships: We need to create the space and the time for candid dialogue among stakeholders in which we share ideas and lay out our concerns with a view toward mutually beneficial solutions. If you don't know the Regional Environmental and Energy Office director in your area of operations, I highly recommend you find out. When I was the South Atlantic Division commander, I was a member of the Southeastern Natural Resources Leaders Group composed of senior leaders from natural resource agencies including the U.S. Fish and Wildlife Service, Environmental Protection Agency, and the National Park Service. The utility of this partnership was apparent in our combined response to the Deepwater Horizon disaster of 2010. USACE played a pivotal role providing on-site expertise, assisting partners with emergency response, coordinating efforts with other military assets, and providing much-needed public information. Another partnership SAD established was the Executive Steering Committee for the Savannah Harbor Expansion Project. The committee, founded in 2008, included regional heads of the National Marine Fisheries Service, EPA Region 4, U.S. Fish and Wildlife Service and the director of the Georgia Ports Authorities. Frequent and continuous communication allowed the committee to quickly identify and resolve project issues and concerns to the satisfaction of many diverse stakeholders.

• Leverage capabilities as much as you can across mission areas. The environmental community of practice is filled with talented professionals in military programs, civil works, and research and development. Regardless of where they sit in our organization, they are doing one or more of three activities: restoring our environment from past activities, supporting compliance with environmental regulations, or using their expertise to eliminate or mitigate emerging threats such as climate change. We need to focus talent where it is most needed, which might mean that our environmental engineers, biologists, chemists, and similar professionals may need to cross-train in multiple program areas.

• Demonstrate your personal commitment – apply the EOPs and promote them within your organization. Ask how your office, district or division is meeting the sustainability standards. Know your energy and water consumption. Ask your managers how they considered the EOPs in their operations. Everyone, regardless of job series, rank, or grade has an important role to play in accelerating sustainability.

As engineers, we have unique capabilities to translate science into actionable information and innovation. All of this important work is accomplished by teams of people deeply committed to sustainability. I am proud to have in our ranks leaders among their peers — scientists, engineers, archeologists, analysts, planners, architects, technicians, biologists, natural resources specialists and many more working together with our customers and contractors to achieve sustainability goals.

(Photo by Maj. Kevin Lewis)

Lt. Gen. Todd Semonite visits with USACE teammates from the Pittsburgh and Tulsa Districts while touring the Veterans Affairs medical complex under construction in Aurora, Colorado.

Now I imagine there might be some speculation about what the change in administration might mean for the Corps and sustainability in the future. History is littered with forecasts that failed to materialize, so I urge you to focus on our missions. As Army engineers, we have made a promise to our country. We have abundant evidence, 241 years' worth, that demonstrates engineers honor our promises. The use of natural resources for a multitude of environmental, economic and social purposes will continue to challenge society and we will continue to be leaders in this arena — safeguarding lives, livelihoods and property without damaging natural resources; all while driving innovation.

As members of the U.S. Army Corps of Engineers, you are the most passionate, consistent and convincing advocates for protecting our nation's interests, including our natural resources.

Why? Because you provide vital engineering services in peace and war to strengthen our nation's security, energize the economy and reduce risks associated with disasters. The future will surely present more challenges, all while our infrastructure continues to age, our population continues to grow and new threats emerge.

I believe we will continue to play our full part in promoting our nation's peace, prosperity and sustainability through our science and engineering expertise and leadership.

Everything we do supports the Army and our nation's readiness. We need to keep setting the example of what right looks like.

(Photo by Julia Bobick)

Hon. Jo-Ellen Darcy, Assistant Secretary of the Army for Civil Works, visits Mobile District's Stennis Lock and Dam on the Tennessee-Tombigbee Waterway in Mississippi to learn about its energy and sustainability efforts with the U.S. Army Engineering and Support Center, Huntsville.

President's Challenge

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Of the $1 billion awarded, $869.8 million was in support of the Army, $68.54 million was in support of the Navy; $50.25 million was in support of Air Force; $16 million was in support of USACE Civil Works, $28 million was in support of the Defense Logistics Agency; and $56 million was in support of the Defense Intelligence Agency.

The Huntsville Center's energy performance contracting program has successfully integrated renewable energy generating assets into projects to help meet federal clean energy and renewable electricity goals. Examples include projects at White Sands Missile Range, New Mexico; Fort Bliss, Texas; Fort Campbell, Kentucky; Fort Buchannan, Puerto Rico; and Los Angeles Air Force Base, California, that provided a total of more than 11 megawatts of solar generated power and 825 kilowatt hours of wind generated power. In addition, the Center integrated a UESC with a Power Purchase Agreement at Fort Campbell that will provide a cumulative 5 megawatts of solar power.

Since FY11, the Huntsville Center has awarded 96 energy performance contracts totaling $1.04 billion.

In concert with other strategic initiatives, USACE signed a memorandum of understanding in 2014 with the energy department's FEMP to advance U.S. government-wide adoption of performance contracting processes. The MOU has effectively contributed to the Army and the defense department's success in achieving the PPCC goals. It will support the efforts of other federal agencies to meet federal energy and water reduction goals. As a result of this MOU, FEMP has provided resources to the Center to initiate several projects to support the U.S. Air Force.

The USACE Civil Work PPCC goal was set at $12.5 million in 2011, and was surpassed in January 2016 with the award of three ESPC projects totaling $16 million at civil works facilities.

In FY15, USACE Civil Works awarded its first ESPC in support of USACE Mobile District's project to implement lighting upgrades along the Tennessee-Tombigbee Waterway. The $3 million project was a "proof of concept" initiative, intended to demonstrate the viability of using an ESPC to implement energy conservation measures at a series of small, geographically dispersed facilities, including high-mast lighting at the 10 locks and dams along the 234-mile navigation channel that collectively comprise the TTWW. Systemwide, the ESPC is guaranteed to deliver 21.7 percent in energy savings, or about 5.1 billion British thermal units and $160,000 per year. In addition to significant energy efficiency improvements, the TTWW has also witnessed operational safety improvements for overnight barge traffic as a result of the high mast lighting installed at various locks. For this effort, Mobile District received a Department of Energy, 2016 Federal Energy and Water Management Program Award.

Following the TTWW, USACE awarded two additional ESPCs that collectively comprise the USACE Civil Works $16 million PPCC contribution. A $5.5 million project for three similar river-based navigation systems in the Pittsburgh District was awarded in January 2016. Through lighting upgrades, thermostat installations and transformer replacements, the project is guaranteed to deliver 23 percent energy savings. USACE also has invested $7.4 million in a project at the Humphreys Engineer Center Support Activity, Virginia, that is guaranteed to deliver a 16 percent in overall energy savings through the installation of various energy conservation measures.

FEMP Award

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Systemwide, the ESPC is guaranteed to deliver 21.7 percent in energy savings, or about 5.1 billion Btu and $160,000 per year. This project provides the impetus for growing the USACE ESPC pipeline, currently comprised of $16 million in contracts awarded to date, including $5.5 million in investment for three similar river-based navigation systems. The pipeline now includes virtually all USACE locks and dams in the Mississippi Valley from St. Paul, Minnesota, to New Orleans.

Fort Riley, the Army and USACE shared an award with the EPA to help advance the installation's net zero, waste and energy goals through innovative technology.

There, the agencies partnered with the Kansas United School District 475 to install a green infrastructure permeable pavement parking lot on the post's Seitz Elementary School.

Completed in August 2015, the parking lot is comprised of permeable interlocking concrete pavers that reduce storm water runoff along with its associated pollutants. Each year, it's expected to capture 443,000 gallons of storm water that would normally be lost to runoff.

In addition, this project will serve as a platform to educate students on storm water management.

In an Army news release following the awards presentation, the Hon. Katherine Hammack, Assistant Secretary of the Army for Installations, Energy and Environment, commented on how the awardees were "helping lead the way in advancing energy efficiency, deploying renewable energy, supporting water reclamation and reuse, investing in integrated planning and design efforts, and leading educational campaigns on sustainability.

"The Army has a history of leading by example in determined support of our national warfighter," she said. "As administrations and priorities change, we believe our energy and sustainability efforts strongly 'Soldier on' to support increasing Army mission capabilities today and preserving our operating ability in the future."

She added that the goal is to establish specific energy and water security requirements so that redundant and diverse supplies of energy and water, from renewable sources, is the logical and cost effective norm to support the military mission.

Kevin McCurdy, wildlife biologist, Gulf South Research Corp., traps brown-headed cowbirds to protect the endangered black-capped vireo.

Soldiers, civilians protect post's endangered black-capped vireo

Story and photos by Cindy McIntyre
Fort Sill Tribune

FORT SILL, Okla. - When Joe Grzybowski, his team of environmental interns and bird experts head out into the backcountry here, they have one little bird in mind. It is an endangered species that could throw a wrench into the Army's training mission, but which Fort Sill is required, by law, to protect.

This little songbird is the black-capped vireo.

Fortunately, the vireo tends to nest in the oak scrub found in rocky terrain where no howitzer artillery gun crew dares to tread. In a sense, the very existence of Fort Sill may contribute to the bird's preservation since the area is protected from development; and, prescribed and natural fires help maintain its habitat.

But why let a songbird few people have ever heard of take precedence over national defense?

According to the Environmental Protection Agency, the 1970 National Environmental Policy Act exists "to assure all branches of government give proper consideration to the environment prior to undertaking any major federal action that significantly affects the environment."

In other words, NEPA mandates that Marine Corps Base Camp Pendleton, California, prohibits its Marines from running over the desert tortoise with their tanks. It requires that personnel at Fort Polk, Louisiana, preserve the longleaf pine forest the red-cockaded woodpecker depends on for survival. And it assures that Fort Hood, Texas, and Fort Sill, will maintain the pockets of native scrub oak habitat needed by the black-capped vireo. Though none of this jeopardizes national defense, it does preserve this country's national heritage, one which has lost — or nearly lost — many iconic species of birds, fish and wildlife.

"The Endangered Species Act was created to preserve our natural heritage and to maintain biodiversity, which has been declining," said Grzybowski, whose work with the vireos is one of the resources used by the Cornell Lab of Ornithology. "We're using endangered species as a vehicle for maintaining some integrity in the ecosystems."

> ***"We're using endangered species as a vehicle for maintaining some integrity in the ecosystems."***
>
> **-- Joe Grzybowski**

To do that, Grzybowski has worked with Fort Sill and the adjacent Wichita Mountains Wildlife Refuge staff for three decades; first, to determine how many breeding pairs still existed, then to figure how to increase those populations.

In the mid-1980s, his team surveyed west-central Oklahoma, checking three dozen or so known locations based on historical records. They found only one where the songbird was still breeding, and it migrates to Mexico's Pacific coast each winter.

A few pairs were located on the installation in 1987. A more thorough search two years later found only five pairs on the post and about five dozen pairs habitating in the Wichita Mountains area. Thanks to those efforts to protect them, today there are 600 to 700 nesting pairs on post and around 4,300 pairs on the refuge.

Why, then, is the vireo an endangered species?

Habitat loss has a lot to do with it, and so does the brown-headed cowbird which has a unique way of raising its young, Grzybowski said. Cowbirds are parasitic in nature and do not build their own nests, but instead stake one out and deposit their eggs in the nest of an unsuspecting vireo, timing their egg-laying so that their chicks hatch first. To complete this deception, the cowbird even removes one or more of the songbird's eggs from the nest.

Unfortunately, the unsuspecting surrogate parent doesn't realize that the big gaping mouth in its nest is not that of its own young, he said. Vireos are simply programmed to stuff bugs and worms into it, and the bigger, more aggressive cowbird nestling then either suffocates or pushes out the vireo young to become the only mouth to feed.

Even worse, a female cowbird can lay 40 or more eggs in a season, while most songbirds might raise four to eight of their own progeny within the same time span, Grzybowski said. Most songbird species can handle this ill-mannered invasion, but not the black-capped vireo. It has a very limited breeding range.

Vireos have a 15-day incubation period as compared to the cowbird, which hatches its young in 10 or 11 days. So, there is zero production from the nest, he said.

To increase the vireo's survivability, Grzybowski's team has incorporated several strategies to help mitigate the cowbird threat; and surveys reflect their success.

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Archeologist Marc Paiva studies material left in the sifting screen. (Courtesty photo)

Archeologists survey proposed project near Ball Mountain Dam

By Ann Marie R. Harvie
USACE, New England District

A team of New England District archeologists traveled to Jamaica State Park, downstream of Ball Mountain Lake in Vermont, to survey a proposed district project site.

The surveys took place on June 27-30 and again on July 19-22.

The proposed project would widen certain sections of the West River Trail on what was originally an old railroad bed, said Kate Atwood, archeologist. The project would afford work crews a capability to position heavy equipment at the foot of the dam in the event any major maintenance or repair is required.

According to Atwood, these surveys were performed in compliance with Section 106 of the National Historic Preservation Act to investigate any archeological sensitivities along the trail since it goes right along the entire length of the West River.

"We have to take into account cultural resources as part of any federal undertaking," she explained. "In this case, we knew there were archaeological and cultural sensitive areas and known sites."

Atwood said that those sites or extensions of any existing sites in the area had to be identified and taken into account before the project could proceed.

The team dug test pits in areas where the district proposed truck pull-offs to compensate for the narrow trail. These pull-offs would allow trucks to navigate the trail amid oncoming traffic.

At issue, however, were those areas previously determined to have Native American archeological sensitivities, Atwood said. "These are the areas we tested."

These archaeological surveys required the team to lay out linear transects, dig 2-by-2 foot test pits and then sift through the soil looking for artifacts. The size of these test pits varied, with one extending about 240-feet long.

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BLACK-CAPPED VIREO

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One such strategy includes cowbird trapping.

Cowbird trapping (with permits) on post is the sole job of Kevin McCurdy, a wildlife biologist with the Gulf South Research Corp.

He explained the trapping process.

Five male and two female cowbirds are set up in each of the 25 walk-in cages to serve as decoys, he explained. Well-stocked with sunflower seed and fresh water, each cage is located near a lake or pond in close vicinity to vireo nesting sites; and, when the cowbird goes through the cage's funnel-shaped entrance, it can't find its way out and is trapped.

Generally starting his rounds at 6:30 a.m. three times a week, McCurdy checks the cages and keeps meticulous records of the number and species of bird trapped.

Kevin McCurdy keeps a record of brown-headed cowbirds trapped at Fort Sill.

During the first two weeks of this past season, he recorded a catch of about 1,100 cowbirds. In comparison, he said, last year, only about 500 birds were trapped in the entire season, which runs from April to June.

If a cardinal or house finch is trapped, they're set free, the biologist said. The cowbirds, however, are either destroyed or given to raptor rehabilitation centers as food for hawks, eagles and owls.

In addition to trapping and because the black-capped vireo requires the kind of oak scrub habitat common in the Wichita Mountains, which includes Fort Sill, the team has incorporated a "fire ecology" strategy as well. This includes periodic burns to rid the vireo's habitat of invading red cedar and other vegetation. Oaks tend to recover from these prescribed fires, whereas the red cedar is destroyed.

The strategy was implemented only after decades of fire suppression policy and human population growth had encroached on the songbird's natural habitat. Today, Fort Sill and the wildlife refuge conduct prescribed burns to mimic the lightning-induced fires that were once commonplace.

"The same kinds of things that could be done by maintaining habitat for black-capped vireos are also fire management strategies that protect property," said Grzybowski.

Fire suppression increases dead wood and organic matter that will burn much hotter and become more destructive than in a habitat that tends to burn regularly, he said. Fire managers nationwide have come to realize that and wildfires are managed differently now.

Fort Sill burns prairie and scrub to facilitate training, and to keep down the potential for wildfires from ammunition impacts, he said. What's good for the mission, in this case, is good for the ecology.

These cooperative efforts between federal agencies illustrate how preserving a little bird needn't jeopardize military training, Grzybowski said. And this small part of America's natural heritage will continue to thrive as long as he and natural resource personnel like him are here to make sure it does.

To learn more about the black-capped vireo, visit the Cornell Lab of Ornithology website at AllAboutBirds.com.

Pittsburgh District hosts environmental experts

Story and photos by Carol E. Vernon
USACE, Pittsburgh District

The U.S. Army Corps of Engineers Pittsburgh District hosted a board of national environmental experts from academia and non-profit organizations on a tour of the district's infrastructure and aquatic ecosystem restoration efforts, Oct. 17-19.

The Environmental Advisory Board's visit allowed its members to observe the Pittsburgh District's environmental challenges.

The Environmental Advisory Board provides expert and independent advice and recommendations on environmental issues facing the Corps.

The board, which can have between five and 10 members, usually meets once or twice a year for deliberation. Its members are eminent authorities in their respective fields, which include disciplines such as biology, ecology, anthropology, as well as community planning and other related sciences.

This year, the Pittsburgh District was selected because it offered the board an opportunity to observe the environmental challenges it faces associated with managing its aging inland navigation infrastructures.

"It is highly appropriate for the EAB to select Pittsburgh District and the Great Lakes and Ohio River Division for its meeting," commented Brig. Gen. Mark Toy, commander, Great Lakes and Ohio River Division. "This region provides examples of aging inland navigation infrastructures, areas that demonstrate the Corps dedication to environmental stewardship, and examples of programs designed to make reservoir operations and navigation more environmentally sustainable."

Formed by the headwaters of the Upper Ohio River Basin, the Pittsburgh District's boundary extends across five states and 26,000 square miles. It manages 16 multi-purpose reservoirs and 23 locks and dams within the Upper Ohio River Basin region.

The meeting provided the board an opportunity to tour Locks and Dam 7 on the upper Allegheny River. The Allegheny River facilities represent some of the oldest locks and dams in the Corps' national inland navigation system, averaging more than 86 years old.

Lt. Gen. Todd Semonite, commanding general and chief of engineers, U.S. Army Corps of Engineers, chaired and presided over the public meeting.

While addressing the board, he emphasized the importance of working together to find the best environmentally sound solutions to the challenges facing the region.

Comprised of environmental experts from academia and non-profit organizations, the EAB provides independent advice and recommendations on environmental issues confronting the Corps. Here they see first-hand those management challenges associated with the district's aging inland navigation infrastructures.

"What I want from this board is for us to really take on the hard ones and be able to figure those out," Semonite said. "Collaboration really has to be instrumental out there. We have to figure out how we lean on each other, back and forth."

Col. John Lloyd, commander, Pittsburgh District, spoke about the district's efforts to study how it can continue improving aquatic ecosystems downstream of its reservoirs through operational or structural modifications.

He offered the group an example of these efforts, i.e. whether mimicking natural flows by performing pulse releases after small storms, or whether structural modifications such as installing additional control towers at varying elevations to better mix water would meet its downstream temperature objectives.

As an example of environmental stewardship, the board accompanied Semonite on a tour of a future project on Pittsburgh's north shore. The project is designed to look at approximately 13 acres of degraded aquatic and riverfront habitat.

By touring the North Shore Ecosystem Restoration project, the board was able to see first-hand how partnering with other agencies can not only improve the environment, but improve the community.

The board also toured the Nine Mile Watershed, an urban aquatic ecosystem restoration project the district undertook with the city of Pittsburgh in 2006. The habitat along Nine Mile Run had been severely degraded. The restoration work used a variety of techniques to allow the stream to function better in high volume situations.

"In the future, the question we need to ask ourselves is how do we continue to improve the environment while making smart decisions regarding the operations and maintenance of the system and reinvestment in our aging infrastructure," Lloyd said.

Project returns floodplain to natural state

By JoAnne Castagna, Ed.D.
USACE, New York District

Wading slowly through high grass under the hot summer sun, the group begins a guided tour through the Walton Floodplain in Delaware County, New York.

Suddenly, excitement erupts as the group eyes an eagle perching on a nearby branch hanging over the West Branch Delaware River. The group swiftly changes its focus, and cameras, from the tour to this majestic bird.

It seems the group is no longer interested in what the guide has to say. On the contrary, this group is an interagency team looking over the land before starting a reclamation project to improve the eagle's environment, reduce flooding for the local community and protect New York City's drinking water.

The Walton Floodplain Reclamation Project is part of the U.S. Army Corps of Engineers' New York City Watershed Environmental Assistance Program.

The program funds projects that protect the water quality of New York's watersheds and provide drinking water to millions of New York City residents and businesses, said Rifat Salim, project manager, U.S. Army Corps of Engineers, New York District.

For this project, the Corps is collaborating with the Delaware County Soil and Watershed Conservation District, New York State Department of Environmental Conservation, New York City Department of Environmental Protection, and the Village of Walton and Town of Walton.

A floodplain is the land bordering a river. Over the years, the 13-acre Walton Floodplain bordering the West Branch Delaware River has been filled with gravel. This gravel has raised and hardened the floodplain and degraded its natural vegetation.

This project will return the floodplain to its natural state, help reduce flooding and improve the water quality.

Through the years, the floodplain was found to be an easily accessible place to dispose of materials and was filled one dump truck at a time, said Graydon Dutcher, team guide and stream program coordinator with the Delaware County Soil and Water Conservation District.

As a result, when the river floods, the floodplain is unable to absorb, filter or redirect the water away from the surrounding area. Instead, the floodwater spills over onto the streets of the Village of Walton, flooding businesses and homes, especially those on Delaware Street and, the ironically named, Water Street.

The stormwater runoff floods the streets, sweeps up contaminates and dumps them into the West Branch Delaware River that feeds into the reservoir. This reservoir supplies 97 billion gallons of New York City's drinking water.

"We are at the same height as the golden arches," Dutcher said, pointing to the McDonald's restaurant sign several yards away. "This is how high the floodplain has grown over the years!"

This project will return the floodplain to its natural state, help reduce flooding and improve the water quality, he said.

Taking the group through a long, muddy path surrounded by high shrubbery leading up to the West Branch Delaware River, their guide explained how the project would restore the floodplain to its former state.

We're going to remove the gravel to create a more natural floodplain elevation, Dutcher said. This work will include relocating a New York State Electric & Gas line, and recycling the gravel and depositing it outside the floodplain.

The invasive plant species will be removed, the grass replanted and a riparian buffer or hardwood forest consisting of a mix of native maples, ash and shrubs is going to be created, he said.

"Floodwaters will drain from the town's streets, building rooftops and parking lots, and filter through the restored vegetation and riparian buffer before entering the river," Dutcher said. The riparian buffer will trap and prevent sediment and pollutants like harmful phosphorus and nitrogen particles from spilling into the river. This improves water quality, maintains the river's temperature and fosters the creation of fish and aquatic habitats. The project will treat 2.8 acres of stormwater runoff.

"This project is a big thing in Walton," he said. "It benefits the community in several ways."

Once completed, the project will provide flood reductions for a 100-year storm event. This is a flood whose strength and water height is predicted to occur, on average, about once in 100 years.

In addition, it will also be useful for lesser, 10-year storm events that occur on average once every decade. This project will also connect and drain the newly built green space in the center of Walton's Main Street.

Dutcher added that the project, expected to be completed by 2018, will also potentially give the land back to the community for other uses like athletic fields and parks.

As for that eagle, which never left the branch the entire time, it seemed to be keeping a steady eye on the team. Some in the group saw it as nature's way of reminding them to keep focused on this project that benefits locals, city dwellers and eagles who just happen to make Walton their home.

New York City watershed

The New York City watershed encompasses approximately 2,000 square miles of land north of the city.

The land includes three watershed systems: The Catskill, Delaware and Croton Systems that are located in the counties of Greene, Schoharie, Ulster, Sullivan, Westchester, Putnam, Dutchess and Delaware.

A watershed is an area of land that catches rain and snow that drains or seeps into a marsh, stream, river, lake or groundwater. This water eventually gets stored in reservoirs, a place where water is collected and kept for use when wanted, such as to supply a city.

The New York City Watershed System provides more than 90 percent of New York City's water supply, accommodating approximately 9.5 million people.

New York City ensures this water is safe by treating it at the source rather than building a costly filtration plant. The source is the land that surrounds the streams, rivers, lakes and reservoirs.

"In 1996, all of the municipalities in the New York City watershed region came to an agreement. They wanted to avoid the creation of a huge filtration plant," said Rifat Salim, project manager, U.S. Army Corps of Engineers. "Instead of a plant they agreed to have small projects throughout the region to provide the public clean water with minimal filtration. This is how our New York City Watershed Environmental Assistance Program came about."

Protecting Ohio River's endangered mussels

By Steve Foster and Andy Johnson
USACE, Huntington District

Most individuals don't recognize the Ohio River as home to numerous species of freshwater mussels. That unfamiliarity, however, doesn't mean that these creatures are of little consequence to our overall ecosystem. Freshwater mussels are not only an important food source for muskrats, waterfowl and fish but they can filter several gallons of water a day making them an important indicator of water quality.

For more than a decade, the Huntington District has successfully minimized impact to the mussel environment.

According to the Freshwater Mollusk Conservation Society, 300 species of mussel once inhabited North America. Of those, 38 species are now extinct and 77 are critically impaired. Twenty-seven different species of freshwater mussels are known to exist immediately below the Robert C. Byrd Lock and Dam, including several federally endangered species.

Dredging nearly 90,000 cubic yards of dredge material on average each year, channel maintenance requirements at RC Byrd far exceed the average Ohio River navigation project. Sedimentation below the project, the presence of endangered mussels and the importance of the dam's navigation mission requires continued scrutiny of dredging and disposal operations.

For more than a decade, the Huntington District has successfully avoided and/or minimized impact to the mussel environment through innovative monitoring and use of alternative gate operations. This monitoring, coupled with mapping water current direction and magnitude, allowed the district to alter its gate operations to steer currents from the dam and direct in-water dredge disposal plumes away from endangered mussels.

Unique to USACE, these strategies have been well received by its partners in other state and federal resource agencies, and has allowed the district to continue its cost-effective, in-water disposal operations.

Though effective, the district sought an increased monitoring capability to better assess those environmental factors that impact mussel habitat, especially turbidity, sedimentation and dissolved oxygen.

To help address these challenges, USACE reached out to the remote environmental monitoring sector to develop a robust, field deployable sediment deposition and scour platform to capture and record real-time data to support district requirements.

USACE turned to Aridea Solutions, an environmental monitoring company, to engineer a monitoring platform to support these project initiatives.

The West Virginia-based company delivered the WIZARD (Water Intrinsic Zoological Ambient Research Device) and supplied a solar-powered communication buoy, eight individual SeaTek ultrasonic transducers, a substrate monitoring platform, and a multi-parameter datasonde capable of recording and sending data at a minimum of 5-minute intervals.

This innovative technology afforded USACE the tools it needed to aggregate multiple environmental parameters through a single interface utilizing off-the-shelf sensor technology. Additionally, the entire platform could be deployed from a boat in 3-to-20 meters of water without the need for divers.

Today, the district continues to test and collect this data to analyze and improve the platform. By 2017, this platform is expected to be in place and in use to monitor the mussel environment during maintenance dredging at both the Robert C. Byrd and Captain Anthony Meldahl Locks and Dams as part of Clean Water Act and Endangered Species Act compliance.

Christie Sain, an Ashdown High School senior, reads her winning essay during the Millwood Lake and Dam 50th anniversary celebration.

Millwood Lake community celebrates 50th anniversary

Story & photos by Bryanna Poulin
USACE, Little Rock District

ASHDOWN, Ark. - As the sweet aroma of barbecue circulated the air and the selection of meats roasted in a nearby smoker about 200 distinguished guests, community members and employees gathered under a large white canopy at Millwood Overlook, Dec. 1, celebrating the 50th anniversary of Millwood Lake and Dam.

Located on the Little River, the Millwood Dam has been a key unit in the general flood reduction system for the Red River below Lake Texoma. The project was authorized by the Flood Control Act of 1946 and modified by the Flood Control Act of 1958. It was designed by and built under the supervision of the Tulsa District of the U.S. Army Corps of Engineers. Construction of the dam began in 1961 and was completed for flood control operations in 1966 at a cost of $44 million. The project was dedicated Dec. 8, 1966.

Following the welcoming remarks by Steve Spicer, Millwood-Tri Lakes Project Office, operations project manager, Little Rock District USACE, and the singing of the National Anthem, the ceremony kicked off with the two local high school students reading their award winning essays.

"Millwood Lake has always been a part of my life. I have many memories of birthday parties, family reunions, fishing with grandmother and learning how to ride a bike," said Christie Sain, a senior from Ashdown High School. "Not many people can say they learned how to ride a bike in a park at Millwood."

Even though Sain has many fond childhood memories of Millwood, her connection with the lake goes much deeper.

A local Ashdown student leads attendees in reciting the Pledge of Allegiance.

"Recreation is a way of life," she said. "It doesn't get any better than drinking tea and eating fish caught on the side of a river bank."

Once the high school senior finished her essay and before she could make it back to her seat, Denny Gray, president and board of directors for Southwest Arkansas Water District presented her with a $1,000 college scholarship.

"What a wonderful essay Christie," Gray said while presenting her the scholarship. "It's my pleasure to present this to you."

Following Sain's essay, Ashdown High School senior, Jacob Purifoy, walked onto the stage and read his essay to convey what Millwood Lake meant to him.

"I can always remember from childhood to just a few weeks ago, those mini trips across the river channels and campfires on the shores," Purifoy said. "The rows and rows of hydroponic trees with dozens of fish swarming … that make great catching on cool, breezy fall evenings."

Purifoy talked about his midsummer's days, where daytime television was mediocre so he would call up a friend to sit on the pier, bait fishing and laughing for hours on end.

"We would go relax on that old lake-facing swing set or hitting up the horseshoes," he said. "I do want to point out, the friend I'd call up, is my friend, Christie."

After reading his essay, Purifoy was presented with a $500 college scholarship from University of Arkansas for his second place entry.

After the essays were read and scholarships given, Col. Robert G. Dixon, commander, Little Rock District USACE, gave his closing remarks with a brief history of the dam and the reason for the celebration.

"Now about a half a century ago, people like us stood up in front of podiums just like these and gave similar speeches," Dixon said. "As they dedicated this project to the people of this region and began an era where the constant flooding that used to plague communities downstream of here … was no longer a threat."

Dixon shared the accomplishment of building such a massive structure when many didn't agree it was necessary.

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Archeologist

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One assumes that in this day and age there would be high tech devices capable of scanning the area for arrowheads and ancient tools, she said. Instead, we still use shovels and a screen tool to sift through the soil.

The work is labor intensive, Atwood explained. "You dig down to what we call the glacial till or approximately 3 feet, whichever comes first."

Archeologist Kate Atwood begins the process of sorting through dirt and rocks to look for artifacts.

Still, it's a lot of fun, she said. "You get to play in the dirt."

Marc Paiva, the district's other archeologist, also worked on the survey while Mike Kaminski, Grace Moses and Ken Levitt rounded out the team and assisted. One of these assistants would record findings while the others helped dig and sift through the soil. In the end, the team found a few stone flakes that were a by-product of Native American stone tool-making along with modern remnants of glass, charcoal, shotgun shells, a railroad spike and a marble.

Atwood explained that had the team found anything more significant, the process would have been a lot lengthier and more detailed. In that case, more test pits would have been dug around those findings.

Test pits are usually 24 feet apart, but we would dig 12 feet away in the cardinal directions – north, south, east and west – to define the limits of the find, she said. "If those are negative, then it's what we call an isolated find. That is what we found at Jamaica State Park."

The flakes we found were across the trail from a known, very significant archeological site, she added. So, it was probably just an extension of that site.

"Anything we find, we record, wash and bag it up," she said. "We send any artifacts to the Vermont Heritage Center where they curate items indefinitely for scholarly research."

The New England District team of archeologists assess every project to determine whether a survey is warranted.

Assessments of which, Atwood says, may be complicated by previous maintenance dredging.

In those cases, "we coordinate everything with the state historical preservation officer as well as the (Native American) tribes to determine whether there are any concerns we need to consider," she said. "Most of the time, I would say that 90 percent or more of our projects just indicate a negative, no effect on historic properties."

This archeological survey completed, Atwood will submit her end of field work letter and issue a final report.

Although fiscal year 2016 surveys are complete, "one never knows what next year's projects will dig up for the archeologists," she said.

Power station to improve energy resiliency, security

By Michael McGhee, P.E.
Executive Director
U.S. Army Office of Energy Initiatives

Today's Army requires access to diverse and reliable energy resources to maintain mission essential functions. The Army's Office of Energy Initiatives is using an enterprise approach to develop a comprehensive capability, and planning and executing a cost-effective portfolio of large-scale renewable energy projects. Leveraging multiple acquisition approaches to execute projects provides Army installations with increased energy security and resiliency.

One project, which will substantially contribute to Army readiness and resiliency, is a 50 megawatt, multi-fuel electrical power generating station at Schofield Barracks, Hawaii. The generating station will enhance the resiliency of the Oahu electrical grid and provide Schofield Barracks, Field Station Kunia and Wheeler Army Air Field with secure and reliable electricity during emergencies. The project is anticipated to be operational by spring 2018.

On Aug. 22, the Assistant Secretary of the Army for Installations, Energy and Environment, the Army OEI and the U.S. Army Garrison - Hawaii, in collaboration with Hawaiian Electric Company, held a groundbreaking event at Schofield Barracks. Representatives from these organizations, along with congressional members and the governor participated.

The event included a traditional Hawaiian blessing of the area, which featured salt from a salt pond on Kauai, Hawaiian rainwater in a koa bowl and three ti leaves to purify the ground. After the blessing, representatives at the ceremony each took one of the 12 golden shovels and ceremonially turned over the first few mounds of dirt.

Once constructed, the plant will run on a mixture of biofuel and conventional fuel. As the only baseload power generating facility on Oahu located above the tsunami strike zone, this project will provide "black start" capability to mitigate risk by providing secure and reliable access to power the three installations and enhance grid resiliency to benefit surrounding communities.

The generating station at Schofield Barracks demonstrates how a shared objective to improve the energy resiliency and security for the Oahu community and Oahu Army installations was realized by multiple partners working together to accomplish the same goal. This project will contribute to the Army's overall requirements to continue to conduct critical national security missions and provide the necessary support to our Soldiers.

(Photo and art illustration courtesy of Hawaiian Electric Company)

Chaplain (Col.) Steve Peck performs a traditional Hawaiian blessing before the groundbreaking ceremony for the Schofield Barracks Generating Station. Participants include Gov. David Ige; Federal Chief Sustainability Officer Christine Harada, White House Council on Environmental Quality; Hon. Katherine Hammack, ASA(IE&E); Sen. Brian Schatz; Sen. Mazie Hirono; Rep. Tulsi Gabbard; Col. Steve Dawson, garrison commander; and representatives from the power and electric companies.

‘Boiling hot’ leads to cool results

Army employs new environmental remediation approach

Story and photos by Chelsea Smith
USACE, Savannah District

HUNTSVILLE, Ala. – Army officials are breaking ground on a decades-long environmental remediation project to lift contaminants out of acres of land located on Redstone Arsenal near the Rocket City.

Across football field-sized areas that became contaminated with industrial chemicals, workers employ a hot new approach to soil and groundwater remediation. They use an environmental treatment method called electrical resistance heating to boil contaminates out of the soil earmarked for land reutilization.

Due to missile and rocket manufacturing during World War II, large swaths of the arsenal were contaminated with solvents during the manufacturing process. Chemicals such as the chlorinated solvent, trichloroethylene, leached into the water table in a widely dispersed plume and is considered a continuing source of groundwater contamination by the Alabama Department of Environmental Management. The Garrison Installation Restoration Branch in partnership with the U.S. Army Corps of Engineers Savannah District lead efforts to remediate vestiges of the arsenal’s past.

Barry Hodges, scientific and technical lead, USACE Savannah District, said Army officials had investigated 900 possible treatment sites in the mid-1990s and identified 385 that would require further investigation. These treatment sites occupied land that could be redeveloped, but which groundwater and soil fall below regulatory standards. To remedy the situation, the Army contracted the investigation and remediation work to the Chicago Bridge and Iron Company, which subcontracted specialty work to Technology Development for Thermal Remediation Services.

During the electrical resistance heating process, electrodes deliver power to the subsurface to lift contaminants out of the soil. This environmental remediation method works in all soil types and can be applied under operating facilities and public areas.

“As with most military installations, many of the most heavily contaminated areas are also in those areas that the arsenal would most like to reutilize, as these are the best geographical areas of the arsenal,” said Hodges.

Compared to other methods of removal such as “pump and treat,” which extracts contaminated groundwater through recovery wells or trenches and treat groundwater above ground, ERH can clean sites where other methods have had limited success.

For a typical commercial site requiring a 99 percent reduction of TCE in soil and groundwater, the total price for ERH remediation is about $400,000 plus $60-100 per cubic yard of treatment. It still outpaces alternative methods in effectiveness and adaptability, and is currently the only remediation treatment that can be performed with guaranteed results. While “pump and treat” methods cost less, ERH cuts decades worth of treatment time by cleaning sites within 6-12 months compared to 20-40 years of “pump and treat” methods, said Hodges.

According to Greg Beyke, vice president, Thermal Remediation Services, this treatment process is a robust remediation technology that can quickly reduce masses of volatile organic compounds in soil and groundwater.

Beyke explained the ERH process.

Electrical currents run through contaminated soil, rock and groundwater where it’s heated to the water’s boiling point, he said. The soil, a defiant conductor of electricity, resists the electrical flow and causes the volatile contaminants to evaporate in place. Steam strips them from the subsurface. Vapor and steam are then extracted, cooled and treated using standard methods. About 150 ERH remediation projects have been completed in the U.S. to date, Beyke said.

He added that deploying ERH requires a power control unit to control and direct electrodes to the subsurface, recovery wells to collect steam and contaminant vapors, a steam condenser, a vapor treatment system, and control and data acquisition systems.

The technology works in all soil types and can be applied under operating facilities and public areas. ERH is also frequently used to remediate sedimentary rock. However, due to Redstone’s complicated geology, a goal of 80 percent reduction was negotiated with the state of Alabama, said Hodges.

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Barry Hodges, a chemical engineer at the U.S. Army Corps of Engineers in Savannah, is a project lead on cleaning contaminated land at Redstone Arsenal in Huntsville, Alabama. Hodges and a team of Army scientists and engineers are employing electrical resistance heating, an environmental remediation method, to treat 385 contaminated sites on the arsenal.

LOCKED UP!

Lock operators weather frigid cold to reopen Ohio River navigation

Story and photos by Jeffrey S. Hawk
USACE, Pittsburgh District

Bone-chilling winds cut through the crisp wintry air as operators and mechanics at a downed Ohio River lock scrambled on the early morning of Dec. 12 to isolate a hydraulic line break that shut down navigation.

New Cumberland Locks and Dam lockmaster, Willie Maynard, walks along the middle wall toward the end of the facility where crews work to fix a hydraulic failure that closed the upper Ohio River to commercial traffic.

The lock crew stopped vessels passing through the lock after noticing a sheen on the water in the 110-by-1,200 foot primary chamber of the New Cumberland Locks and Dam, eight miles south of Wellsville, Ohio. They immediately deployed spill containment booms to absorb and stop the spread of hydraulic fluid, which was mostly contained in the chamber.

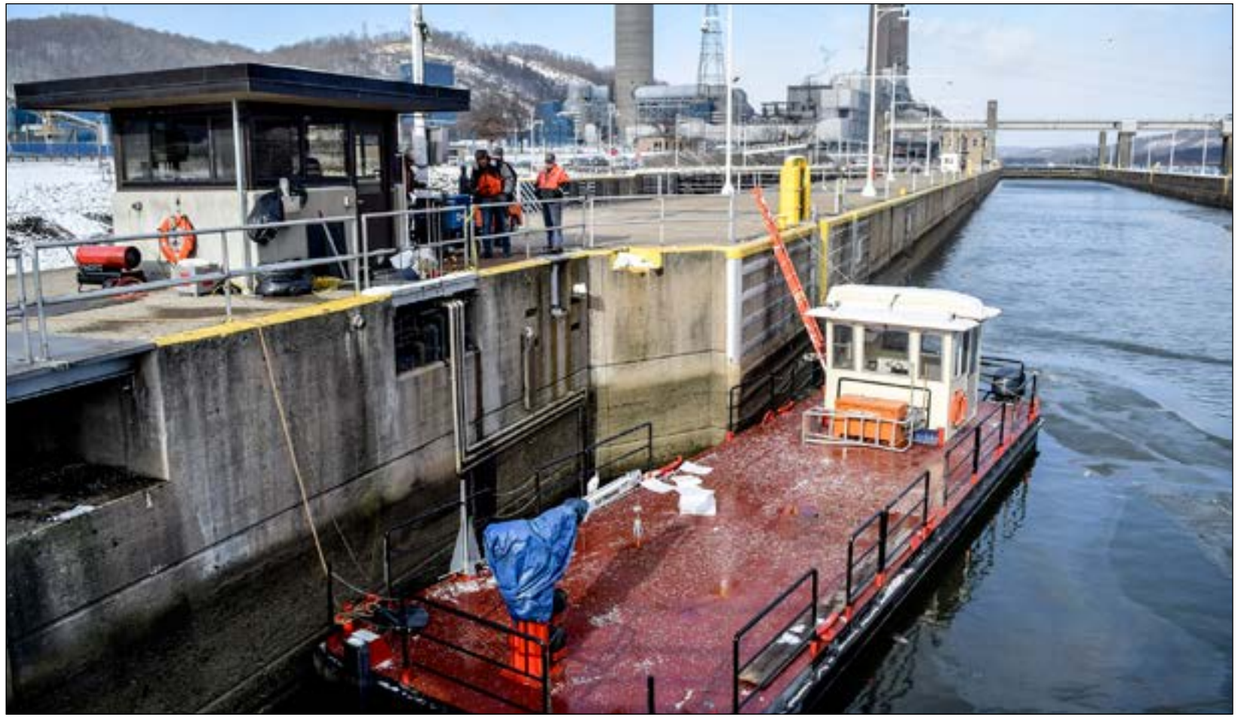
The shutdown closed navigation up and downstream of the Ohio River. Tows pushing 15 jumbo barges of mostly coal, aggregates and petroleum started to stack up. Some returned to their terminals, but most waited for the lock to reopen, tied to the river mooring cells.

The district dispatched civil and environmental experts to investigate the spill and reported the situation to the Coast Guard's National Response Center, navigation interests and the West Virginia Department of Environmental Protection, which monitors the river's water quality.

After several days, tow crews replenished supplies and brought in replacements for those crews who had been housed on the waiting vessels.

Meanwhile, lock mechanics and repair party welders worked in wind chills approaching 10 degrees below zero trying to cap and test several hydraulic lines that run under water and operate the chamber's 170-ton miter gates and filling and emptying valves.

Five days later, the New Cumberland team had temporarily fixed the breakage allowing them to operate the upstream miter gates and fill and empty some valves hydraulically. The work of operating the downstream miter gates, where hydraulic power was still unavailable, fell to the facility's 53-foot work boat and lock operators.



A workboat rests on the main chamber lock wall as repair crews above work to fix the dam's hydraulic system.

Though New Cumberland is usually open 24-hours-a-day, seven-days-a-week, crews were restricted to work only during daylight hours from 8 a.m. to 4 p.m. because of safety concerns.

Still, crews locked six vessels through when it reopened on Dec. 17, significantly reducing the number of waiting vessels. The next day they passed another six tows.

The quick action to install a temporary repair allowed vital commodities such as steam and metallurgic coal to reach their destinations.

Rich Lockwood, chief of the district's Operations and Regulatory Division, said that crews did exactly as they have been trained to do when something goes wrong - from noticing the sheen to deploying the containment booms to notifying industry.

"(Lockmaster) Willie Maynard and his team have done it all about as well as anyone could have hoped for," said Lockwood. "What service we are providing is due to their service, skill and dedication."

The district submitted a request to its headquarters for $3.8 million in emergency funds to put in place a more long-term solution, but that fix could be several months away.

"The men and women who work on the locks every day are dedicated to the mission and take pride in ensuring the river remains open so that industry is able to deliver goods to keep the nation running," said Col. John Lloyd, commander, U.S. Army Corps of Engineers Pittsburgh District.

New Cumberland Locks and Dam is comprised of two lock chambers, an auxiliary and a main chamber. The Corps placed the 110-by-600 foot auxiliary lock chamber out of service approximately two years ago due to structural issues that prevent its safe operation; however, the remaining primary lock is a vital part of the nation's inland waterways system.

"Any closure like we saw at New Cumberland because of aging infrastructure is costly to us, industry and many others who depend on the river system to be open to transport goods," Lloyd said. "It always reminds me how we must take a hard look at our future strategy to deal with our infrastructure to reduce river closures that are costly at so many levels."

At the time of this report, crews were looking for additional ways to increase operating hours at the lock using temporary measures until a long-term solution can be identified.

"I am incredibly proud of the work they do especially under adverse conditions," Lloyd said.

USACE Chief of Engineers tours, tracks Savannah Harbor Expansion Project progress

U.S. Army Corps of Engineers Chief of Engineers, Lt. Gen. Todd Semonite, discusses progress of the Savannah Harbor Expansion Project with Savannah District Construction Project Manager, Robert Player, during a visit Oct. 13, 2016. Semonite met with key district personnel, state partners and elected officials to discuss progress and reinforce his commitment to delivering one of the most critical projects across USACE.

Story and photo by Chelsea Smith
USACE Savannah District

SAVANNAH, Ga. – U.S. Army Corps of Engineers Chief of Engineers Lt. Gen. Todd Semonite visited the Savannah District Oct. 13 to track progress of the Savannah Harbor Expansion Project, one of the 15 most significant projects across USACE.

Semonite met with District Commander Col. Marvin Griffin and personnel responsible for delivering the project. He presented coins to Jonathan Brodie, Carolyn Gomez and Scott Weaver, key personnel instrumental in managing construction of the raw water storage impoundment and dissolved oxygen injection system, two mitigation features of the SHEP.

Semonite also met with Georgia Ports Authority officials, who represent the non-federal sponsor of the SHEP.

The chief, accompanied by South Atlantic Division commander Brig. Gen. C. David Turner, thanked GPA for their partnership in the effort, reinforced the importance of the project to the nation and cited his personal commitment to delivering the project.

Millwood

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"Some of you might have been here in 1966 to hear some colonel from the Corps talk about the five years it took to build the dam and the obstacles they had to overcome," Dixon said. "These, of course were amazing feats. Constructing the longest earthen dam in Arkansas is no small task, and overcoming protests from three states and multiple citizens and businesses must have been difficult at best."

Dixon talked about the struggles in the past and how building the dam was exciting for the town where the dam would eventually call home.

"You see, building the dam was exciting, newsworthy work," Dixon said. "Watching this structure emerge from the ground and tame the Little River is a tribute to modern engineering and the fortitude of hundreds of workers.

"Just as our structure quietly holds back millions of gallons of water, our team of great folks are dedicated to quietly caring for it… the lake, its resources and this community" Dixon said.

"Millwood Dam has stood strong for the past five decades, and I am reassured by the dedication and professionalism of our team and the constant support of this great community, that it will certainly stand for another five decades or more" the colonel concluded.

Boiling hot

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A sign marks a site on Redstone Arsenal being investigated for environmental remediation.

"There is a cost-benefit calculation that one must keep in mind towards the end of the effort," he said. "As you approach 'clean' it gets harder and harder to remove the contaminant. At some point you cross the point that the benefit no longer justifies the cost. It's critical that the designers choose a goal that is achievable before one enters the 'this is no longer making sense' range."

Before selecting an optimal remediation method, the Army conducted studies to understand the complex geology of the area. Across Redstone's more than 38,000 acres and what Hodges describes as "bipolar geology," they found that about 20-50 feet of its geology are remnants of limestone bedrock that slowly broke down over time to produce red clay. The remaining geology is a type of limestone called karst rock.

"Think of a box full of [cooked] spaghetti but generally trending in one direction," he said. "That is what karst looks like. Finding the voids are hit or miss."

While water moves slowly through overlying red clay, groundwater penetrating deep into karst networks moves extremely fast, said Hodges.

"This impacts the effectiveness of the ERH system," he said. "This means that new cold water is constantly being introduced into the system and more energy is required to maintain [boiling] temperatures."

For nearly a decade, the Environmental Management Division has successfully treated five contaminated sites at Redstone, including difficult karst limestone environments.

"It's been a huge success for us," Hodges said.

To date, roughly 20 sites remain. Though cleanup work will continue for years, the vast majority of investigation work is complete.

"In about eight years, we have essentially defined Redstone's universe," Hodges said. "Redstone will be spending many decades finishing the cleanup work but we are beginning to make real progress."

(Photo courtesy of USACE Vicksburg District)

USACE Vicksburg District saves the Tensas-Cocodrie Pumping Plant in Monterey, Louisiana, nearly $34,000 in monthy operating costs via USACE Huntsville Center's Commercial Utilities Program.

Negotiations reduce utility cost for Tensas-Cocodrie Pumping Station

By Debra Valine
USACE Engineering and Support Center, Huntsville

The U.S. Army Corps of Engineers Vicksburg District is saving nearly $34,000 monthly in costs to operate the Tensas-Cocodrie Pumping Plant in Monterey, Louisiana, thanks to the U.S. Army Engineering and Support Center, Huntsville's Commercial Utilities Program.

The program negotiates with utility providers to ensure reliable utility services for Army installations and facilities at the lowest possible cost.

Over the course of the 10-year contract period, USACE will save $402,000 annually or $4 million.

Vicksburg District contacted CUP Program Manager Bernard Givan in August 2014 requesting assistance to find a way to reduce the $54,000 monthly power bill it had been paying for electric power at the pumping plant since 1993, with slight adjustments based on actual operations. The plant controls water levels in a basin near four major rivers including the Mississippi River. The plant consists of five very large three-story electric pumps. Other than routine testing, the pumping plant does not operate until a flood event occurs.

"USACE greatly needed to reduce this high cost of electric service due to budget constraints and because it was shown to be above average," Givan said. "The district decided to take the following steps: 1) terminate the existing contract for electric service, 2) implement a temporary agreement for up to 6 months and 3) negotiate a more cost effective permanent contract. The contracting officer could execute step 1, but steps 2 and 3 would require subject matter expert support."

Givan said he used his prior experience with the Alabama Public Service Commission and Alabama Power Company to develop a strategic approach to reduce the monthly rate to more accurately reflect pumping plant operations and to provide and calculate rate components that allowed the contracting officer to productively lead negotiation discussions with the utility provider. Army Regulatory Law was also added to the team to provide advice, to serve on the negotiation team and, if necessary, to go before the state public utility commission for resolution.

"The team negotiated with the utility provider over a six-month period," Givan said. "CUP provided rate analysis and transmission line service cost estimates. USACE invested only $16,771 for CUP labor and travel."

To further clarify technical support, the utility said maintenance and operation (O&M) expenses of the transmission line serving the pumping plant were substantial and could not be reduced. Givan found a generally acceptable method to calculate the cost to operate and maintain the transmission line that demonstrated the O&M cost should be only $12,000. This transmission line cost combined with the calculated minimum monthly usage cost of $10,000 helped establish a new total monthly rate of $22,000 that still allowed the utility to comfortably recover all costs.

"Since this was the first negotiation for the program, the experience and team building approach for this project helped establish the ideal Army utility negotiation team model," Givan said. "The model team consists of the CUP program manager, contracting officer, utility regulatory law attorney and one or more representatives of the supported facility. A utility consultant will be added to the team as required. This effort can be replicated by any agency or department that owns large facilities. Utility contracts are generally 10-year agreements that should be reviewed for utility market or industry changes as well as outdated facility requirements. A similar negotiation team will provide the depth, knowledge and flexibility to arrive at a 'win-win' negotiation."

Hunter Army Airfield goes GREEN

Story and photo by Chelsea Smith
USACE, Savannah District

SAVANNAH, Ga. – Fuel Island at Hunter Army Airfield now hosts the 21st century standard for fuel systems after about $13 million in infrastructure improvements and construction work which began in 2014.

The new above ground fuel system replaces an underground system constructed in the 1950s. Its eco-friendly design most notably nearly eliminates risks of soil contamination caused by potential underground fuel leaks, said Brett Wiliford, a U.S. Army Corps of Engineers project engineer.

It features two 5,000 barrel fuel tanks, a 1,800 gallon-per-minute pump house, fixed pantographs, two high-reach mobile pantographs and 8,000 linear meters of piping. A new 900 square-foot operations building equipped with utilities, leak detection, pavements, area lighting, emergency generator, fire protection and communications system were also installed as part of the improvement project. Prime construction contractors at The Nova Group, Inc. built to advance Type IV criteria, a gold standard for fuel systems.

Each tank holds 210,000 gallons of fuel and can refuel approximately 21 aircraft per day – about as efficient as the previous system. But environmental advantages and enhanced infrastructure differentiate the new system, which should outlast the pre-existing structure by about 50 years, said Kevin Pierre, a terminal manager for Hawthorne Services Inc., a contractor with the Corps.

A final inspection was performed Sept. 28 by USACE project managers and construction representatives, Hawthorne Services, Inc. staff, and installation safety representatives and maintenance contractors before it was handed over to petroleum experts at Hawthorne Services.

Twin cities celebrate completion of flood risk reduction project

By Mark Rankin
USACE, Nashville District

BRISTOL, Tenn. – The U.S. Army Corps of Engineers Nashville District joined the twin cities of Bristol, Virginia, and Bristol, Tennessee, along with the Tennessee Valley Authority to celebrated the completion of the Beaver Creek Flood Reduction Project, Nov. 9.

Located along the Tennessee-Virginia state line, both cities have suffered the impact of more than 15 years of flooding along Beaver Creek and its tributaries, impacting downtown businesses and residential neighborhoods.

The downtown ceremony marks the culmination of more than a decade of planning and cooperative efforts between the Corps, the cities of Bristol, and the Tennessee Valley Authority.

Lt. Col. Stephen F. Murphy, commander and district engineer, Nashville District, commended city leaders, the community, project managers and everyone who worked on the project in the last decade.

"This is a beautiful city and a great project for the Army Corps of Engineers. It is very important to the local community, and it is very important to us to help you," said Murphy. "This is what the Corps of Engineers is here to do… improve the lives of citizens."

Ramune Morales, project manager for the Beaver Creek Flood Damage Reduction Project, said the four-phase project began in September 2011 to provide channel and site improvements at the former Sears building site.

The Corps removed an existing box culvert, modified the Beaver Creek Dam inlet, sloped the creek banks, created a plaza area, installed a parking lot, provided landscaping and lighting, widened the channel near 6th Street, and improved the channel and modified the bridge near 8th Street.

Mike Wilson, Nashville District deputy for Programs and Project Management, said the incentive for this project was a desire to protect the commercial assets of downtown Bristol from the risk of potential flood damage, which has historically been very costly.

Reducing adverse economic impacts associated with flooding is a critical component of the continued revitalization of Bristol's downtown area, he said. These improvements will provide greater flood protection to other areas along Beaver Creek as well.

Wilson added that in 2001, Bristol, Tennessee, entered into an agreement with the Corps on behalf of both cities to conduct a feasibility study. This study produced a detailed project report and an environmental assessment outlining potential courses of action.

Morales said the project was divided into four phases, the last of which included the widening of the channel and removal of the bridge at 8th Street, which impeded creek flow, along with replacing the pedestrian bridge on the Wes Davis Greenway. Other components included site modifications at the former Sears building and Beaver Creek Dam inlet, as well as widening the channel near 6th Street.

Aspen Construction from Hackensack, Minnesota, completed work at the Sears site and 6th and 8th streets, while Stephens Construction Inc. constructed the modified Beaver Creek Dam inlet.

The cost for the project was shared between the federal government and both cities. The Nashville District designed and managed construction.

With downtown Bristol buzzing again, city officials stressed just how important this project is for the safety of its citizens as well as for the local economy.

Bill Sorah, city manager, Bristol, Tennessee, said the project addresses the flood potential that has been a problem for the city.

"Because of this project, our downtown area is a better place for thriving food and beverage businesses, specialty shops," he said. "They can now operate without the fear of flood occurrences."

State Street, which divides the city and is only yards away from the project site, is lined with flourishing businesses again.

Bristol, Tennessee, Mayor Chad Keen said the people of Bristol celebrate what it means to the sustainability of the community.

"We knew that a solution to protect our shared local economy from the impact of future flooding was imperative and well worth the investment that has been made," he said.

Murphy added that the Beaver Creek project affords its citizens incredible benefits and an added sense of security from flood damage.

"I think we're all happy with the project outcome," said Murphy. "It's the people involved; it's the leadership, the division, the teamwork and collaboration that made a difference over 15 years."

(Photo courtesy of USACE Nashville Disctrict and inset photo by Leon Roberts)

The Beaver Creek Flood Reduction Project serves to protect citizens of the Bristol cities from potential flood risks and their adverse economic impact on commercial businesses. The inset photograph illustrates how the cities previously dealt with the effects of flooding.

Jacksonville District delivers innovative solution to meet environmental challenges

Story and photos by Erica Skolte
USACE, Jacksonville District

"During the 2015 Everglades Cooperative Invasive Species Management Area summit, the working group challenged us to create an engineering solution to deliver biocontrol organisms over vegetation in areas that had previously been difficult to reach," said Jessica Spencer, a biologist in the Corp's Invasive Species Management Branch. "We met the challenge by integrating two cutting-edge technologies to create an innovative solution to real-life problems faced by people working on the front line of invasive species management."

Tiny biocontrols for water hyacinth and other invasive plants are housed and delivered to vegetation via a vertical-takeoff quadcopter.

"We used a 3D printer in-house to create a lightweight, custom-fitted housing with a remotely-operated drop-door that attaches to our vertical-takeoff quadcopter," said Thomas Spencer in the Corps' Unmanned Aerial Systems section, who engineered the solution. "Designing the 3D file in a Computer Aided Drawing program allowed for precise, reproducible retrofitting. You can go from a digital design file to an actual full-scale print within a few hours, and we've since used our new 3D printer capability to produce many other useful components to advance our UAS capabilities."

The Corps team and agency partners unveiled the new technology at this year's summit, followed by a field demonstration near Lake Okeechobee.

The tiny biocontrol insect, Megamelus scutellaris, was released from about five feet above the invasive aquatic water hyacinth, using the on-board camera to visually target and confirm the delivery in real-time.

The system is highly effective, delivering more than one thousand insects per drop to targets at a distance of up to 500 meters away, and 86 percent of the insects hit their one-meter target.

Using the system, leaf galls with the mite Floracarus perrepae can be delivered into tree canopies to help manage highly invasive Old World climbing fern (Lygodium microphyllum). Biocontrols for melaleuca and Brazilian pepper may also be compatible with this platform.

The system can be used to reach areas that have been difficult to access in the past, such as high tree canopies, hard-to-reach areas with thick vegetation, floating islands that cannot be traversed and, small pockets of invasives in remote areas. Other potential applications have been identified as well.

Management of invasive species is important to the success of many of the Corps' missions, including navigation, flood risk reduction, and environmental restoration and sustainability," said Jessica Spencer. "We are proud of the extraordinary work by the professionals on our Jacksonville District team, whose innovative engineering solutions meet the nation's environmental, technical and engineering challenges.

Thomas Spencer engineered an innovative solution to deliver biocontrol organisms to areas previously inaccessible to invasive species managers, such as tree canopies and remote wetland locations. Victor Wilhem releases the specially-outfitted vertical lift quadcopter with a remotely operated drop box and camera to monitor and confirm delivery in real time.