



The Corps

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# Environment

Innovative  
underwater  
camera system  
captures  
unique view of  
Alaska's murky  
7 depths

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## Environmental Operating Principle #7

Employ an open, transparent process that respects views of individuals and groups interested in Corps activities.



## The Corps Environment

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[www.usace.army.mil/Missions/Environmental.aspx](http://www.usace.army.mil/Missions/Environmental.aspx)





## Embracing open, transparent process delivers results



Lara E. Beasley  
Interim Chief  
U.S. Army Corps of Engineers  
Environmental Division

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*“Our Environmental Division National Program Managers serve as your ‘one door to the Corps’ in supporting environmental activities.”*

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By Lara E. Beasley  
Interim Chief, U.S. Army Corps of Engineers Environmental Division

It is a dynamic time for environmental activities within the U.S. Army Corps Engineers. Not only is our Environmental Division working to execute a projected \$1.5 billion worth of reimbursable environmental work for our Department of Defense and non-DOD partners this year, but we are also supporting our stakeholders in addressing emerging issues.

When a call comes in for our environmental technical expertise, our goal is to answer that call as quickly as possible. Key to expediting response efforts is ensuring that requests are managed centrally through our U.S. Army Corps of Engineers Headquarters National Program Managers.

Our Environmental Division National Program Managers serve as your “one door to the Corps” in supporting environmental activities. When requests are submitted centrally through our headquarters, we are able to leverage technical expertise across the entire enterprise, maximizing our support capabilities.

This strength is exemplified in our recent efforts to support environmental hazard screenings in Army housing.

Last August, the Corps of Engineers received a request from the Department of the Army to award a contract to inspect Army housing. Since this request came through our headquarters, we were able to send out an urgent tasker to every field office, district, center, laboratory and major subordinate command looking for in-house support.

Our St. Louis District and Southwestern Division’s Regional Planning and Environmental Center answered the call with the capacity and expertise to execute the mission. Using

primarily in-house resources we were able to inspect more than 1,000 homes in under 60 calendar days. I would like to stress here that this work was accomplished in calendar days; work could not be performed on weekends or holidays—and we had four federal holidays during this time period.

Our ability to complete more than 1,000 home inspections in under 60 calendar days was a direct result of the initial request coming directly to USACE Headquarters. Starting centrally at headquarters enabled us to mobilize a team and deploy quickly in support of this emerging issue. Furthermore, it enabled us to assess conditions on the front end and develop a plan that could be executed as expeditiously as possible.

I provide this example to illustrate that we have processes in place, and when used appropriately, these processes work. Embracing an open and transparent process is key. It is one of our guiding principles, outlined in our **Environmental Operating Principles** and is highlighted in this issue of *The Corps Environment*.

In the spirit of embracing an open and transparent process, I would like to share with you all the inner-workings of our U.S. Army Corps of Engineers Headquarters Environmental Division and how we are structured.

There are three branches within our Environmental Division, the Department of Defense Environmental Programs Branch, Environmental Integration Branch, and Environmental Support Branch. Each of these branches are composed of National Program Managers whose role is to support the execution of our environmental programs at the major subordinate command level. They are your champions.

See ENVIROPOINTS, page 5

We have 11 National Program Managers within our Environmental Division. We have National Program Managers supporting the Formerly Used Defense Sites program, Army Regional Environmental and Energy Offices, Defense and State Memorandum of Agreement program, and Native American Lands Environmental Mitigation Program.

We have National Program Managers supporting the Formerly Utilized Sites Remedial Action Program, Deactivated Nuclear Power Plant Program, Interagency and International Services – Environmental program, and U.S. Environmental Protection Agency's Superfund program.

We also have National Program Managers supporting sustainability and all Air Force and Army environmental programs. Beyond our programs, our Environmental Community of Practice Integrators serve as the unifying force that enable us to leverage the full capacity of our environmental technical expertise across all mission areas.

If you are not familiar with all these programs, I encourage you to delve into this issue of *The Corps Environment*. It contains articles related to many of the programs listed above.

Key to embracing an open and transparent process is knowing the process and knowing who to call. Our National Program Managers are constantly engaging with the MSCs and stakeholders, ensuring we stand strong in our commitment to delivering solutions to the toughest environmental challenges.

Our success is built upon embracing partnership and collaboration. It is through our national-level engagements that we are able to innovate and streamline our processes. You can read about the benefits provided by our Army Regional Environmental and Energy Offices' strategic partnerships on page 31, and how we are expediting environmental restoration activities under our DSMOA program on page 6.

I also encourage you to read the content

submitted by our U.S. Army partners, such as how a red-tailed hawk was rescued at Yuma Proving Ground in Arizona, on page 35. We partner across the Army and DOD to advance environmental efforts across the globe.

Through the centralized and coordinated efforts of our National Program Managers, we are able to track, monitor and assess conditions throughout our environmental programs. This enables us to provide comprehensive and proficient technical support to our stakeholders as soon as their requests are received.

As the interim chief of the U.S. Army Corps of Engineers Headquarters Environmental Division, I will continue to champion our National Program Managers so they can in turn champion our environmental teams in the field.

Through our unified efforts, we will continue to maximize our delivery of engineering and scientific solutions that provide ecological and economic benefits across the nation.

## Environmental Operating Principles

*The Environmental Operating Principles reinforce the U.S. Army Corps of Engineers' role in, and responsibility for, sustainable use, stewardship and restoration of natural resources. Introduced in 2002, these guiding principles are integrated across all mission areas.*

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

# Risk management program educates landowners, public

By Mark Seebeck  
USACE Headquarters

In early 2015, the U.S. Army Corps of Engineers began implementing interim risk management at Formerly Used Defense Sites that may contain military munitions and where a response action will not be conducted for an extended period of time.

In accordance with a memo issued by the Office of the Under Secretary of Defense on interim risk management procedures on May 24, 2013, USACE developed a comprehensive, systematic approach to educate landowners and communities about the actions to take to reduce the risks from munitions that may remain on FUDS. The basis of the risk communication is the Army's 3Rs of Explosive Safety (Recognize, Retreat, Report) message.

There are approximately 1,256 FUDS that may contain military munitions from past military activities and that are eligible for interim risk management. The portion or portions of a FUDS that are suspected to contain military munitions are referred to as munitions response sites.

To perform interim risk management,



USACE identifies landowners at munitions response sites and provides each landowner FUDS-specific 3Rs of Explosive Safety information.

Interim risk management activities also include providing a toll-free FUDS information center telephone line that landowners and the public can call with questions, and conducting 3Rs safety outreach activities for communities.

Prior to notifying landowners, USACE provides information on upcoming interim risk management activities to state environmental regulatory agencies, local congressional offices, state and local elected officials, and first responders.

To provide additional information to landowners at a munitions response site, webpages dedicated to interim risk management were developed and posted to [www.fuds.mil](http://www.fuds.mil). The webpages provide information on interim risk management, including an interactive map so landowners can identify where their property is located within a munitions response site, and provide additional information on the munitions response site.

As of the end of fiscal 2018, USACE has implemented interim risk management activities at 602 munitions response sites, involving processing data for over 104,400 parcels; mailing 72,902 landowners FUDS-specific 3Rs of Explosive Safety information; responding to 675 calls into the information center; providing 3Rs of Explosive Safety educational awareness presentations to 18 schools and 4,288 students; and hosting nine outreach events.

Through interim risk management, USACE helps safeguard landowners and affected communities and maintains transparency.

USACE will conduct interim risk management activities at eligible munitions response sites at least once every five years.

# DSMOA Program fosters partnerships, expedites cleanup

By Jenn Miller  
USACE, Headquarters

The Defense and State Memorandum of Agreement program helps to expedite environmental restoration activities at Department of Defense sites across the country through enhanced partnerships with states, territories and regulatory agencies.

Enacted in 1990, the DSMOA program provides financial reimbursement to state agencies for carrying out cleanup activities under the Defense Environmental Restoration Program. This is accomplished through the execution of cooperative agreements between the Department of Defense and state agencies, enabling state agencies to be reimbursed for cleanup activities at active military installations, Base Realignment and Closure locations, and Formerly Used Defense Sites.

"The DSMOA program enables Department of Defense sites to be closed out faster while also strengthening partnerships with states and territories

across the country," said Thomas Meyer, DSMOA national program manager with the U.S. Army Corps of Engineers Headquarters. "Through the execution of cooperative agreements, we are able to work together to protect human health and the environment."

To date, there are 52 states and territories participating in the DSMOA program. The program provides approximately \$40 million annually to participating states and territories for environmental restoration activities.

The cooperative agreements allow the DSMOA program to reimburse states and territories for regulatory activities that support the Department of Defense's execution of the Defense Environmental Restoration program. These activities include: technical review of documents, site visits, public participation support, Restoration Advisory Boards, identification and explanation of applicable, relevant and appropriate requirements, and quality assurance/quality control sampling and analysis.

The Army is the designated lead agent for all Department of Defense components, and the U.S. Army Corps of Engineers is the Army's designated execution agent.

The program is supported through a virtual team, composed of representatives from the U.S. Army Engineering and Support Center, Huntsville's Environmental and Munitions Center of Expertise, Contracting Directorate, and U.S. Army Corps of Engineers Headquarters.

"This virtual team serves as a liaison with Department of Defense service components and states, providing project management and administration of the 52 current cooperative agreements, as well as financial and budget support related to DSMOA activities," said Meyer.

The Department of Defense components currently participating in the DSMOA program include the Department of the Army, Department of the Air Force, Department of the Navy, Defense Logistics Agency and Formerly Used Defense Sites.



# Innovative underwater camera system captures unique view of Alaska's murky depths

By Dylan Snyder  
USACE, Alaska District



(Courtesy photo)

*A deckhand helps lower a special underwater camera system overboard a vessel to gather ecosystem data at a potential dredging disposal site in Frederick Sound near Petersburg, Alaska.*

Accurately capturing and recording an underwater ecosystem is a difficult task, even more daunting when it involves the deep, cold and dark waters of Alaska.

This is the challenge presented to the U.S. Army Corps of Engineers, Alaska District and Matt Ferguson, a biologist with the environmental resources section in the civil works branch.

The proposed project is located in the small fishing community of Petersburg in southeast Alaska and involves dredging for navigational improvements in Frederick Sound, where depths can drop to 500 feet within a half mile off the coast.

Efficient operation of the harbor has been negatively affected by navigation issues for commercial fishing vessels during low tides. This problem involves the rise of land that was previously covered by glaciers, otherwise known as isostatic rebound. After the weight of receding glaciers is removed, the now uncovered ground slowly rises faster than sea levels, resulting in shallower depths.

The dredged material from the project must be disposed in a place that is cost beneficial, has minimal environmental impacts, and uses sound engineering practices.

Historically, a disposal area was used off the northern end of Mitkof Island that fell within inland waters and the Corps' jurisdiction.

According to Ferguson, the boundaries changed in 2005 and the nearest inland waters of Thomas Bay are too distant to be economically feasible. Ocean dumping of the dredged material is the best remaining option.

Not only was the biologist tasked to evaluate the environmental impacts of about 90,000 cubic yards of dredged material at deep depths, but this would also be the first time the district conducted a site-selection study to identify a dredged material disposal area in ocean waters.

Under the permitting authority of the Environmental Protection Agency's Section 103 of the Marine Protection Research and Sanctuaries Act, a proposed disposal location must comply with several ocean dumping criteria, such as purpose and need, environmental impact and adverse effects on other uses including navigation.

Ferguson added that the district had never studied areas at such depths nor had it studied an area so intensively before because the requirements of the ocean dumping act are explicit.

"When I got done with my initial coordination with EPA and realized how impactful it would be to collect video, I took a step back and reevaluated what our capabilities were and what we would need to meet the requirements of the site-selection study in a collaborative way," he said.

**See ALASKA, page 8**

Three potential disposal sites were identified within Frederick Sound, consisting of 24 cameras set up to observe epibenthic fauna (life present at and just above the sea floor) facing potential environmental impacts.

Previous video-recording capabilities limited Ferguson's view to depths of about 120 feet, far shallower than the average depth of 500 feet at each site. The deepest locations included in the survey were expected to reach 690 feet.

The depths presented additional restrictions, including a lack of natural light, cold temperatures that depleted battery life, pressure on camera housings and lack of mobility.

"It also needed to be transportable," Ferguson said, citing the state's limited accessibility to remote locations. "We work all over the state here in Alaska and there are many locations that are only accessible by plane or by boat."

Undeterred, the biologist designed and fabricated a camera system capable of the job.

He contacted a company that worked to provide him with an adequate camera and light setup by constructing a rig from galvanized and stainless steel that was compact when broken down and easily transportable.

Capable of being deployed on different support vessels, the camera system is dropped over the side of a boat with the same winch used for crab pots.

While in the water, the camera collects field location data, geo-referenced photos of additional shrimp and crab pot samples, using existing imported map geometry from geographic mapping systems.

During the camera system's initial deployment in August 2018, Ferguson made in-field adjustments, such as moving hardball buoys and anchor weights, to accurately capture the ecosystem on film.

The long hours and alterations paid off. Review of the footage showed clear images of the seabed 500 feet below him.

So far, video from the depths has captured crab, shrimp, fish, sea urchins,

brittle stars and a variety of smaller crustaceans called amphipods, he said.

The camera system has been successfully deployed on three trips to Petersburg, allowing a better assessment of the possible environmental impacts at a disposal site.



(Courtesy photo)

*An underwater camera system developed by Matt Ferguson, biologist with the USACE, Alaska District, is readied for deployment during a site selection study in Frederick Sound near Petersburg, Alaska.*

More than collecting clear footage of a previously inaccessible environment, the camera system helped both the Corps and the project save money by keeping the work in-house.

Early estimates placed the cost of a contractor performing a site selection, including benthic surveys, at around \$1 million, but Ferguson estimates his work at one-tenth the cost.

Other filming options, such as using an underwater remotely operated vehicle or benthic sled, presented problems or high

costs that were not feasible for the project.

Chris Hoffman, a fellow biologist with the Environmental Resources Section, had previous first-hand experience with Remotely Operated Vehicles (ROVs). He encountered potential drawbacks for their use while helping Ferguson on the initial deployment of the camera system.

"The first time we dropped that camera last August, we ran into a sunken vessel and lost that 25-pound cannonball," Hoffman said. "The last thing you'd want is that \$100,000 Remotely Operated Vehicle to become an anchor."

Video footage from the 24 camera sites and three potential disposal areas was shared with external agencies including the Alaska Department of Fish and Game's Shellfish Management Office, National Marine Fisheries Service's Habitat Division and EPA ocean dumping coordinator.

Additional video clips, photos and qualitative analysis were shared through satellite imagery files, which are easily transferable and viewable on most agency systems.

The project and site selection are still ongoing, but the camera system has already shown promise outside of Petersburg, Ferguson said.

And, in February, he presented his design to a committee at the Corps' Technical Innovation Forum, which is considering the system's adoption throughout the organization.

Ferguson and Hoffman hope to use the camera system on upcoming Alaska civil works projects, such as navigation improvement studies in Kotzebue, Whittier, Elfin Cove and especially the remote island of St. George.

"One of the good things about this camera system is that it's so flexible," Ferguson said. "It could be configured to satisfy a lot of different needs in a lot of different places."



# Fort Rouseau environmental cleanup proves challenging, yet rewarding

Story & photo by John Budnik  
USACE, Alaska District

A popular state historical and recreational park for hardy kayakers and tourists thrilled with military history in Alaska is beginning a new era – one sans environmentally damaging contaminants.

The U.S. Army Corps of Engineers, Alaska District is nearing completion of cleanup efforts for the Fort Rouseau Causeway State Historical Park under the Formerly Used Defense Sites program.

Located in Sitka Sound, the Army constructed a number of military features from 1941 to 1943 such as artillery magazines, command posts, fuse houses, gun emplacements, motor sheds, personnel shelters and storehouses on a chain of islands connected by a causeway spanning about 8,100 feet – most of which today is now overgrown, in a state of decay, or already removed.

Back then, the mission was to protect Sitka Harbor from a Japanese invasion. Today, the Army's duty is to clean up its past.

Since 1996, the Corps has strategized and waged its own battle against the contaminants left behind – polychlorinated biphenyls, or PCBs, drums, batteries and fuels.

“It would take a lifetime of living there for someone to have adverse effects directly from the contamination,” said Aaron Shewman, project manager and environmental engineer in the Alaska District's FUDS program during a recent interview with USA Today. “The reality is people who

use or have used the causeways have only used it for a day or two and any exposure if it did happen was low.”

In 2018, a \$6.3 million cleanup effort to remove the contents of a leftover landfill over the course of five weeks was completed at the site. In total, about 933 tons of hazardous waste; 5,157 tons of nonhazardous materials; 317 pounds of electronics equipment; 168 pounds of broken lead acid battery plates; and 133 tons of steel were removed.

Since Alaska does not have supporting infrastructure to properly dispose of the rubble, the hazardous waste was shipped to Oregon, its nonhazardous waste to Washington, and the steel recycled in Seattle.

Shewman said that he knew the former landfill at the site was an ecological problem because it was eroding into the ocean.

“Some of those contaminants like the PCBs are bio-cumulative, meaning they can accumulate in the fatty tissue of animals which threatens the food web,” he said.

However, one of the greatest challenges of the project was not the immense

amount of contamination, but getting to and from the island because of access limited to marine vessels only. A washed out causeway and having to time work with tidal influences left the Corps with a complicated project schedule, Shewman said.

“It was crucial work trying to get this contamination while not making the site worse,” said Ken Andraschko, chief of the Alaska District's FUDS program. “Our contractors left the trails in as good of condition when they started – if not better.”

While this landfill removal is a major milestone for the entirety of the site's progress, there is still an intertidal area at the island west of the former landfill that is the next target for the FUDS team.

Shewman believes that the Corps has done a lot of good for the active community of Sitka. With this cleanup effort, outdoorsman and history buffs alike can enjoy the causeway for many years to come.



*A loaded Marooka rubber track carrier drives onto a landing craft off of the Makbnati Islands heading north.*



# Engineers use latest technology to tackle WWI cleanup

Story & photo by Chris Gardner  
USACE, Baltimore District

Crews searching for buried explosives at a Formerly Used Defense Site in northwest Washington D.C.'s Spring Valley neighborhood are using the latest in advanced technology to reduce unnecessary impacts to private property and to improve efficiency.

Historically, crews doing this sort of work end up digging hundreds if not thousands of pieces of scrap metal and other items referred to as cultural debris, rather than buried munitions. These "false digs" are pretty common at FUDS across the country, and Spring Valley is no exception.

During World War I, the Spring Valley site was known as the American University Experiment Station (AUES) and was the site of the nation's initial research into chemical warfare. Part of that included storing, testing and firing explosive rounds in an area that has since been developed into a community of more than 1,000 private homes. This is why crews are using the latest technology to reduce the amount of false digs.

"It's been over 100 years since the Army finished its research and training in what is now the Spring Valley Formerly Used Defense Site, and that's a lot of time for all kinds of metallic objects to have shown up and become buried in addition to any munition items that may remain from past military use," said Alex Zahl, project manager, U.S. Army Corps of Engineers, Baltimore District. "Our teams in the field use the latest in geophysical mapping technology to classify subsurface metallic anomalies to say 'yes, that's a munitions item' or 'no, that's construction debris or a horseshoe.'"

The process, known as Advanced Geophysical Classification, or AGC, was recently accredited by the Defense Department and the EPA to be deployed during munitions investigations.

According to Zahl, while the geophysical principle involved is not new, the use of the newly developed smaller equipment and the AGC process provides clear improvements for a site like Spring Valley.

Previously, the technology was larger and less maneuverable, and primarily used at FUDS with more open space.

With advancements in technology and the equipment getting smaller, Baltimore



*Manned Portable Vector, or MPV, technology seen here was proved to be effective and is being used during ongoing munitions investigation work in Spring Valley.*

District collaborated with Naval Research Laboratories to conduct a pilot study at three Spring Valley properties to determine how the technology might work in a residential setting. This meant not only working with different topography and surfaces like decks and driveways, but also addressing greater signal interference from things like buried utilities and foundations.

While USACE has worked to address immediate hazards in Spring Valley over the past several years, the recently completed Spring Valley Site-Wide Decision Document identifies 92 private properties and 12 government-owned parcels where further investigation to remove potentially buried explosive hazards is recommended based on historical research and site investigation.

With the pilot study proving the new technology could be effective in a neighborhood setting before that larger site-wide effort began, the team was able to incorporate the AGC technology going forward.

"We were lucky enough that as this technology was coming on the market, we were planning to conduct our investigation into these properties to remove any potential buried munitions," Zahl said.

AGC involves state-of-the-art electromagnetic survey tools that not only locate buried metallic objects, but also identify which anomalies are buried intact munitions.

These tools create an electromagnetic pulse over an anomaly and listen for the items' 'decay curve,' which is based on things like the size, shape and thickness of the buried item. Different items have unique decay curves. AGC files contain an extensive library of all the standard ordnance used by DOD, and specialty devices developed at the AUES were added prior to work in Spring Valley.

The decay curves of detected buried metallic anomalies are compared with historical files to identify the anomalies and help determine whether they are likely to be munition or cultural debris.

There are many benefits to reducing the amount of false digs when doing munitions cleanups. It reduces the impact to private properties, where crews are only able to work with the permission of homeowners.

It also reduces the amount of restoration needed since every hole dug in a yard, patio, or driveway has to be restored whether munitions items were discovered or not. These restoration efforts take time and can be costly.

Reducing the amount of digs also saves time, which in turn saves money.

"While we're able to save time and money by conducting fewer digs, we will not compromise safety and are still digging if there's uncertainty," Zahl said. "We're doing a lot fewer false digs while still addressing the potential hazards we're here to address."



# First floating nuclear power plant dismantled, recycled

By Chris Gardner  
USACE, Baltimore District

The U.S. Army Corps of Engineers recently completed the safe removal of more than 1.5 million pounds of radioactive material from the STURGIS, a World War II Liberty Ship turned into the first floating nuclear power plant in the 1960s.

The Corps' Baltimore District was tasked with the unique mission to decommission and dismantle the STURGIS, and its nuclear reactor, known as MH-1A, which was used to generate electricity for military and civilian use in the Panama Canal for several years before being shut down in 1976.

Beginning in 2015, all remaining radioactive material was removed while the vessel was in Galveston, Texas. The radioactive waste was transported to a licensed disposal facility in Andrews County, Texas. After the radiological decommissioning was complete, the project team had to figure out how to handle the hundreds of thousands of remaining pounds of traditional debris that was not radiologically contaminated. The STURGIS was dismantled at a shipyard in Brownsville, Texas, earlier this year.

"The STURGIS was a large vessel. Only a portion of the vessel was impacted by radiological contamination, so we

had a lot of ship left to properly dispose of after the decommissioning was complete," said Brenda Barber, Baltimore District project manager. "We looked at different alternatives for disposing of the more traditional waste and made a commitment to try to recycle as much of the vessel as possible."

With sustainability on their minds, the team implemented a process to recycle a tremendous amount of debris — approximately 600,000 pounds of lead and more than 5,000 tons of steel and other assorted recyclables.

This recycling effort reduced the project's overall environmental impact while the team simultaneously addressed the vessel's remaining low-level radioactive waste in an environmentally conscious and safe way.

"Not only was our team able to safely package and ship all of the radioactive components of the STURGIS barge, we were also able to safely separate out hundreds of thousands of pounds of non-radioactive recyclables so the STURGIS could live on in other ways," Barber said.

Most of the recycling ended up being lead shielding and the steel that made up the ship itself. Both of which are highly recyclable due to their recovery rates.

According to the International Lead Association, recycled lead is used more than mined lead. Common uses include lead-based batteries often found in vehicles and lead sheeting that can be used in construction for roofing as well

as radiation shielding in the healthcare industry. Recycled steel can be reused in anything from automobiles to cans to building materials.

Recycling metal like steel and lead has significant environmental benefits, including less impact on landfills, minimization of emissions, and a reduction in the requirement for mining or producing virgin material.

The 5,364 tons of steel and other scrap metals recycled eliminated an estimated 6.36 million kilograms of carbon dioxide that would have been generated by the production of virgin steel according to Mike Berner's-Lee's 2011 work, "How Bad are Bananas: The Carbon Footprint of Everything." This is equivalent to taking more than 1,000 cars off the road for an entire year. It also saved approximately 13.41 million pounds of iron ore, 7.5 million pounds of coal, and 643,680 pounds of limestone.

Though difficult to quantify, recycling lead reduces the need for lead mining and in doing so reduces the associated human health and environmental impacts. Efficiently collecting and recycling lead also reduces the amount of hazardous lead released into the environment.

"In addition to being the right thing to do for the environment, our focus on recycling also provided the project with cost savings - less disposal costs, which made the entire effort a win-win," Barber said.



Sectioned pieces of steel from the STURGIS are stacked and prepped for recycling. (Courtesy photo)



# RECYCLING THE STURGIS



## Primary metals recycled included:

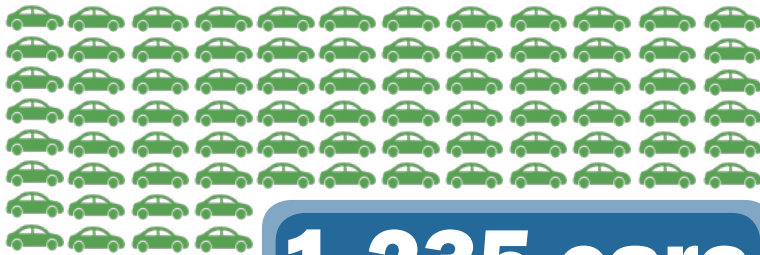
**600K**  
pounds of  
**LEAD**

**5,364**  
tons of  
**STEEL**

the 5K tons of steel  
**ELIMINATED**

**6.36**  
million kilograms  
carbon dioxide

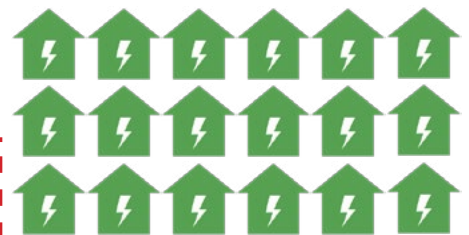
that would have  
been generated to  
make virgin steel



which is  
equivalent to

**1,235 cars**  
off the road for an  
**ENTIRE year**

OR



the energy the  
average house  
needs for  
**485 years**

the STURGIS team also safely removed



**1,500,000**

pounds of radioactive material &  
shipped it to a licensed disposal site

Not only was our team able to safely package and ship all of the radioactive components of the STURGIS barge, we were also able to safely separate out hundreds of thousands of pounds of non-radioactive recyclables so the STURGIS could live on in other ways.

- Baltimore District Project Manager Brenda Barber



US Army Corps  
of Engineers®

To learn more about the STURGIS visit: [www.nab.usace.army.mil/Missions/Environmental/Sturgis](http://www.nab.usace.army.mil/Missions/Environmental/Sturgis)



*(Photo courtesy of USACE, Buffalo District)*

*The Braddock Bay Restoration project incorporates a barrier beach with an innovative breakwater design that can be deepened, if necessary, to enhance water circulation.*

## Restoration project exemplifies collaborative, transparent process

**By Holly Kuzmitski**  
Engineer Research and Development Center

When considered from every angle, the Engineering With Nature® Braddock Bay Restoration project is a model for successful interagency collaboration and transparency.

Completed in September 2018, the U.S. Army Corps of Engineers, Buffalo District project included a natural and nature-based feature: a constructed barrier beach with a breakwater.

“The created barrier beach affords the same protections that the natural barrier beach used to provide when it existed: reduced interior wetland erosion and enhanced natural littoral drift processes for lake sediment,” said Tony Friona, Engineering Research and Development Center liaison to the Great Lakes.

Friona is also the USACE Focus Area 1-Toxic Substances and Areas of Concern lead for three USACE districts and ERDC, and coordinates all budgeting, interagency coordination and project development and execution.

“The construction team conducted

conference calls, webinars and public meetings to keep the process transparent. Input from the community, stakeholders and other federal agencies was taken very seriously—we answered questions and incorporated concerns into the project’s design and implementation,” Friona said.

In one example, U.S. Fish and Wildlife Service personnel had a concern that the bay would become so nutrient rich that the subsequent decomposing plant life would deplete the fishes’ oxygen supply.

“To address this concern, the breakwater design was modified to feature a natural gap between the existing shore and the feature, a ‘relief valve’ that allows more circulation,” said Joshua Unghire, an ecologist with the Buffalo District. “If, during monitoring, we see changes in water quality resulting from water trapped in the bay, that gap can be easily deepened.”

The planning centered on stakeholder involvement. The New York State Department of Environmental Conservation; the Town of Greece, New York; Monroe County, New York; the U.S. Environmental Protection Agency; and

a local technical expert from the State University of New York at Brockport; the National Audubon Society and others at the public, state and municipal levels all gave input at the bi-monthly meetings.

“We worked through the Corps’ planning process with them and created a transparency that also nurtured project support from the stakeholders,” Unghire said. “We started using each other as sounding boards for ideas.”

“The project’s funding and authority came from the Great Lakes Restoration Initiative, which is in itself a collaborative body,” Friona said. “Managed by the U.S. Environmental Protection Agency, GLRI is a unique program: an interagency partnership of 14 different organizations—an experiment in efficient government.

“We all develop five-year action plans that address five different focus areas; areas of concern (AOC) are one of the highest priorities,” Friona added. “Great Lakes AOC’s have been identified by the International Joint Commission as having significant environmental degradation.”

**See BRADDOCK BAY, page 14**



According to Friona, the GLRI was formed to remove beneficial use impairments, or the changes that affect the chemical, physical or biological integrity of the Great Lakes system, so the AOCs could eventually be delisted. The Braddock Bay Restoration project was part of a locally driven, state-led process to remove beneficial use impairments.

“The barrier beach design incorporates the fundamental concepts of the EWN® approach. It solves the problem of shoreline erosion and habitat loss with a structure that provides ecosystem benefits and services in the form of exceptional shorebird habitat and littoral drift maintenance,” he said.

Friona adds that even when the project

is completed, under GLRI, his team will continue working with stakeholders.

“First, there is a warranty period. We want to make sure the planned communities are working well and that we hand off the best project possible to the long-term owner. We want to make sure there are no unintended consequences,” he said. “Then there is an adaptive management process, where, if necessary, we can adjust project elements, like the breakwater gap, according to what works best.”

“This is also a project that delivers so many benefits,” said Dr. Jeff King, deputy national lead for the EWN initiative. “Restoring the natural littoral drift processes for lake sediment will likely lead to less maintenance dredging of the

bay, which will obviously create economic benefits.”

“We used input from the many agencies and individuals to help inform construction of the beach, which has proven to be a tremendous habitat for shorebirds, at no extra cost to the Corps,” Unghire said. “Twenty-six different shorebird species have been observed using the natural and nature-based feature, including two endangered species: the piping plover and the red knot.”

“The project is an excellent example of how incorporating the viewpoints and concerns of multiple parties can lead to a well-designed project with multidimensional benefits,” he said.

*Two of goals of the Braddock Bay Restoration, an Engineering With Nature® project, were to reduce coastal wetland loss and improve habitat diversity. (Photo by USACE Buffalo District)*



# Environmental Support Team hones skills to support war fighters

By John Busse  
USACE, Headquarters

Within the U.S. Army Corps of Engineers, there is a cadre of environmental engineers and specialists that serve on an expeditionary team providing support to the combatant command and its components during war, contingency operations and disaster relief operations.

Known as the Environmental Support Team, or EnvST, this team provides critical environmental support to U.S. forces deployed overseas so they can focus on their mission.

Recently, members of the EnvST participated in a two-week-long training session, alongside members of other expeditionary teams that make up USACE's Field Force Engineering program.

During the annual training conducted

April 23 through May 2 at the USACE Readiness Support Center in Mobile, Alabama, members from the EnvST, the Forward Engineer Support Team, Contingency Real Estate Support Team and Logistics Support Team strengthened their skills in support of the war fighter with an emphasis on base camp development and operation.

"The value of the EnvST program is that it gives USACE environmental subject matter experts who have expressed an interest in supporting the program an opportunity to learn additional environmental skills that they are likely to need if called upon for overseas deployments," said Arlene Weiner, Field Force Engineering training manager at USACE Headquarters. "It also offers a forum to interface with other USACE staff who share their interest but may have a different skill set."

The forum provides participants an opportunity for a peer-to-peer exchange of ideas as well as expose them to individuals that have executed such missions and who can provide that real world experience.

During the event, teammates obtained overviews of upcoming training tracks and reachback engineer data integration (REDi).

REDi provides a common database, mapping tool and robust user interface for managing, tracking and archiving all data and reachback for the Field Force Engineering program.

This was followed by additional full group training on the tools and information available through the USACE Reachback Operations Center and how base camp planning is integrated into the joint construction management system.

**See EnvST, page 16**



*(Photo by Cynthia Phillips)*

*Pictured from left to right are: Maj. Logan Blank, U.S. Army Public Health Center; Daniel Hunt, U.S. Army Engineer School; Mark Ogburn, U.S. Army Engineer Research and Development Center; Eric Lam, USACE, Fort Worth District; Matt Collins, USACE, St. Louis District; Anne Mayo, ERDC; Bruce Travis, U.S. Army Engineer School; Jodi Gentry, USACE, Kansas City District; David Erickson, USACE, Omaha District; Tonya Acuff, USACE Mississippi Valley Division; Brian Wilson, USACE, Seattle District; and John Busse, USACE, Headquarters.*



Before breaking out into individual training tracks, an overview was provided on the operations order that provided a fictional scenario that would serve as the combined groups' capstone project.

"This year's EnvST course has been expanded and incorporated with the FEST training. This modification has allowed the students a better understanding of their roles and responsibilities and how the Field Force Engineering teams support each other in completing the mission," said Bruce Travis, EnvST instructor with the U.S. Army Engineer School's Directorate of Environmental Integration. "Completing the EnvST training provides information on the different media, and the necessary resources/reachback to be setup for success in future deployments."

The EnvST track provided training across several different topic areas focused on supporting contingency operations and the war fighter.

Training included the following: environmental laws, regulations, and outside the continental United States (OCONUS) environmental baseline guidance; water resources and testing; wastewater and solid waste treatment; hazardous waste requirements and storage management.

Training also included: environmental tool kit for expeditionary operations; spill response and management; medical waste management; pesticides, asbestos and polychlorinated biphenyl requirements; protection of cultural and natural resources; air quality; environmental sustainability considerations in base camp development; environmental impacts and preparation of an environmental baseline assessments and surveys for OCONUS activities; occupational and health surveillance and assessments; and repurposing of basecamps.

At the conclusion of the individual training sessions, participants with the FEST, CREST, EnvST and LST were split into four teams to perform the capstone as detailed within the training session's OPOD.

The final day concluded with each team briefing their findings which fed into their base camp designs, including the cost and schedule to achieve base camp operation.

Each team provided a comprehensive package incorporating the training lessons to construct and operate a base camp in response to the fictional disaster outlined within the OPOD.

Not only does this training provide hands-on experience and enable face-to-face interactions with fellow Field Force Engineering Team members, but it also provides skill sets that can be utilized at their home stations.

"The joint training opportunity and collaboration with CREST, logistics and the recon/base design teams provided a portal for teammates to view their respective duties and deliverables, and clarified how the EnvST team can supplement efforts to satisfy overall

mission success," said Brian Ogburn, EnvST member and facility manager for the Environmental Laboratory with the U.S. Army Engineer Research and Development Center. "I am already putting my training to work in an assessment of a potential airfield."

Additional information on the Field Force Engineering Program, and the Environmental Support Team is available at [www.usace.army.mil/Missions/Military-Missions/Field-Force-Engineering/](http://www.usace.army.mil/Missions/Military-Missions/Field-Force-Engineering/).

## Feedback from the Field

*"The high quality of professionalism, knowledge, and collaboration were evident throughout the entire training session from all team members. EnvST members are a great example of the high quality and caliber folks working within the Environmental Community of Practice. Instructors indicated that this may be the strongest group of folks ever assembled for this training."*

**- John Busse, EnvST program manager  
USACE, Headquarters Environmental Division**

*"The training drove home the importance of effectively working on an interdisciplinary team. I had the opportunity to work alongside Soldiers and civilians from across the country, each of whom possesses a unique skill set. It was a phenomenal experience that helped prepare me to serve our county in a specialized capacity."*

**- Dave Erickson, environmental engineer  
USACE, Omaha District**

*"The two-week EnvST training course provided a great broad sweep overview of the environmental challenges met by USACE and our Department of Defense customers around the world. The combination of in field knowledge, spanning decades and continents, shared through classroom instruction and hands-on practice, provided an invaluable learning experience for the students and instructors."*

**- Eric Lam, environmental engineer, USACE Fort Worth District**

*"What I learned from the EnvST training course was the value of face-to-face training, learning alongside other professionals having similar desires to serve the Army in a unique deployable capacity. This training provided a foundational platform for understanding the dynamics and importance of environmental reconnaissance in theater, ultimately supporting development of sound decisions made by senior leadership."*

**- Brian Wilson, program manager, USACE, Seattle District**

*"While individually we may not know every answer, the value in the cadre is that we make connections, learn each other's strengths and know how to reach back. By utilizing the EnvST you are not only getting a person to assist with your mission, but you are getting a network of backgrounds and specialties. I left feeling that I was a part of a team of 'big brains.'"*

**- Tonya Acuff, regulatory and EC program manager  
USACE, Mississippi Valley Division**

# Collaboration ensures better, effective forecast operations

By Carol C. Coleman  
Engineer Research and Development Center

It's an all-too-frequent scenario in the western United States: winter storm variability causing insufficient water storage to meet water supply needs, resulting in reservoir drain or environmental damage. It was one such severe drought in northern California during January 2013-February 2014 that helped initiate the Forecast Informed Reservoir Operations effort.

For almost a decade, northern California's Russian River had been identified as an important study area due to variable precipitation, urban and agricultural demands, and the endangered fish species. After the driest year on record, Marty Ralph from the Scripps Institution of Oceanography at the University of California-San Diego and Jay Jasperse from Sonoma Water proposed the formation of a group of researchers, operators and stakeholders to explore the potential viability of including forecasts in Lake Mendocino's operations.

The idea was discussed at an Integrated Water Resources Science and Services (WRSS) meeting held in Santa Rosa, California, in April 2014 and was attended by representatives from the U.S. Army Corps of Engineers, the U.S. Geological Survey, the National Oceanic and Atmospheric Administration, and the Federal Emergency Management Agency.

"IWRSS was really the genesis of the FIRO effort," said Cary Talbot, division chief for flood and storm protection at the Army Engineer Research and

Development Center's Coastal and Hydraulics Laboratory and program manager for ERDC's FIRO effort.

The collaboration that built FIRO has proven results. The completion of a Preliminary Viability Assessment contained detailed modeling, analysis and scientific research, and demonstrated that FIRO can provide water managers the information they need to selectively retain or release water. Consequently, a major deviation was approved in 2018 by the Corps that allowed for FIRO-developed tools and concepts to be tested at the reservoir.

The deviation was a huge step in defining how FIRO could be implemented. With a policy change in 2016, the Corps allowed for forecast information to be used in water management, but didn't necessarily spell out how this was to be done.

FIRO is defining the how.

After the IWRSS meeting, a workshop explored what that effort would look like. This followed a request from Congress, asking the Corps to investigate improving forecast capabilities to find a better balance between flood risk management, water supply and ecological concerns. Lake Mendocino was chosen for the joint FIRO effort. A steering committee was formed consisting of representatives from ERDC, the Corps districts, Sonoma Water, the Center for Western Weather and Water Extremes at Scripps Institution of Oceanography, NOAA, USGS, the U.S. Bureau of Reclamation and the California Department of Water Resources. The group was chosen to represent the lake's specific challenges.

"The composition of the steering committee is watershed dependent," Talbot said. "Each reservoir is different with individual needs. The committee had to consist of the right agencies and stakeholders."

The committee first met in December 2014 and began to establish a work plan that would set the path for the FIRO effort for the next five years.

"In the beginning, everyone was learning each other's objectives. It was about education and sharing ideas," Talbot said.

Fast forward almost five years later and collaboration is still key.

"Now that we all have an understanding of each other's perspectives and objectives, it's about how can we work within those constructs to reach our objectives," Talbot said. "There is an established culture of communication and collaboration in the steering committee."

As the effort moves toward the future with two new locations—one in an urban southern California watershed and another located in the Sierra Nevada foothills—the focus has turned to properly assembling the right steering committees for those locations. Each one must be assessed for its own unique objectives, carefully selecting agencies and stakeholders who can speak to those perspectives.

"It's important to have the right mix of people," Talbot added. "It's a collaborative relationship where we all have our own objectives, but work together toward a better balance."



*Water is released at Lake Mendocino, the pilot reservoir for the Forecast Informed Reservoir Operations effort.  
(Photo by Brandon Beach)*



# Corps team moves to dispose munitions found at former prisoner of war camp

By Shatara Riis

USACE, Louisville District

Located in western Kentucky, 30 miles south of Evansville, Indiana, Camp Breckinridge was once used for infantry housing, combat training and medical care.

It also served as a prisoner of war camp for more than 3,000 German soldiers from 1943-46 and was deactivated in 1949.

During the 1950s, Camp Breckinridge was reopened for troop training related to a peacetime draft and the Korean War followed by annual support for National Guard troops, Reserve Soldiers and Army units conducting special field training.

“Training on this site was conducted with small arms, hand grenades, mortars and artillery,” said Clayton Hayes, Louisville District project manager. “The camp was declared excess in 1962, and the land was disposed of over the following years.”

Due to past military training operations, numerous munitions and explosives of concern (MEC) were found on the site, leading to the development of the project.

According to Hayes, an estimated 1,200 MEC have been found at Camp Breckinridge, along with more than 30,000 pounds of munitions debris. The majority of the items found range from small hand grenades, mortars (60mm and 81mm), to large 105mm projectiles.

Currently, the U.S. Army Corps of Engineers and its contractor are nearing the end of the field work in the remedial investigation phase. However, due to the extensive amount of munitions found, a time critical removal action is underway in an effort to clean up areas with high concentrated amounts of MEC.

According to Hayes, the TCRA permitted additional funding for the removal/disposal action during the RI phase. As a result, more resources were placed in the field to eradicate and dispose of the munitions while the RI phase is currently in progress – reducing the wait time by two or more years to start the removal action.

**See POW CAMP, page 19**



*(Photo by Todd Hornback)*

*A contractor (left) discusses findings with Clayton Hayes, project manager, and Jay Trumble, environmental engineer, during a tour of the Camp Breckinridge site. Contractors are finding large amounts of ordnance in the investigation and are following protocols to dispose of the unexploded ordnance.*



“The significant impact of this step greatly reduces the risk for the public to come in contact with MEC,” Hayes said.

This project is of particular importance to USACE because it carries a high risk score – for safety reasons, Hayes adds. It is also ranked as one of the Kentucky Department of Environmental Protection’s top projects.

“However, to the area residents, the project may not be so important, since they have been dealing with the munitions for many years and may not consider it as much of a threat,” he said. “Fortunately, we’re not aware of any casualties or accidents associated with the munitions there.”

Even though some may feel comfortable with the munitions, it’s still vital for residents to recognize what to do whenever they encounter a munition: retreat – do not touch, move or disturb it but leave the area the way it was found, and report the sighting – call 911 and immediately notify law enforcement.

Progress and success of the project stem from partnership.

“Partnering among the many people and stakeholders (both internally and externally), acting as one cohesive team has been excellent,” Hayes said. “The coordination of activities has been very smooth, and we have great teams of experienced professionals in the UXO (unexploded ordnance) field who put safety first, and orchestrate the work very efficiently.”

There is still more work to be done.

The current contract consists of the RI/Feasibility Study phase, which is scheduled to be completed by the end of June 2020. However, subsequent phases of the Comprehensive Environmental Response, Compensation & Liability Act process may take several years to complete. The total cost to complete the project is estimated at approximately \$60 million.

“We still have much to do,” Hayes said. “(We) look forward to the successful completion of this work.”



*(Photo by Todd Hornback)*

*Though inert, ordnance such as this discovered at the former prisoner of war and National Guard and Reserve Soldier training camp are being removed and disposed of to ensure the safety of area residents.*





*(Photo courtesy of USACE, Louisville District)*

*A team of contractors undergoes the process of cleaning contaminants from a residential site. The Jacobsville neighborhood in Evansville, Indiana, was a contaminated site identified by the Louisville District, along with the EPA, for cleanup under Superfund.*

# District remediates 2,000 residential properties in Jacobsville neighborhood

**By Shatara Riis**  
USACE, Louisville District

The Comprehensive Environmental Response, Compensation and Liability Act, or CERCLA and commonly known as Superfund, is responsible for the cleanup of some of the nation's most contaminated land resulting from environmental emergencies, oil spills and natural disasters.

According to the Environmental Protection Agency's website, Superfund allows the EPA to clean up contaminated sites. It requires the parties responsible for the contamination to either perform cleanups or reimburse the government for EPA-led cleanup work.

The Louisville District lends a helping hand to this important effort under EPA's Superfund Program.

"Superfund started in 1980 when Congress passed CERCLA; at sites where EPA can't find a viable party responsible for the contamination, EPA performs the cleanup using the federal Superfund

program created by CERCLA," said Josh Van Bogaert, Louisville District EPA Superfund program manager.

The Jacobsville neighborhood in Evansville, Indiana, is one site the Louisville District, along with the EPA, is cleaning up under the Superfund program, Van Bogaert said.

Airborne dust, soot and smoke from manufacturing companies that once occupied the current Jacobsville neighborhood, contaminated the soil with lead and arsenic through industrial operations in the late 1800s, according to the EPA and Van Bogaert.

About 4,000 residential properties require clean up.

"EPA has already remediated about half of those," Van Bogaert said. "They have asked the Corps to remediate the remaining 2,000."

The work plans are all complete. The contractor mobilized in January to start conducting sampling and pre-coordination with the homeowners.

They have to walk through the plan for excavating in the residents' yards and work out whether they need to remove or temporarily relocate from the properties. This coordination has started. A full-time construction division engineer from the Louisville District, Marc Hodges, is on site, coordinating with local officials, meeting with the public, and managing the contractor.

"Having Hodges in Evansville, dedicated to the project, living with the community, and being available to listen to their concerns, has been crucial to the early success of the project," Van Bogaert explained.

In April 2019, the Corps began remediating properties.

"The project is estimated to be a \$50 million effort over the next five years for 2,000 properties and will take five construction seasons – through the summer of 2024 – to complete," Van Bogaert said.

**See SUPERFUND, page 21**





*(Photos courtesy of USACE, Louisville District)*

*Wearing protective clothing, work crews clean up and remove contaminated soil from a residential neighborhood, making it safer for its residents.*

## SUPERFUND

continued from page 20

“Our role is to conduct the remediation. EPA does the investigation, designs the remedies – using separate contractors, then they come to the Corps to execute the field remediation,” Van Bogaert said. “We (Corps) are the people in the field.”

Louisville District’s support to the U.S. EPA’s Superfund Program is smaller than some of the other districts; however, the Louisville District program is growing.

“This is the biggest project we’ve ever had with EPA Superfund,” he said. “We’re hoping to use this to grow our relationship with the EPA and work together with them in the future on other Superfund sites.”

“We’re in the very early phases of this project. It’s going to be a challenge, but we’re in the right spot to succeed,” Van Bogaert said. “We have a good contractor who is engaged. We have excellent team members in engineering, construction and contracting working in concert together. We will clean up these yards and make it a safer place to live.”

Superfund’s goals are to protect human health and the environment by cleaning up contaminated sites; make responsible parties pay for cleanup work; involve communities in the Superfund process; and return Superfund sites to productive use.

For more information about Superfund, visit <https://www.epa.gov/superfund/whatsuperfund>.



*A neighborhood yard – cleared and ready for resodding.*



# Planning pays off!

## Forest management helps regenerate forest, lands

By **Joshua Levesque**  
USACE, New England District

Earlier this year, the Blackwater Dam team and their partner, the New Hampshire Division of Forest and Lands, successfully completed a cut-to-length harvesting operation to implement a partial overstory, or treetop removal, in order to regenerate white pine trees at the dam.

This operation was the culmination of a 20-plus-year undertaking to establish a white pine generation project on Corps lands.

The Corps of Engineers has had a license with the state of New Hampshire's Department of Natural and Cultural Resources for Wildlife and Forestry Management since 1989.

Early in the 2000's a small 27-acre plot at the Blackwater project caught the attention of the state forester for its potential regenerative qualities for white pine. The tree, which is used in every aspect

of the building and timber industry in the northeast, has huge economic value both in terms of dollars and social economic importance. The trees offer wildlife value to a large diversity of species.

The state forester proposed a small experimental shelterwood harvest that would incorporate three different stocking levels to determine how overstory stand density influences white pine regeneration.

A shelterwood harvest is used to leave seed-producing trees uniformly throughout a section of the forest, also known as a stand.

The ultimate focus was on managing for white pine, with a component of hemlock, red spruce and balsam fir, and to establish young successional growth for biodiversity. New Hampshire is responsible for the proper management and execution of the long-term program and developed a 25-year working forest management plan for each of the district's projects in the Merrimack River Basin.

In the winter of 2007 a decision was

made to equally divide the timber harvest area into three, 9-acre stands. Within these three separate stands, tree density was reduced to 10 trees per acre in one stand, 30 trees per acre in another and 90 trees per acre in the last.

In each case, efforts were made to preserve a few of the most robust and healthiest pines, known as "seed tree cutting" – trees that are selected for their genetics and are intentionally left as a future seed source.

After a 10-year regeneration survey conducted by State Forester James Airey, the results were clear—the site conditions demonstrated exceptional regenerate qualities, but more importantly, the 10 tree per acre application clearly had the best results. The pine seedlings that began in 2007 were now nearly 20-foot tall in some cases and showing growths of 2-3 feet per year. Compared to the other two sites, the same-aged pine were averaging less than half that height.

**See FORESTS, page 23**



*The New Hampshire Division of Forests and Lands performs a tree harvest. This timber harvest will create young forest habitat for many species of wildlife and build tree species diversity. (Photo by James Airey)*



# FORESTS

continued from page 22

This regeneration survey helped determine the next steps needed for future sustainable forest management in this area.

In 2018, a proposal was agreed to between the state and the Blackwater team to plan for a partial overstory cut.

The management approach was to reduce stand density to 10 trees per acre within the two other stands in order to further encourage the white pine to regenerate.

Within the stand initially cut to 10 trees per acre, the entire overstory was recommended to be removed to fully release the established, advanced white pine regeneration. The residual mature white pine trees left would provide some shade protection to seedlings in order to prevent damage by white pine weevil. These trees would also serve as a seed source for the recruitment of additional white pine seedlings.

A Cut-To-Length harvesting operation was used in 2019 by the logging

contractor for this overstory harvest. This cut operation allowed for the low-impact removal of timber. The equipment consisted of a harvester that cuts the tree, de-limbs the stem, and then cuts the stem to length all directly at the stump.

Additionally, de-limbing occurs in front of the harvester, so the limbs and slash can be used as a mat upon which the machine travels.

The CTL is also able to fell or place trees directionally, resulting in considerably less damage to the white pine regeneration compared to the amount of stand damage and soil disturbance conventional harvesting does.

This timber harvest will create young forest habitat for many species of wildlife and build tree species diversity.

Within the next several years, another regeneration survey will help determine the results of this timber harvest and the next steps.

No Corps dollars are used directly in

the management of the land. Income from the harvested timber is allocated as a resource that the state can use to resource the staff and equipment necessary to manage the program.

Income from the timber can also be used for future projects, habitat improvements and sustainable silviculture.

All of the revenue generated at the project returns to the project.

The state through its Department of Natural and Cultural Resources, and the state forester, manages the majority of the lands at Hopkinton-Everett, Franklin and Blackwater for wildlife and forest management through the license agreement.

The Corps' partnership has developed a beneficial approach focused on maintaining a sustainable forest management program for conservation and other benefits as well as to provide for the greatest diversity of species indigenous to the surrounding area.



*Freshly cut trees are loaded onto a vehicle to be sold. (Photo by James Airey)*



# District team inspires students to study, pursue STEM careers

By Ann Marie R. Harvie  
USACE, New England District

When more than 200 middle school girls climbed out of school buses and piled into Avon Middle-High School in Avon, Massachusetts, one could only wonder who was more excited – the students or the presenters.

Six U.S. Army Corps of Engineers, New England District engineers and biologists volunteered to participate in the Schools-to-Careers annual Girls STEM event entitled “Middle School Girls STEM Meet Up!” May 9.

According to Katherine Touafek, director of Schools-to-Careers, the seminar included hands-on activities and presentations from the STEM professionals.

“Girls will have the opportunity to ask questions, make connections to classroom content and learn to dream big,” she said. “Girls will be empowered with inspirations and armed with the knowledge of how to start their journey right now.”

David Heislein, engineer and coordinator for the New England District volunteers said that what the guests presented would extend beyond the 200 girls that physically attended.

“These students are the future scientists and engineers,” he said. “The teachers also take what they learn and incorporate it into their classroom curriculum. This means a lot to these young women and the teachers.”

The day began in the school’s theater with a video chat with guest speakers, Col. (retired) Charles Samaris and his wife, Chief Warrant Officer 3 (retired) Kathleen Samaris. Samaris was the former New England District commander and his wife is a retired Army helicopter pilot who flew missions all over the world, including Iraq and Afghanistan.

The Samaris’ talked about their families’ history of military service as well as their own; both having served multiple deployments all over the world.

**See STEM, page 25**



*(Photo courtesy of USACE, New England District)*

*Some 200 students converged at Avon Middle-High School for a Schools-to-Careers Program May 9. According to David Heislein, volunteer coordinator, the New England District enjoys being part of this long standing partnership to inspire girls to pursue science and engineering career fields.*



According to the Samaris', they were no math scholars when they were in middle school, just average students with lots of different interests, like them.

To succeed in life, both urged the audience to study hard, stay in school and not to give up even if they need help with math or science—just be vocal and ask for help.

Following the presentation, the girls divided up and rotated through various rooms to meet with the other guests.

Jeanine Cline, engineer, discussed her electrical engineering work at various Corps projects.

She described what they were and how electricity factored into each project. Projects included the Fox Point Hurricane Barrier in Rhode Island, the Townshend Dam and the Knightville Dam Gate Tower.

Cline also shared with them careers they could pursue with an electrical engineering degree, including electrical designer, lighting design, lighting manufacturer, lighting sales representative, equipment manufacturer, equipment sales representative, telecommunications and electronics.

Having been inspired watching Saturday shows about Jacques Cousteau, a marine biologist and underwater research scientist, Rosemarie Bradley, decided that was a career she wanted to pursue as well.

The marine biologist talked about her professional journey and that, like the Samaris, not being good in math didn't stop her either.

She graduated from the University of Massachusetts Dartmouth and volunteered at the New England Aquarium collecting water samples from the marine exhibits, getting up close with dolphins, sea lions and sea turtles. She even got to be a guide on the whale watches.

Bradley chronicled her career and the projects and adventures she had while working at the Massachusetts Department of Environmental Protection and the Federal Emergency Management Agency, U.S. Fish and Wildlife Service, the U.S. Forest Service, the White House Council on Environmental Quality and, of course, USACE, New England District.

Kristine Reed, biologist, shared her experiences, growing up in a town like Avon and of her academic journey through STEM, including her travels and



*(Photo courtesy of USACE, New England District)*

**Students enjoy a cup-stacking activity during the STEM event held at the Avon Middle-High School.**

adventures with the Corps of Engineers.

Not to be excluded, Heislein discussed his career and some of the projects he's worked on, including the Harbor Environmental Remediation, military range cleanup of explosives, the demolition of Gorham Mill and Mashapaug Pond sediment remediation, as well as the Raymark Superfund Site in Connecticut.

Janet Patev, engineer, shared why STEM is a career field worth looking into especially if they enjoy helping others and good employment opportunities.

She described how both her parents worked in the science and engineering fields; and how she initially studied geology but switched to engineering because engineers made more money.

"Scientists study things," Patev said. "Engineers take that same knowledge and design new things to solve real-world problems."

An Army veteran, Patev also shared her experiences as a woman serving in the armed forces, then about some of her assignments with the Corps of Engineers, especially dams. She discussed the different types of dams, flood control, hydropower, water supply and dam safety.

Christine Jacek, a biologist, talked about her STEM career. She attended the University of Massachusetts Amherst and

was a seasonal park ranger at West Hill Dam even while she attended school. She left the New England District to become a park ranger at Tygart Lake and Dam in West Virginia, but returned to work in the district's Regulatory Division.

Funded by the Society of American Military Engineers Boston Post Outreach Committee, Schools-to-Careers has been metro Boston's longest running partnership for the past 20 years and has served 15 middle and senior high schools, and provided students and teachers approximately 4,500 opportunities each year.

Heislein adds that the New England District has enjoyed being part of that long-standing partnership, providing volunteers each year to take part in events like this.

Other companies and organizations who contributed to the event were Women Who Code, Vistaprint, Instron, Consigli Construction, Women in Engineering, EMP, Thoughtbot, Pluralsight, CDM Smith, Geosyntech Consulting and Analog Devices.

The program's objective, Touafek said, is to successfully transition each student into further training and education critical to a dynamic and highly skilled workforce that distinguishes Massachusetts as a place of opportunity.



# Environmental stewards, motorcyclists keep riding trails in peak condition

By Ann Marie R. Harvie  
USACE, New England District

Volunteers are an invaluable asset to the U.S. Army Corps of Engineers, New England District. When the call goes out for cleanup events such as Earth Day and National Public Lands Day, these environmental stewards show up in force to repair and improve public lands for everyone to enjoy.

Some come as individuals, but others come in organized groups and form long-lasting partnerships with the district's field teams.

Thomaston Dam has enjoyed one such partnership with the Pathfinders Motorcycle Club of Connecticut since 1979 when the two organizations signed a cooperative agreement for trail management.

"This past year when the Thomaston Dam team performed a comment card survey, it was noted that eight out of 10 visitors were dirt bike riders," said Christopher Way, basin manager at the Naugatuck River Basin. "Approximately 35,000 riders visit Thomaston Dam on an annual basis."

According to Tony Gasper, the club leader, the Pathfinders hold at least four-to-five work parties each year with between 10 to 30 member volunteers participating. This year, the group held their annual trail cleanup, March 7.

"Usually at least two of these are just before the start of the riding season," he said. "The dam impoundments over the winter typically leave a lot of trash on the trails."

Gasper said when doing cleanups, their focus is trash, tree limb debris and puddle clearing.

"In the middle of the riding season we focus on 'face slapper' branches and tall grasses," he said.

A fixture in Connecticut, the motorcycle club has promoted fun, family-oriented riding in New England since 1971. The club has continued that tradition by keeping the only public trail riding spot in the state free of debris and safe for all riders.

Thomaston Dam benefits from the cleanups because it offers safe and enjoyable trails to the public.



*(Photo courtesy of USACE, New England District)*

*A Pathfinder volunteer removes a downed limb from the trail during the March 7, 2019, cleanup at Thomaston Dam.*

"Without their help, I don't know if we could maintain the trails," Way said.

Gasper says that the Pathfinders are proud to maintain the trails.

"The biggest benefit we get as a group is the satisfaction of giving back to the sport," he said. "All of us understand that riding is a privilege, not a right. We want to give back to the riding area and maintain our excellent, long-standing relationship with the Army Corps."

In addition to cleanups, the Pathfinders sponsor safety classes for young riders, 7-15 years old.

"We have a couple different kinds of safety initiatives that have been offered on and off over the past 10 years," Gasper said. "We have offered several rider clinics in which we teach young or novice riders how to safely operate their dirt bike—including maintenance to improve the safety of the motorcycle itself."

According to Gasper, the Pathfinders have conducted "patrol days," passed out safety information and then patrolled the trails in case a rider needs assistance or advice on riding the trails.

One of the highlights of the trail-riding season is the annual Hare Scrambles event opened to any member of the New England Trail Rider Association. The total weekend attendance can range from 250-500 riders, plus spectators and family members.

Way notes that Thomaston Dam has plans to rehabilitate the dirt bike parking area. One of the potential improvements is installing beam counters at the two trail entrances to better capture usage.

No doubt, the Pathfinders will lend their assistance to the project.

"Our relationship with the park rangers at Thomaston Dam is one that we value very highly and work hard to keep strong," Gasper said.

The riding trail area at Thomaston Dam was developed in 1975 after a trail system was mapped and created within the project's boundaries.

It was officially designated as an off-highway vehicle area by Col. Charles Samaris, then district commander, on August 22, 2011.



# USACE's military arm flexes muscle at 'Prime Power reunion'

By Vince Little  
USACE, Norfolk District

The 249th Engineer Battalion (Prime Power) headed out into the field recently to sharpen and validate its full power-generation package.

Nicknamed the "Black Lions," this versatile and unique unit, assigned to the U.S. Army Corps of Engineers, deployed power plants and associated assets in two staging areas while exercising all its company-level elements to replicate a large-scale contingency operation. Soldiers also spent time practicing casualty medevac during a simulated base attack with two Black Hawk helicopter crews.

The 10-day tactical and technical training event took place March 18-29 at Fort A.P. Hill, Virginia.

"This is by far the largest thing we've ever done as a battalion," said Staff Sgt. Hugo Contreras, operations sergeant for Headquarters and Headquarters Company (HHC). "We're really stressing the muscle of this battalion and our capabilities. Everything the battalion can do is taking place here."

The prime power missions are like no other in the Army, let alone the Department of Defense. The 249th provides commercial-level power to military units and federal relief organizations during full-spectrum operations. It's charged with the rapid provision of Army generators to support worldwide requirements.

Maj. Jean Archer, battalion operations officer, said the exercise had a pair of major objectives: validate three units for overseas missions, including two for forward-base mode site deployments in support of Space and Missile Defense Command; and another for the Army Central Command to rehearse the battalion's Command Deployment Discipline Program, increasing its readiness to deploy in support of contingency operations.

"Bringing the whole team together enabled us to train at multiple echelons and exercise our mission command system at the company and battalion levels," added Lt. Col. Daniel Kent, battalion commander and commandant of the U.S. Army Prime Power School. "It also made the training realistic and best prepared the battalion to meet these requirements in support of combatant commands."

**See PRIME POWER, page 28**



*(Photo by Rebecca A. Nappi)*

*A power distribution specialist climbs a power pole during the 249th Engineer Battalion's recent field training exercise at Fort A.P. Hill, Virginia. Also known as Prime Power, the versatile power generation battalion is charged with the rapid provision of Army generators to support worldwide requirements.*



In addition to its headquarters company, the battalion consists of 400 Soldiers divided into four prime power line companies and the Prime Power School based at Fort Leonard Wood, Missouri.

HHC and C Company are out of Fort Belvoir, Virginia; A Company is assigned to Schofield Barracks, Hawaii; B Company is at Fort Bragg, North Carolina; and D Company is comprised of all Reserve Soldiers, its headquarters and three platoons in Cranston, Rhode Island, and a fourth at Fort Belvoir.

Soldiers in these companies are either power-distribution specialists or prime power production specialists.

Distribution specialists are responsible for electrical-distribution systems in the Army, including installation of exterior services and utility poles.

Production specialists supervise, operate, install and perform sustainment-level maintenance on electric power plants.

“Coming here to this battalion field-training exercise, we call it the prime power reunion,” said Staff Sgt. Ali Abubekr, a prime power production specialist with A Company. “Even though we’re geographically separated, everybody from all the different companies knows each other pretty well.”

The Soldiers imitated deployment life by staying in open-bay barracks, eating MREs and pulling 12-hour shifts, often slogging through the cold, rain and mud of early spring. They also got glimpses – sometimes up-close – of controlled burns engineered this time of year across Fort A.P. Hill’s vast forests and training ranges.

As part of the exercise, two teams

conducted 24-hour operations at separate sites named “Afghan Village” and “FP 22” – where observer-controllers installed overhead lines to distribute medium-voltage power.

“It’s the same setup a deployment would have,” said Staff Sgt. Gilberto Reyes, a shift lead at “Afghan Village” for A Company. “We need to make sure we can run effectively. It’s been pretty intense. Once out here, it’s nonstop.”



*(Photos by David Gray)*  
**Power distribution specialists supervise drill digging for the installment of a power utility pole during a recent field training exercise at Fort A.P. Hill, Virginia.**

The two exercise sites allowed the “Black Lions” to train in different environment scenarios getting an electric-distribution system up and running using 840-kilowatt generators and higher, capable of powering a small town or base.

The most recent examples of the battalion’s capabilities were seen during relief operations in Puerto Rico, Florida and the U.S. Virgin Islands after Hurricanes Irma and Maria, as well as the Northern Mariana Islands following Super Typhoon Yutu last fall.

“Most of us have done this before, but it’s a good refresher,” Reyes added. “This type of environment allows us to troubleshoot different things and supply power to various assets.”

Abubekr, who served on the validation team at “Afghan Village,” said critical tasks were high on the assessment list.

He added that the exercise replicated conditions and compacted timelines Soldiers may encounter in support of contingency operations. It validates their preparedness to execute the mission under similar conditions.

Archer expressed hope that the Soldiers came away from the exercise with increased proficiency and a better grasp of how their preparedness influences the battalion’s mission.

“It was also significant because it provided an opportunity to identify gaps in our capabilities and allow our geographically dispersed companies to work together and share best practices,” she said. “This was a great learning experience across the battalion.

“For many of our Soldiers, this was the first time they saw the full scope of what the battalion does,” Archer said. “I believe we learned more about our capabilities and shortfalls, areas where we can improve at all levels.”

The 10-day grind in the field proved to be a great barometer for prime power, Kent said, adding his Soldiers exceeded high expectations.

“They performed incredibly well,” he said. “I was really impressed with the staff-managing operations, continuing to plan, fulfilling all logistics and communications requirements, and making complicated special staff functions look easy.”

“All in all, I couldn’t be more proud of the team,” Kent said. “And I know we’re prepared for any mission that comes our way.”



*A power production specialist performs generator maintenance.*



# USACE, Port of Virginia ramp up Norfolk Harbor deepening efforts

By Vince Little  
USACE, Norfolk District

The U.S. Army Corps of Engineers and Virginia Port Authority are proceeding with design measures to expand Norfolk Harbor's shipping channels, which will improve navigation and energize the national, state and local economy.

The Wider, Deeper, Safer dredging project will deepen the Inner Harbor channels to 55 feet, Chesapeake Bay's Thimble Shoal Channel to 56 feet and Atlantic Ocean Channel to 59 feet. The Thimble Shoal Channel will also be widened up to 1,400 feet in select areas, allowing for ultra-large container vessel two-way traffic.

The navigation project recently secured full federal approval when President Donald Trump signed America's Water Infrastructure Act of 2018.

"In short, the project's inclusion in the bill clears the path for the Port of Virginia to become the deepest and safest port on the East Coast," said Joe Harris, a

Virginia Port Authority spokesman. "The next step in the process is to complete the preliminary engineering and design work and then begin dredging next January."

With about a year left before construction starts on the western portion of Thimble Shoal Channel, USACE and port officials say engineers are focused on locking down an engineering and design plan for seamless transition into all the dredging phases.

Robert Pretlow, Norfolk District senior project manager, said the detailed engineering and design phase includes ship simulation, sediment sampling and testing for Environmental Protection Agency clearances, hydrographic assessments, dredged-material management, environmental coordination and archaeological-resource surveys for sunken vessels in potential dredging areas.

Virginia Port Authority engineers completed archeological-resource surveys and sediment sampling for the initial construction phase in December. The first stage of ship simulation with the Virginia

Pilot Association took place earlier at the Maritime Institute of Technology and Graduate Studies facility in Maryland.

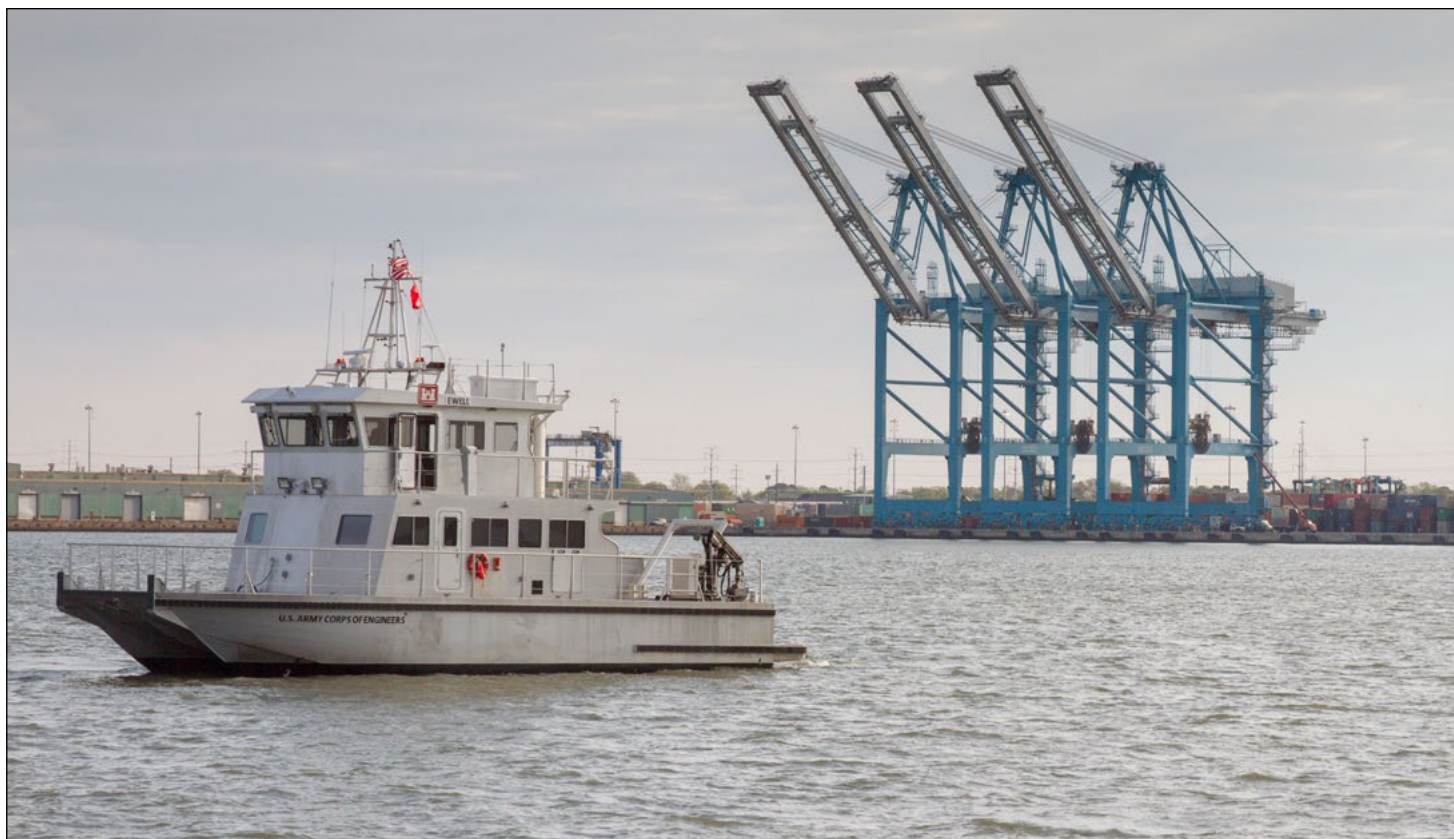
Norfolk District officials say they're working to execute a design agreement with the port authority that will allow federal funds to be used to complete engineering and design work for the remaining project construction.

The shipping industry's standard unit of measure for shipping containers is known as a TEU, or 20-foot equivalent unit.

A decade ago, the workhorse-vessel size was 8,000 TEUs and these ships made daily calls to the Port of Virginia, Harris said. Now, they carry more than 14,000 TEUs into the port's six terminals, and officials are preparing for the next generation of ships, which could top 16,000.

"The trend is to build bigger and bigger ships to take advantage of navigation-cost savings," Pretlow said. "That requires the dredging of deeper channels to provide additional water under the draft of a ship for safety and added maneuverability."

**See VIRGINIA PORT, page 30**



*(Photo by Patrick Bloodgood)*

*The Ewell, a USACE, Norfolk District survey vessel, sails past cranes at the Virginia Port Authority's Norfolk International Terminal. The first phase of Norfolk Harbor's deepening project is set to begin next January.*



continued from page 29

Harris said this project will enable the Atlantic Ocean's biggest ships to safely transit the port fully laden with cargo and without tidal restrictions. Navy vessels and coal ships are expected to benefit from safer, more efficient movement as well.

In 2007, Norfolk Harbor's inbound lanes were deepened to 50 feet to match outbound lanes, Pretlow said. Now, the port seeks to dredge channels deeper to remain competitive with other ports on the east coast.

"From a federal perspective, deeper channels mean larger ships," he said, "and larger ships mean lower transportation costs, the savings of which are passed on to the general population as lower commodity costs.

"The economic impact is going to be significant and extend across Virginia," Pretlow added. "The Wider, Deeper, Safer project, combined with ongoing terminal-capacity expansion projects at Virginia International Gateway and Norfolk International terminals -with completion in 2020 - "will create jobs, investment and economic development across the state."

The port received four new ship-to-shore cranes in early January as part of its ongoing efforts to accommodate increasingly massive container ships, local news outlets reported. The cranes stand 170-feet-tall and is the nation's largest.

According to its website, the port is home to the world's biggest naval base, a robust shipbuilding and repair industry, thriving export coal trade and sixth-largest containerized cargo complex in the U.S.

Estimated cost of the engineering and design work is \$20 million, while project construction was forecast at \$330 million.

Last June, Gov. Ralph Northam and the Virginia General Assembly approved state funding for the entire project.

"The Corps of Engineers has been a critical partner in the success of this process, and that teamwork is going to be vital as we move into the construction phase," Harris said.

Completion of the full Norfolk Harbor navigation-improvement project is expected around 2025.



(Photo by George Gonzalez)

*Carmelo Melendez (center) and his staff from the Department of Energy's Office of Legacy Management met with Brad Wilson (right), FUSRAP lab manager, to discuss how an isotopic-thorium sample is prepared for alpha-spectrometry analysis May 8. Wilson works for Leidos, a contractor for the U.S. Army Corps of Engineers.*

## DOE Legacy Management group visits St. Louis FUSRAP sites

By Andrea Wales  
USACE, St. Louis District

The director of the Department of Energy's Office of Legacy Management visited the U.S. Army Corps of Engineers, St. Louis District's Formerly Utilized Sites Remedial Action Program St. Louis Sites May 8.

During the visit, Carmelo Melendez, LM director, and members of his staff toured the on-site laboratory in Berkeley, Missouri, and various project sites in downtown St. Louis and North St. Louis County.

The DOE contingent was able to watch a sampling crew from Leidos, a USACE contractor, take samples from the banks of Coldwater Creek.

Two years after the remedy is completed at a FUSRAP project site, with or without inaccessible soils, its long-term management is turned over to DOE-LM.

"Our strong collaboration with the Corps is essential to accomplishing a smooth and efficient transition of the St. Louis area FUSRAP sites in the coming decades," Melendez said. "This site tour gave me and the rest of the LM staff the opportunity to observe how the Corps has

managed the remediation challenges at these sites, as well as the issues that will remain when we take responsibility."

Bruce Munholand, USACE FUSRAP program manager, said that the DOE-LM site visit fostered a common understanding of the complexities of the FUSRAP sites and, as a result, what each site's end state may be upon transfer to LM.

"Our goal is to execute our remedial action mission at all FUSRAP sites safely and ensure that the government's responsibilities have been addressed prior to turning the project over to DOE-LM for long-term stewardship," Munholand said.

The FUSRAP was initiated in 1974 to identify, investigate and, if necessary, clean up or control sites throughout the United States contaminated as a result of Manhattan Engineer District or early Atomic Energy Commission activities. Both the MED and the AEC were predecessors of the Department of Energy.

Through this program, the Corps addresses the environmental remediation or control of sites where the MED or AEC activities were performed during the 1940s, 1950s and 1960s. Upon completion of remedial action and site closure activities, these sites are transferred back to DOE.





*REEO-Southern facilitated a partnership to develop a conservation strategy for the gopher tortoise.  
(Photo courtesy of U.S. Fish and Wildlife Service)*

# PARTNERING FOR SOLUTIONS

## REEO-Southern protects species, Army's training mission

**By Adriane Miller**  
Army Regional Environmental & Energy Offices

The problem seems intractable: protect the military's training and testing activities on its installations while protecting burrow-digging gopher tortoises that live on the very same training lands.

For the Department of Defense or the gopher tortoise, it isn't an either-or proposition.

DOD needs the lands and must protect at-risk species, like the gopher tortoise. The tortoise needs the land too, as its

prime habitat is running in short supply elsewhere.

The organizations representing both sides of this problem, though, realized they share parts of the same goal—protect tortoise habitat—and that made finding a solution easier.

"We learned right away this was a shared problem that we had no choice but to work collaboratively," said Susan Gibson, director, Army Regional Environmental and Energy Office-Southern, which helped facilitate the partnership to develop a conservation

strategy. "None of us wanted to see the gopher tortoise be listed as endangered."

Under the Endangered Species Act, a listing could restrict the military's training and testing mission on its installations.

The REEO-Southern is DOD's lead agent for 61 military installations in the Southeast. The partnership it helped develop with state, regional and federal agencies created a first-of-its-kind plan to protect gopher tortoise habitat while precluding the need to list the species as endangered.

**See TORTOISE, page 32**



The Gopher Tortoise Conservation and Crediting Strategy encourages voluntary conservation investments that enable the military to maintain its mission requirements even if the tortoise is listed in the future. It is closely overseen by the Defense Department and its partners, including the U.S. Fish and Wildlife Service; Alabama; Florida; Georgia; South Carolina; Southeast Natural Resource Leaders Group; Southeast Regional Partnership for Planning and Sustainability; Southeast Conservation Adaptation Strategy; and South Atlantic Landscape Conservation Cooperative.

It's the kind of partnership the Army REEOs have worked to develop and maintain for the Defense Department, across the U.S., since 1995.

The REEOs link the military in close partnership with state and regional groups to monitor and nurture environmental initiatives to support military training, testing and readiness. The four Army REEOs—in Georgia, Colorado, Maryland and Kansas—are DOD lead agents in the U.S. Environmental Protection Agency's federal regions 4, 5, 7 and 8. (The Navy and Air Force are DOD leads in the other regions.)

The REEOs execute the DOD Regional Environmental Coordinator mission assigned under Department of Defense Instruction 4715.02. Among the REEO's primary missions as RECs is to sustain military readiness by maintaining partnerships with states and federal agencies.

"Partnering equals networking, and networking equals solutions to problems," said Dr. Jim Hartman, REEO-Northern Director in Maryland and DOD lead in EPA Region 5. "Partnership development with state agencies leads to accessibility. Often, we're on a first name basis with members and we can discuss issues directly with service counterparts and state regulators at the highest levels, including commissioners of



*(Photo by Shelby Jackson-Register)  
A scope and camera is positioned next to a gopher tortoise burrow.*

environmental regulatory agencies."

That ease of access can help installation managers address complex problems. For instance, when Naval Station Warfare Center Crane in Indiana was applying for its permit to allow for open burning and detonation of munitions from Indiana regulators. Over the course of two DOD-Indiana partnership meetings in 2017 and 2018, facilitated by REEO-Northern, Crane settled multiple permitting questions with the regulators. That resulted in the collaborative resolution of an ongoing permit issue at Crane, enabling the state to renew it.

"The REEOs promote a greater understanding of the Army and DOD mission by developing cooperative partnerships that support long-term sustainability of the military," said Lia Gaizick, REEO national program manager at U.S. Army Corps of Engineers Headquarters. "Meeting regularly with state environmental officials helps the

REEOs resolve issues."

Mark Mahoney, REEO-Western Director in Colorado and DOD lead in EPA Region 8, agrees.

"By maintaining open communication through partnerships and seeking equity for DOD in the application of laws across the states, the REEOs help the Army comply with state requirements and showcase our dedication to being a good environmental steward," he said.

Such open communication helped REEO-Western fix a reporting problem Colorado installation environmental managers were having. The managers revealed in a roundtable discussion that they couldn't complete an online reporting requirement for wastewater systems required by EPA Region 8 because of DOD firewalls. REEO-Western has long-standing ties with the regulators and quickly secured a waiver to the reporting requirement for all affected installations.

REEO-Central in Kansas co-facilitates regular meetings with the Texas Environmental Partnership to focus on military compliance issues and give installation environmental managers the opportunity to talk with regulators about strategies for meeting regulatory compliance requirements.

"The one-on-one dialog helps to reveal and resolve issues on the spot," said Stanley Rasmussen, REEO-Central director and DOD lead in EPA Region 7.

With a 19-year history, TXEP is the REEOs' longest-running DOD-State partnership.

"The close and productive working relationship we have with our TXEP partners is a testament to the value of partnerships for the Army," Rasmussen said.

For more information about the Army REEOs, visit [www.usace.army.mil/Missions/Environmental/Regional-Environmental-and-Energy-Offices-REEOs/](http://www.usace.army.mil/Missions/Environmental/Regional-Environmental-and-Energy-Offices-REEOs/).





*(Photo courtesy U.S. Embassy in Vietnam)*

*Villagers from Northwest Vietnam, Hagiang Province, near the border of China, pose for a photo with Chief of the Office of Defense Cooperation in Vietnam, Maj. Joshua Rodriguez, following a turn-over ceremony of a brand new two-story kindergarten May 7.*

## Corps of Engineers builds bright future for Vietnamese students, communities

**By Ana Allen**  
USACE, Pacific Ocean Division

U.S. leaders officially turned over the keys to a brand new two-story kindergarten in Northwest Vietnam, Hagiang Province, near the border of China, during a ribbon-cutting ceremony May 7. The 3,650-square-foot kindergarten boasts six classrooms and can hold up to 320 children.

Chief of the Office of Defense Cooperation in Vietnam, Maj. Joshua Rodriguez, presided over the ceremony, highlighting the enduring partnership of the U.S. and Vietnam, as well as the strengthened alliance symbolized by the school's construction.

"Since 2009, the U.S. government, through the Overseas Humanitarian Disaster Assistance and Civic Action Program, has helped to construct dual-use disaster shelters, management coordination centers, clinics, bridges, and schools like this one, in many towns and villages throughout

Vietnam," said Rodriguez. "These efforts are important to strengthening Vietnam's education system as well its ability to respond when disaster strikes."

He added, "these collaborative projects help advance our defense relationship and people-to-people ties, while bringing greater prosperity to Vietnam's beautiful provincial regions."

Brig. Gen. Thomas Tickner, commanding general, Pacific Ocean Division, said that humanitarian construction projects are just one way the U.S. Army Corps of Engineers engages with partners in the Pacific.

"USACE works closely with U.S. Indo-Pacific Command, U.S. Army Pacific and our interagency partners at the State Department and U.S. Agency for International Development in support of water and environmental security, technical workshops, disaster risk management, subject matter expert exchanges and foreign military sales," Tickner said.

The general also mentioned that taking

a whole government approach multiplies U.S. efforts to support the development of strong, prosperous, and independent countries in the region, citing U.S. Indo-Pacific Commander, Adm. Phil Davidson's attendance at a U.S. Navy-led ribbon-cutting ceremony to unveil the Khanh Hoa dermatology Hospital in Cam Rahn Vietnam.

"So whether it's a Navy Facility Engineering Command project, or a USACE project, these engagements allow us to be a vital partner in building strong relationships and in strengthening Vietnam's capacity," Tickner said.

Col. Phillip Borders, USACE Alaska District commander, who attended two ribbon-cutting ceremonies last year for USACE-led kindergarten construction projects in Kon Tum Province, said he's seen firsthand the positive impacts that humanitarian assistance joint efforts have on community families, as well as the region at large.

**See VIETNAM, page 34**



“What makes this project so special is the immediate benefit this school has on the kids and community members,” Borders said. “We are getting to serve the youngest and most precious members of this beautiful country in a way that provides multiple benefits.

“In addition to education, the school provides the only form of institutional daycare in this area, as well as an added component of healthcare,” he said. “This is also a tangible expression of our commitment to Vietnam’s security, as well as the security of this region. It’s been incredibly meaningful to work with our partners to bring this to fruition.”

Xin Cai District Chairman, Vang Huong, echoed similar sentiments.

“The school is an invaluable asset to the community, providing a safe, clean school for young students in this extremely rural area,” Huong said. “It also provides a

central location for children and teachers who were previously forced to travel to numerous locations throughout the province, dividing the already severely limited resources of this community.

Huong added that the school also serves as an emergency shelter, which is important, due to mudslides and heavy storm damage that tend to occur in the area.

The weather trends, as well as other risks associated with the steep topography of the area, led the team to construct a retaining wall to protect the kindergarten from potential landslide threats during heavy seasonal rains.

According to Clayton Harrison, USACE, Alaska District project manager and architect for the school, constructing the facility, which began in 2015, required the team to overcome several hurdles.

“This is definitely one of the toughest environments to build in, given the

rural area and mountainous geography,” Harrison said. “But we’ve been able to partner with local Vietnamese government and interagency leads to come up with long-lasting solutions. The structures are built to endure the harsh mountainous climate with minimum maintenance throughout their entire lifecycle.”

Since 2009, USACE has completed approximately 23 schools in Vietnam and has plans to construct more in the future.

Beyond Vietnam, USACE is partnering with nations throughout the Indo-Pacific to support various humanitarian assistance construction program projects, ranging from birthing centers, labs to nutrition centers and schools.

In addition to Vietnam, there are currently 28 projects in various stages of either acquisition, or design construction in Bangladesh, Cambodia, Laos, Mongolia, Nepal and Sri Lanka.



*The new two-story kindergarten has six classrooms and will house up to 320 students. The 3,650 square-foot facility will also serve as an emergency shelter when mudslides or heavy rains threaten the community.*

*(Photo courtesy U.S. Embassy in Vietnam)*

*The Corps-led construction project heralds a bright future for the children of Hagiang Province and highlights the enduring partnership between the two countries as well as the strengthened alliance symbolized by the school's construction.*

*(Photo by Ana Allen)*





# Red-tailed hawk rescued, released



*(Photo by John Heinz, National Wildlife Service)*

*The red-tailed hawk is one of the largest birds found in North America and is easily recognized for its thrilling, raspy scream.*

**By Ana Henderson**  
Yuma Proving Ground, Arizona

Yuma Proving Ground is comprised of 1,300 square miles, about the same size as Rhode Island. Within those miles a variety of wild animals inhabit the land, one of which is the red-tailed hawk.

Recently, a family of red-tailed hawks were nesting above the water tower near Laguna Airfield. Two fledglings fell from their nest. A member of the Military Free Fall School discovered them and called Daniel Steward, YPG's wildlife biologist.

"He was hopping around pretty healthy," said Steward of one of the birds. Unfortunately, the other young hawk did not survive.

The injured hawk was approximately four-to-six weeks old, and found just before fledgling, which is normally when it develops preliminary flight feathers and prepares to leave the nest.

The team rescued the hawk and looked to Linda Winchell, a customer service representative at the Arizona Department of Game and Fish who also helps rehabilitate birds.

"Our first priority is to keep it wild," Winchell explained. "But in this situation it was not safe for him to be there."

She nursed the hawk, kept it in a bird cage and fed it animals it would find in the wild.

After about four weeks of rehabilitation, Winchell saw indicators that the hawk was ready to return to its natural habitat.

Normally the team would release the hawk where it was found, but since the airfield was not considered a safe zone, they found another spot nearby.

According to Steward, the team scouted the area for an alternate location that would be suitable for the hawk's release.

"We wanted to find someplace with a good wash, plenty of vegetation, ground squirrels, all kinds of prey animals here for him," the biologist said.

The time had come for its release and as soon as they opened the gate, the fledgling bounced once or twice, flew onto a nearby tree and perched on a low branch.

Everyone was elated to see the hawk in nature again.

**See HAWK, page 36**





*(Photos by Ana Henderson)*

*Immediately upon opening the cage door, the red-tailed fledgling bounces out and flies to a nearby tree where it perches onto a low-lying branch.*

## HAWK

continued from page 35



*The team of wildlife biologists move the hawk to a safe environment away from the Laguna Airfield and free from populated areas where it can be reintroduced to its natural habitat.*



*The red-tailed hawk perches onto a low-lying branch before spreading its wings and flying off.*

“He did exactly what I expected him to do,” exclaimed Winchell. “I thought he would either bounce to get up off the ground or he would fly.”

“It’s a great thing to see, that’s what we ultimately want to see for all of our fledglings,” added Steward. “We want to see them become part of the population and the ecosystem.”

The hawk will most likely practice flying between branches in low areas for a few days until he is ready to fly, he said. The hawk will not be tracked. It’s on its own now.

“It’s a disadvantage when a bird is not raised by his parents,” Steward added. “In nature, they have that chance to be climbing the ladder of the trees while still being fed by the mother bird. But he’s got a good head start. He’s strong, he just has to figure out where to perch, how to fly, and how to hunt.”

After successfully releasing the hawk into its new home, Steward explained that this type of work is only a part of the team’s many duties.

“We operate under an integrated natural resource management plan and one of the big parts of that plan is conserving migratory birds,” he said. “We try to avoid disturbing habitats and nests. If we do see animals having a problem, we try to intercede and rescue them.”



# Munitions cleanup ensures public's safety

By Catalina Carrasco  
USACE, Jacksonville District

Culebra Island, located 17 miles east of Puerto Rico's main island, is known for its white, soft sands, which makes it a favorite vacationing spot for tourists seeking to snorkel and find treasures in its waters. Unfortunately, some of those treasures may actually be unexploded ordnance due to the island's history.

Beginning in 1901, the U.S. military used Culebra and adjacent cays as a coaling station and a radio transmitter facility.

After World War II began, the Culebra Archipelago became the primary gunnery and bombing practice site for the U.S. Navy in 1939 and continued to be used for these purposes until 1975. The island was approved for inclusion in the Defense Environmental Restoration Program for Formerly Used Defense

Sites in 1991, with the exception of the area known as the Northwest Peninsula. Known as NWP, Congress had specifically prohibited the use of federal funds for its cleanup.

The U.S. Army Corps of Engineers executes the FUDS program on behalf of the Army and the Department of Defense. The program cleans up properties formerly owned by, leased to, or otherwise possessed, by the United States and transferred outside of Department of Defense control prior to October 1986.

Culebra Island is part of the FUDS inventory and USACE, Jacksonville District is responsible for the day-to-day management and clean-up of munitions on the portions of the island where authorized.

## Munitions cleanup advances

The Military Construction Authorization Act of 1974 allowed the Navy to transfer the deed of Culebra Island to the Commonwealth of Puerto Rico, but emphasized the restriction that federal funds could not be used to conduct any remedial activities or decontamination in the bombardment area unless expressly authorized by Congress.

The bombardment area in Culebra is comprised of approximately 572 acres and is generally referred to as the Northwestern Peninsula or the Flamenco Peninsula. The National Defense Authorization Act for Fiscal Year 2015 authorized the Secretary of the Army to expend federal funds to remove unexploded ordnance from specific portions of the

NWP, as defined by Congress, to make them available for safe public recreational use. Section 317 of the National Defense Authorization Act for Fiscal Year 2015 stated that the specific authorized areas are portions of Flamenco, Tamarindo and Carlos Rosario beaches, Flamenco Campground and Carlos Rosario trail.

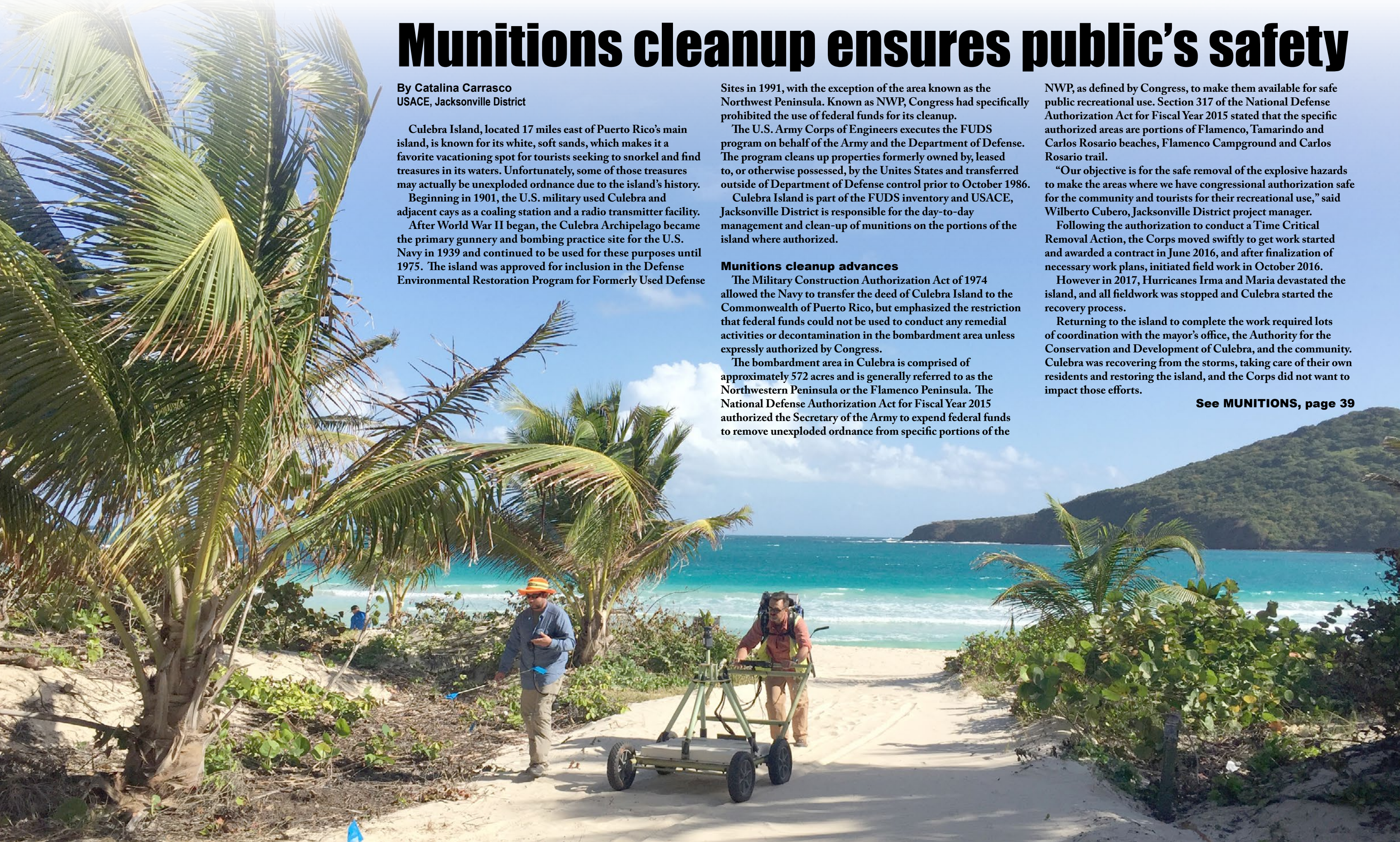
"Our objective is for the safe removal of the explosive hazards to make the areas where we have congressional authorization safe for the community and tourists for their recreational use," said Wilberto Cubero, Jacksonville District project manager.

Following the authorization to conduct a Time Critical Removal Action, the Corps moved swiftly to get work started and awarded a contract in June 2016, and after finalization of necessary work plans, initiated field work in October 2016.

However in 2017, Hurricanes Irma and Maria devastated the island, and all fieldwork was stopped and Culebra started the recovery process.

Returning to the island to complete the work required lots of coordination with the mayor's office, the Authority for the Conservation and Development of Culebra, and the community. Culebra was recovering from the storms, taking care of their own residents and restoring the island, and the Corps did not want to impact those efforts.

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When the Corps' contractors returned to resume the work, they made sure that they could sustain themselves without taking resources away from the residents.

"When our contractors came back they brought their own sustainment supplies, such as water and food. We needed to make sure that we were not a burden to the community that was still dealing with the aftermath of the overwhelming and tragic storms," said Teresa Carpenter, Jacksonville District contracting officer's representative.

The contractor also brought in additional teams to expedite the field work to complete intrusive activities prior to spring break and the peak tourism season, which was a major concern for the local government. As a result of this effort, all field work activities were completed in March 2018.

According to Cubero, Flamenco beach is the heart of Culebra's economy and all efforts were made not to adversely impact tourism during their most important season of the year.

## Technology makes a difference

To date, 31 unexploded ordnance have been recovered or destroyed as part of the Time Critical Removal Action, utilizing a range of technology to accomplish the work. This includes using analog metal detectors, digital geophysical mapping process data, and advanced geophysical classification. The AGC technology not only identifies whether metal that is detected is associated with munitions, but it also reduces the number of digs and amount of time crews need to complete the work.

AGC methods were utilized in sub-areas where it was practicable and field work was completed. The AGC data resulted in a 70 percent reduction of intrusive investigations and the finding of four munitions and explosives of concern within the sub-areas.

## Communication is key

A proactive public involvement program is imperative to ease the munitions response process and help ensure the protection of people and the environment. The Culebra FUDS team has made it a priority to maintain open lines of communication with the local government and the community, as well as other interested individuals.

The Culebra FUDS team has been diligent in engaging stakeholders in all



(Photo courtesy of HydroGeoLogic, Inc.)

*To date, 31 unexploded ordnances have been recovered or destroyed as part of the Time Critical Removal Action on Culebra Island in Puerto Rico, utilizing a range of technology to accomplish the work, including advanced geophysical classification.*

aspects of the project. The Technical Project Planning team is comprised of the Puerto Rico Environmental Quality Board, Authority for the Conservation and Economic Development of Culebra, the Puerto Rico Department of Natural and Environmental Resources, U.S. Fish and Wildlife Service, National Marine Fisheries Service, National Oceanic and Atmospheric Administration and the U.S. Environmental Protection Agency.

In addition to keeping the public informed, the Corps maintains frequent communication with the mayor, ACDEC, as well as the regulatory and resource agencies providing copies of fact sheets, safety posters and project update letters

"We want to make sure that we are communicating effectively and that the community is well informed of our activities, including the schedule and the process required to close and reopen portions of the campground where fieldwork is taking place," said Cubero. "In addition to the community meetings, we send letters to all mailbox holders, we post notices on our social media platforms, and we maintain a robust website that contains detailed information and documentation of our program and actions."

## Ensuring success

In addition to the field work, the Corps implemented and maintains a robust Explosives Safety Education program on the island.

Each year, prior to the busiest season for tourism, the FUDS team travels to Culebra to distribute the 3Rs - Recognize, Retreat, Report - safety campaign education materials, by posting colorful posters and pamphlets around the entire island, to include at arrival points and businesses frequented by tourists.

The 3Rs program informs the public, as well as landowners and tourists of what actions they should take to minimize their risk if they discover any unexploded munitions. This includes recognizing that these munitions are dangerous and that individuals should immediately retreat from the area without disturbing the munition, and report its discovery and location to law enforcement authorities.

The Corps anticipates the final report for the Time Critical Removal Action within the NWP to be completed by the end of fiscal 2019.

Additional information on the Culebra FUDS project available at: [www.saj.usace.army.mil/Culebra/](http://www.saj.usace.army.mil/Culebra/).