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You'll read about the nearly $41 billion of work that our 37,000-strong workforce of Soldiers and Civilians accomplished in 2010... from the significant progress we've made building the Greater New Orleans Hurricane and Storm Damage Risk Reduction System, to the $3.2 billion worth of work to Afghanistan and Iraq. You'll see how we accomplished a mission more than twice our normal workload through disciplined people, disciplined thought, and discipline action, and how we're looking forward to meeting the challenges in 2011.

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Five years ago, you were presented with two more monumental tasks: complete our massive Base Realignment and Closure mission, and build the greater New Orleans hurricane and storm damage risk reduction system. Not only were these assignments challenging, but you were asked to do both while simultaneously supporting our ongoing campaigns in Iraq and Afghanistan. Having recently seen your projects first-hand, I will tell you that your work is nothing short of magnificent.

To all of you on the Corps of Engineers team – 34,000 strong – let me assure you that our Army and our Nation are fortunate to have your service. You are an elite and dedicated team. Thank you for all you do every day. I could not be more proud to be a Soldier, standing shoulder-to-shoulder with our magnificent Engineers, Families, civilians, veterans and retirees. Thank you for another year of unsurpassed excellence, for your distinguished service, and for your continued support of our Army and our Nation. Essayons!

George W. Casey, Jr.
General, United States Army

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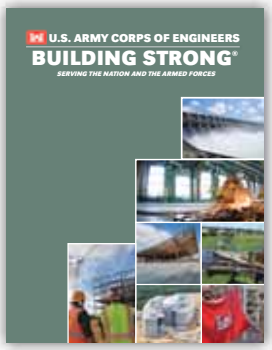

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Building Strong

Lt. Gen. Robert L. Van Antwerp fortifies USACE for the future.

By Jan Tegler

Ask Lt. Gen. Robert L. Van Antwerp what he's most proud of as his tenure as USACE chief of engineers and commanding general nears its conclusion and he'll tell you over and over, "It's our people."

From day one on the job, Gen. "Van" has sought to improve the U.S. Army Corps of Engineers (USACE) by strengthening its greatest asset – the dedicated Soldiers and civilians who execute the command's vital missions around the world. Armed with a strategy now known Corps-wide as the "Campaign Plan," Van Antwerp has made the development and recruitment of human capital a priority. In parallel, he has encouraged USACE personnel to cultivate a culture of innovation from the division and district levels right down to the individual.

This focused effort has already paid dividends. In 2009, USACE hired 8,213 employees and in 2010 are projected to hire another 8,000. They come to the Corps with a variety of experience and an enthusiasm that is helping to re-energize USACE. Retention has also been emphasized and the Corps is looking ahead, working to prepare for any "talent gap" that may arise as aging workforce members retire.

In addition, new and existing personnel are being encouraged to develop individual plans that move them forward and dovetail with the operational plans and I-Plans, or Implementation Plan, of their division. Work toward professional registration (professional engineering licenses and project management professional certification, as examples) is on the rise with the objective of a more qualified Corps of Engineers than ever before firmly in sight.

The benefits of human capital development are magnified across every mission area as the workforce continues to more thoroughly apply Van Antwerp's direction to "share ideas willingly and steal ideas shamelessly."

The fruits of the concept are manifested not only in improved collaboration among USACE teams and individuals but between the Corps and a range of organizations and agencies with which the command has often been at odds. From tribal relations and contractor interaction to environmental preservation and reconstruction, Corps personnel are reaching out and listening as never before, seeking fresh perspectives to solve complex problems and build on proven principles.

The emphasis of the 52nd chief of engineers on people shouldn't come as a surprise. Prior to his assumption of

Official photo of Lt. Gen. Robert L. Van Antwerp, chief of engineers and commanding general of the U.S. Army Corps of Engineers from May 2007-present.

Photo courtesy of the U.S. Army Corps of Engineers, FT Eyre

Chief of Engineers Lt. Gen Robert L. Van Antwerp presents an award to Jeremy D. Laster, a structural engineer for USACE New Orleans District, who was recognized in February 2010 as the "Most Promising Engineer or Scientist in Government" for his work in the design and development of the Hurricane and Storm Damage Risk Reduction System in New Orleans. "Jeremy Laster is a bright young star in the Corps of Engineers," the chief said. Van Antwerp's Campaign Plan emphasizes the development and recruitment of human capital in the Corps' workforce; Laster exemplifies that priority.

Photo courtesy of the U.S. Navy, Mass Communication Specialist 2nd Class Elizabeth Viahos

command at USACE, Van Antwerp served in a variety of Army leadership roles both inside and outside the Corps where he invested great effort in attracting, developing, and supporting human capital. None was more notable than the tour that preceded his current command.

In 2004, Van Antwerp became the chief of Army Accessions Command (AAC) at a time when Army recruiting needed a shot in the arm. Having underperformed in previous years, the command topped its goal for recruitment by 2006 under his leadership. It was also during Van Antwerp's tenure that the command launched a new slogan. After consulting with cadets and new recruits AAC coined the motto, Army Strong®.

So when the former West Point football player took over USACE in May 2007, he took the same idea from the playbook he developed at Accessions Command. After talking with a wide range of Corps personnel, Van Antwerp and USACE leaders adopted the phrase that describes the organization's foundation for meeting the challenges of today and the future – Building Strong®.

Nearly four years later, Van Antwerp is still working on transforming USACE, even as the command has taken on a historic workload both at home and abroad. With the end of his tour in sight (Van Antwerp will turn over command in May 2011), the Corps' enthusiastic leader gave *Serving the Nation and the Armed Forces* a snapshot of where USACE stands as 2010 winds down and what 2011 will bring.

THE WORKLOAD

When Van Antwerp spoke with us for *Serving the Nation and the Armed Forces* in 2009, the Corps was facing an "unprecedented workload." Legacy operations and maintenance work, the Obama administration's American Recovery and Reinvestment Act

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Chief of Engineers Lt. Gen. Robert Van Antwerp stands with Capt. Karl VanFlorcke aboard the Dredge *McFarland*. During the visit, Van Antwerp presented the deck, engine, and steward crew with certificates of recognition for their work in the Southwest Pass of the Mississippi River January to April 2010.

(ARRA) stimulus package, and a shift in combat zone operations from Iraq to Afghanistan had pushed USACE activity to record levels.

According to the USACE commander, the Corps took on $45 billion worth of work by the end of 2009.

"A normal year's worth of work for the Corps represents about $12 billion," Van Antwerp said. "This year [2009] is off the charts but what a great time to be in the Corps!"

If 2009 was a banner year, 2010 has proven just as busy. ARRA work went forward with a dual purpose, allowing the Corps to do much-needed maintenance and construction on key infrastructure (particularly in the water resources area) and aiding the government's attempt to spur the economy via "shovel ready" projects.

The work associated with the stimulus package was on top of projects already under way. Work to complete the $85 billion Army Base Realignment and Closure (BRAC 2005) and military construction mission as required was ongoing. So too was the rebuilding of a $14.6 billion flood-damage reduction system, or levees, in and around New Orleans, La.

Support for Overseas Contingency Operations in Iraq and Afghanistan carried on while USACE's more traditional missions demanded full attention, including a disaster-response effort in the wake of the earthquake in Haiti as the year began and a similar response after flooding in Tennessee in May.

By the end of August 2009, the Corps had executed more than $17 billion in Civil Works. "It was a truly remarkable feat," said Van Antwerp. "Particularly when you consider the supplemental and the ARRA funds, we finished up the year with a 98 percent obligation rate!"

The trend went on unabated this year with the Corps on pace to execute projects exceeding $35 billion, including $23 billion for military construction. Looking ahead, the Corps' commander anticipates $38 billion worth of work for 2011. But with new additions to the workforce and the collective expertise and energy of current USACE personnel, Van Antwerp sees no reason why the challenges posed by another record workload can't be overcome.

THE CAMPAIGN PLAN AND USACE CULTURE

More than three years into Van Antwerp's tenure and three years since the launch of his Campaign Plan, the concept is working well, resonating with leaders at every level of the Corps. It remains the "box top" for the USACE jigsaw puzzle, providing a clear picture of the goals the organization is pursuing and focusing the command's civilian and military workforce on its most important tasks.

Van Antwerp is keen to point out that the "human element" is still the prime focus of the Campaign Plan. New initiatives in recruiting, developing, and retaining the Corps' workforce are being instituted while others are under development.

Photo courtesy of the U.S. Army Corps of Engineers, Sarah Rivette

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A new office and barracks building for the Afghan fire department at the regional training center at Camp Parsa, Khost province, Afghanistan, was designed to suit Afghan tastes and practices. So far this year, deployed Corps service members and civilians have been working hard in partnership with other agencies to help provide the basics to the war-torn country; USACE continues infrastructure projects valued at nearly $3.2 billion.

Photo courtesy of the U.S. Army Corps of Engineers, Afghanistan Engineer District-North, Paul Giblin

Significant strides have been made in transforming the way USACE recruits the engineers and professionals of tomorrow. Van Antwerp cites progress in both immediate growth over the last year and in how the command is positioning itself to grow the team for years to come. In 2010, the Corps established the USACE Recruitment Program to compete more aggressively with other agencies for applicants in the future.

Van Antwerp and other Corps leaders expect that competition for talent will get tougher as the economy fully recovers, as baby boomers retire, as competition increases for those in science, technology, engineering, and mathematics (referred to as STEM occupations), and as today's newest generation enters the workforce with limited work experience. The Corps' goal is to ensure that USACE stands out by emphasizing its unique mission, unparalleled work experiences, service to the nation, and the opportunity to work in the U.S. and abroad.

Three quarters of the way through 2010, the workforce had grown by more than 3,000 people. Van Antwerp noted that the Corps was closing in on a workforce of more than 39,000 – a direct reflection of its ability to better retain and recruit.

Building the workforce is more than just putting bodies in seats he stresses. It's also about getting the right person in the right position and preparing for a changing workload. Van Antwerp says USACE is looking for professionals with experience in energy, automated engineering applications, and other cutting-edge technology so that the Corps can continue to serve the nation as leaders in engineering. USACE also remains committed to recruiting a diverse workforce to meet technical and leadership competencies.

The Corps has always had a "can do" culture said Van Antwerp, but he added that USACE is making great strides in creating a "culture of innovation." The notion of tapping the best of the Corps' internal knowledge, while simultaneously seeking input from a wide range of USACE partners and external stakeholders to overcome long-term challenges, has taken hold. As mentioned, the Corps now works with groups that frequently opposed it in the past. There's a growing recognition that the command can get more done by considering unfamiliar ideas rather than rejecting them.

CONTINGENCY SUPPORT IN AFGHANISTAN AND IRAQ

In 2009, it became clear that USACE support of operations in Iraq was winding down. By autumn, multiple district offices had been inactivated along with a division headquarters as the workload there decreased. As Van Antwerp observed, it was good news. The majority of the projects (nearly 5,000) scheduled for the Corps in Iraq since 2004, when it stood up operations, were complete.

At the same time, the USACE mission in Afghanistan was growing. Two district offices were up and running by August 2009, with a division headquarters established as the year wound down. Plans initially called for the headquarters to fall under the Joint Force Engineering Command (JFEC), supporting the Afghanistan Engineer District-North and AED-South.

As it turned out, the USACE "plug part" of the JFEC, the Joint Program Integration Office, did most of the interface with

Construction continues on the Inner Harbor Navigation Canal Surge Barrier, dubbed the "Great Wall of Louisiana," is one of the main perimeter structures of the Hurricane and Storm Damage Risk Reduction System.

Photo courtesy of the U.S. Army Corps of Engineers

Afghanistan-North and Afghanistan-South. According to Van Antwerp, the JFEC will soon stand down and the reserves will no longer provide the JFEC commander. The new theater engineer will be Brig. Gen. Mark W. Yenter. He will be the USFOR-A ENG (U.S. Forces, Afghanistan-Engineer) instead of the JFEC commander.

Regarding the shift in contingency support from Iraq to Afghanistan, USACE's commander says that he doesn't really see a shift but more of a "ramp down" as projects are completed in Iraq. Overall, Van Antwerp feels the wind-down in Iraq has progressed well and he indicates that the Corps will continue to support the mission with on-the-ground engineering expertise, both uniformed and civilian. Since 2003, USACE personnel have made more than 10,000 deployments to Iraq and Afghanistan.

Over the past six years, the Corps has invested more than $4.5 billion in construction in Afghanistan, mostly building Afghan police stations, army bases, roads, airstrips, and other infrastructure projects, plus facilities for U.S. and coalition forces.

In 2010, the two districts, North and South, have played a vital role in international efforts to establish a secure and stable environment in Afghanistan while increasing its reconstruction effort, valued at $3.2 billion in fiscal year 2010. Van Antwerp highlights initiatives including the construction of the Afghanistan National Police training facility in Wardak province (which will provide training for 134,000 recruits by 2011) and the construction of the Afghanistan National Army's Khair Khot Garrison, which will support more than 3,400 Afghan soldiers by winter 2010.

In 2009, Van Antwerp spoke about his excitement for tackling the difficult challenge of managing water resources in Afghanistan – a key initiative for getting the country on its feet. In 2010, deployed Corps personnel have been working hard in partnership with other agencies to help provide the basics to the war-torn country. USACE engineers have performed watershed assessments in 16 provinces across the country. The assessments identify sound and sustainable engineering locations to build small, water irrigation and hydropower dams to support stability, economic growth, and job creation.

In southern Afghanistan, Van Antwerp reported that the Corps has begun the final leg of the country's $500 million "Ring Road," a highway system that loops the rugged mountain terrain and sparsely populated countryside to connect to its major cities.

MILITARY CONSTRUCTION, CIVIL WORKS PROJECTS, AND THE GULF OIL SPILL

The Corp's military construction workload remained at a high tempo in 2010 as the command worked toward completion of the roster of projects dictated by BRAC 2005. In all, the military construction workload from fiscal year 2006 through fiscal year 2013 exceeds $73.2 billion. That's before the addition of work called for by the American Recovery and Reinvestment Act of 2009, which provided an additional $3 billion in military programs alone.

The Corps will wrap up most of the work from this unprecedented program in 2011 according to Van Antwerp, completing construction (as required) by September 2011. Additional work resulting from the Army's restructuring and re-stationing will also be completed.

Van Antwerp notes that there is still an enormous amount of military construction work ahead, including $20.3 billion worth in fiscal year 2011. An example of the challenge is the Army's largest military construction project since the Pentagon was built in 1943, the National Geospatial-Intelligence Agency New Campus East. The campus occupies the site of what was formerly known as the Engineer Proving Ground, in Springfield, Va.

Back toward America's Heartland, pressure is on to complete of the rebuilding of the New Orleans levee system, now referred to as the "Hurricane and Storm Damage Risk Reduction System." Van Antwerp has committed to finishing the project by June 2011. The goal is to transform what was once a patchwork of levees, floodwalls, and pumps into a true system that will provide 100-year-level perimeter protection against hurricane storm surge to Greater New Orleans.

The project includes the "Inner Harbor Navigation Canal Surge Barrier," the Corps' largest-ever design-build Civil Works Project. At almost two miles long, the $1.3 billion project is being called the "Great Wall of Louisiana." It's one of the key components of the Hurricane and Storm

Damage Risk Reduction System. Another is the nearly $1 billion West Closure Complex, a gated surge barrier containing the largest drainage pump station in the world, now 40 percent complete after only one year of construction. More than 270 construction contracts have been awarded for the mission with more than $9 billion of funding committed to the huge project.

Finally, USACE has been responding to the effects of the massive Deepwater Horizon oil spill, which occurred in the Gulf of Mexico in April 2010. In early May, the Corps announced permitting guidelines for cleanup, employing Nationwide Permit 20 to authorize activities involving containment and cleanup of oil and hazardous substances.

Some friction with Louisiana officials resulted from a proposal by Gov. Bobby Jindal to create barrier islands to keep oil from the state's coast. USACE did not immediately issue permits to allow the project to proceed and faced criticism from state officials over the issue. In June, portions of the plan were eventually approved. As of this writing, the Environmental Protection Agency was urging the Corps to turn down a request from the state to build 101 miles of sand berms to stop oil from contaminating shores and marshlands.

REFLECTION

Just less than halfway through 2011, Van Antwerp will step down as commander of USACE, leaving the growing team of Corps Soldiers and civilians to carry on with the organization's historic workload and move forward with the "good to great" vision he articulated for the command.

Van Antwerp is quick to express his enthusiasm for USACE, characterizing the opportunity to lead the Corps as an "incredible privilege." He's proud of the way in which Corps personnel have stepped up to deal with extraordinary responsibilities at home and abroad, and equally moved by the "expeditionary civilians" who have answered the call for overseas contingency operations and always responded to disasters in an exemplary way.

Through it all, the people of the Corps of Engineers have inspired him.

"If I am remembered for anything, I would want it to be the love I have for the people and mission of the Corps," Van Antwerp affirmed. "We did it together!"

An aerial view of the National Geospatial-Intelligence Agency (NGA) New Campus East complex being constructed at Fort Belvoir, Va., June 30, 2010. Along with NGA, the U.S. Army Corps of Engineers Baltimore District and part of the North Atlantic Division are managing design and construction of the $1.7 billion facility as part of Base Realignment and Closure 2005 programs at and around Fort Belvoir.

Photo courtesy of the U.S. Army Corps of Engineers, Marc Barnes

American Recovery and Reinvestment Act Helps Corps' Civil Works and Military Programs

By Charles Dervarics

For years, environmentalists and government officials alike sought renewal of the Florida Everglades, with a goal to restore wetlands, build reservoirs, and remove the crumbling roads that were built for failed housing subdivision projects.

Now, thanks to a major law enacted by Congress and signed by President Barack Obama in 2009, those efforts are getting renewed attention.

The federal statute is the $787 billion economic stimulus law, formally known as the American Recovery and Reinvestment Act (ARRA) of 2009. Signed into law in February 2009, the legislation is creating and saving millions of jobs while addressing long-neglected infrastructure challenges for the 21st century. Among the top priorities of ARRA are civil works, military construction, and military support projects carried out by the U.S. Army Corps of Engineers (USACE).

"Funding provided in the Recovery Act has enabled the Corps to provide lasting value for the nation by addressing much-needed infrastructure improvements in both water resources and military construction," said Gary Loew, Civil Works Programs Integration Division chief. USACE ARRA projects span 49 of the 50 states as they maintain and improve the nation's ports, harbors and waterways, restore ecosystems and provide military support nationwide.

USACE received $4.6 billion in ARRA funding for civil works projects, along with $2.85 billion for military construction, including $35 million for Energy Conservation Investment Program projects and nearly $30 million for Research, Development, Testing and Evaluation.

USACE also received more than $550 million funded by the Environmental Protection Agency and other federal agencies for the Interagency and International Services program. These efforts enable USACE's interagency partners to operate new Land Ports of Entry that secure borders, accelerate cleanup of hazardous waste and provide modern medical facilities for military veterans.

To meet the law's requirements to obligate ARRA funds for contracts by the end of September 2010, USACE funded projects that were "shovel ready." The projects had already received prior congressional authorization and appropriation; and had received the required technical, environmental and engineering approvals. They simply needed a source of federal funding to bring them to reality.

Since projects already were in the federal pipeline, USACE was able to move quickly to get work under way. In civil works, for example, USACE awarded every scheduled contract and obligated 96.4 percent of the available $4.6 billion by the end of September, Loew said. The remaining, unobligated funds are carried forward to administer the contracts for projects still under construction. As of the end of August, 73 percent of the civil work ARRA contracts and 51 percent of the dollars had been awarded to small businesses.

USACE also obligated $2.54 billion for military projects, or 89 percent of the funding available by mid-September. For international and interagency services, USACE had obligated $532 million by the end of September, or 99.7 percent of the available $534 million.

Amid all this activity, Loew says it is a challenge to manage a workload that is "substantially above the norm" while ensuring that USACE also meets its non-ARRA mission goals

Photo by Airman 1st Class Maynelinne De La Cruz, U.S. Air Force

Children of parents stationed at Cannon Air Force Base, N.M., dig up dirt as part of the groundbreaking for a new Child Development Center, June 18, 2010. The $8 million, 23,000-square-foot Child Development Center is expected to be completed in April 2011. The new center will accommodate the growing need of base personnel for day-care services, as well as provide a safe and healthy environment for early childhood development and preschool programs. The project is made possible by the American Recovery and Reinvestment Act of 2009.

The U.S. Army Corps of Engineers Jacksonville District showcased one of its survey vessels, *Florida,* at the Ports 2010 Conference. The vessel was recently repaired with American Recovery and Reinvestment Act funds and has continued to serve as the district's largest survey vessel.

in civil works, military construction, and international support. He credits a strong USACE workforce that is capable of juggling multiple projects and challenges.

"The Corps' success in executing the ARRA mission can be directly attributed to the planning and preparation done at all levels of the Corps," he said. "We identified projects that were ready to go and that met the intent of ARRA, stayed flexible in responding to changes in where and how the funds could be executed, and maintained dedication and commitment throughout the Corps' workforce to accomplish the mission," he said.

As in all of its projects, USACE is carrying out its ARRA work "with the highest standards of engineering and science," he said.

ENVIRONMENTAL RESTORATION

In civil works, the Everglades project is among those with the highest profile. Soon after passage of the law, USACE provided $40 million from ARRA to help fully fund the $53 million federal share of the Picayune Strand project in southwest Florida.

When the Picayune Strand project is completed in late 2011, USACE will have constructed a pump station, plugged miles of canals, and restored the natural hydrology of the area. It also will have removed poor-quality roads built as part of a flawed vision in the 1960s to convert areas of the Everglades to housing to serve as a new suburb of Naples, Fla. USACE officials said the Picayune Strand project was the first federally funded component of the Comprehensive Everglades Restoration Plan.

"This is a huge advance for Everglades restoration. We're moving into a period of intense construction activity around the ecosystem," said Col. Al Pantano, Jacksonville District commander.

The project covers 55,000 acres of wetlands and uplands between Interstate 75 (dubbed Alligator Alley) and the Tamiami Trail on U.S. Highway 41 in southwest Florida. Years ago developers excavated canals and built roads in anticipation of the proposed residential development. The projects disrupted the region's natural water flow and overdrained the area, leading to a damaging change to the regional ecosystem.

"Picayune Strand is a crown jewel of the Comprehensive Everglades Restoration Plan," said Paul Souza, field supervisor of the U.S. Fish and Wildlife Service's South Florida office. Forty years after the development of failed suburban subdivision plans, USACE is working with state and local agencies to maximize restoration effectiveness.

"This is another great example of federal, state, and local entities working together to accomplish more than anyone could achieve on its own," Pantano added.

Photo courtesy of the U.S. Army Corps of Engineers, Barry Vorse

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Photo courtesy of the U.S. Army Corps of Engineers, Todd Plain

The U.S. Army Corps of Engineers Sacramento District's Stanislaus River Parks' headquarters office installed a new solar electricity system in March. Stanislaus is one of nine Sacramento District park and dam offices to install solar systems, paid for with funds provided by the American Recovery and Reinvestment Act of 2009. The panels are expected to provide 41 percent, on average, of each office's electricity needs.

Picayune Strand is one major part of the USACE $103 million allotment through ARRA to fund Everglades' restoration. The USACE work also includes funding to help restore the Kissimmee River. Already, many experts have dubbed this endeavor as the world's largest river restoration project. The Kissimmee originally meandered about 103 miles through a one- to two-mile floodplain. But the river was straightened in the 1960s, ultimately losing about two-thirds of its historical floodplain and triggering rapid declines in waterfowl, bird, and game fish populations.

Elsewhere in the Everglades, the Recovery Act will fund construction of a reservoir to benefit the Loxahatchee National Wildlife Refuge in Palm Beach County. USACE officials say the refuge is the northernmost remaining area of the Everglades' famous "river of grass" wetlands, providing protected habitat for native plants and animals.

Soutwest Florida Water Management District photo

The Picayune Strand is one of the primary projects of the Comprehensive Everglades Restoration Plan. ARRA funds, $40 million, fully funded the project.

SUPPORTING WATERWAYS INFRASTRUCTURE

Overall, ARRA's $4.6 billion civil works component includes $2 billion for construction, $2.1 billion for operations and maintenance, and $375 million for the Mississippi River and Tributaries account, Loew said.

In the Chesapeake area of Virginia, USACE will spend $27 million in ARRA funds on a variety of projects, including maintenance dredging on four of nine critical shoals on the James River. Cottrell Contracting of Chesapeake, Va., has the contract to conduct the work, which will ensure that deep-draft vessels can navigate safely on the James, the nation's oldest transportation route for commerce.

The project also provides about 85 miles of deep-draft channels at a depth of 25 feet from Hampton Roads to

Richmond, Va. About 5 million tons of cargo annually has moved on the James River during the past five years.

"The Recovery Act funds for civil works enable Norfolk District to complete these types of shovel-ready projects that will benefit our state and the nation for years to come," said Col. Andrew Backus, Norfolk District's commander.

Also in civil works is a $17.4 million ARRA-funded initiative to complete construction of a riverwall at the Monongahela River Locks and Dam 4 at Charleroi in western Pennsylvania. USACE officials say the project will provide direct and indirect jobs as part of the agency's long-delayed Lower Monongahela River Project. Without ARRA funding, this work would not have been done in the near future.

"This is a needed shot in the arm for the project and the economy. We're generating work as quickly as we can to bolster the region's job growth and prosperity," said Col. Michael Crall, Pittsburgh District commander.

While generating private-sector work, the project will modernize some deteriorating infrastructure "and take a bite out of a quarter of a billion dollars in critical backlogged maintenance here in the district," he said. Locks and Dam 4 is one of 23 locks and dams USACE operates to maintain navigation on the upper Ohio, Allegheny, and Monongahela rivers.

Overall, the Pittsburgh District received $105.6 million for construction and $28.9 million for operations and maintenance projects through ARRA. Corps officials say the funding will have a direct impact on communities by:

- helping to reduce the risk of flooding in the region;
- restoring, protecting, and cleaning up our environment; and
- increasing the reliability of aging reservoir projects and a busy navigation system.

Other civil works and restoration programs include a $10.8 million project to stabilize a levee in Marysville, Calif. Installation of a 105-foot slurry wall will support a fragile area so that water will not seep through the levee. ARRA funding also will provide $49.7 million for civil works projects in Alaska, including dredging at the Port of Anchorage that will support other expansion efforts at the site. When completed, the port will nearly triple its size.

In southern Virginia near the North Carolina border, USACE will clean up four areas contaminated with dioxin and other toxics near John H. Kerr Lake.

"We have been wanting to clean up these areas for some time," said Bill Bond, Wilmington District land use manager for lake projects. "ARRA made it possible for us to do the job." The district also will use Recovery Act dollars to clean up an abandoned rail spur contaminated with fuel and a former youth camp with lead contamination from ammunition used at a firing range.

MILITARY PROGRAMS

Since USACE serves as a construction agent for the Department of Defense (DoD), it is supporting a variety of ARRA-related military construction projects. The projects range from new child development centers for the children of Service members to new Warrior in Transition complexes to help wounded and injured Army, Navy, Air Force, and Marine personnel returning from service in Iraq and Afghanistan and elsewhere.

"The Corps is overseeing the modernization and repair of military facilities throughout the nation to ensure our Soldiers and their families are provided with the types of facilities they so richly deserve," Loew said.

One example is at Cannon Air Force Base in New Mexico, where ground was broken in June on an $8 million, 23,000-square-foot Child Development

APPLYING ARRA FUNDS TO HELP DISABLED VETERANS

Of all the American Recovery and Reinvestment Act (ARRA) programs undertaken by USACE, no project may be more vital to returning Servicemen and women than three projects in Augusta, Ga., St. Louis, Mo., and Washington, D.C.

In those cities, USACE has developed Veterans Curation Project laboratories – an innovative way to provide jobs and job training to returning veterans, many of them with disabilities.

Veterans of all services are eligible to work and train at the three laboratories. The expectation is that the technical skills veterans learn at the labs can be transferable to jobs outside in the public or private sector. Officials say they selected the three sites for the laboratories because the regions are home to large populations of wounded and returning veterans.

"The three Veterans Curation Project laboratories funded by the Recovery Act are unique opportunities for the nation's armed forces and the Corps of Engineers," said Jo-Ellen Darcy, assistant secretary of the Army for Civil Works. "No group of people has done more to forge our national identity throughout history than the veterans who have served and sacrificed for our nation."

The objective of curation is to manage and maintain the archeological and historical properties now in USACE's possession as the result of construction projects across the country, Darcy said. At the three labs, veterans will receive training in computer, photographic, and scanning technologies as they work with archeological collections and related records.

The labs "will advance the curation of archeological and historic properties that have come into the Corps' possession over the years as a result of construction at its water-project sites around the country," Darcy noted.

The goal is to work with a group of 10 veterans at each site for a six-month period so they can receive comprehensive training. After six months, another group will participate in job training at each site.

Since 1995, USACE has operated the Center of Expertise for Curation and Management of Archeological Collections in its St. Louis District to provide protocols and best practices to maintain historical and archeological assets. With its extensive collection, however, it is a significant task for USACE to fully follow proper curation requirements under the National Historic Preservation Act and the Native American Graves Preservation and Repatriation Act.

Working with the Department of Veterans Affairs and non-governmental wounded warrior organizations, USACE and its contractor are filling many of the laboratory jobs with veterans and disabled veterans. For those unable to work a full day, USACE provides rotations and specially tailored jobs so disabled veterans can participate.

"The labs are an innovative approach to supporting returning veterans with jobs and training in a variety of technical skills," Darcy said.

Center to accommodate the growing need of base personnel for child care services.

While a current child care facility serves 130 youngsters, there is demand for 300 slots, said Col. Stephen Clark, 27th Special Operations Wing commander. "We have 160 on the waiting list and close to half of those have not been born yet," he said.

With families seeking a safe, healthy environment for young children, the project will fill a major need at the base. Completion is scheduled for April 2011.

Thanks to $83.9 million in ARRA funding, USACE is building two Warrior in Transition complexes, one at Fort Bliss, Texas, and the other at Fort Campbell, Ky. These facilities will provide space for wounded and injured warriors to recuperate from injuries sustained during service. The barracks are designed for individuals from all service branches who no longer require hospital care but could benefit from a healing environment, and there is ample room for family members as well.

The Warriors in Transition complexes are similar in many respects. At Fort Bliss, the three-story building has 140,000 square feet of space with 116 apartments and 232 beds. Each module has two bedrooms and two baths with a shared kitchenette. Fort Campbell's facility is almost identical with capacity for 206 beds, and both sites will have gardens for outdoor relaxation.

Each site also will have a battalion headquarters and company operations headquarters, while a Soldiers' and family activity center will offer counseling and social services, legal/financial support, and a child-activity center.

DoD originally estimated it would take $100 million in ARRA funds to cover the construction costs of both complexes, but USACE said bids came in lower than expected, with a projected final cost of $83.9 million. USACE will use the remaining $16.1 million to provide more amenities at some of the 18 other Warrior in Transition facilities built independent of the Recovery Act.

While these transition complexes have gained considerable attention, ARRA is funding other construction projects as well. Fort Hood, Texas, is gaining several new facilities, including a new child development center and a hospital.

In addition, USACE is executing more than $550 million in ARRA funding provided by the Environmental Protection Agency and other federal agencies through USACE's International and Interagency Services program. These efforts will enable interagency partners to operate new Land Ports of Entry that secure the nation's borders, accelerate environmental cleanup of hazardous waste, and provide modern medical facilities for military veterans.

"From the outset, the Corps has worked hard to ensure the appropriate people and processes were in place to perform rigorous oversight of contracting, contractors, and program execution," Loew said. Yet, he noted, "That is no different than our long-standing objectives for the normal execution of our military and civil works programs."

USACE also is supporting wounded warriors and the families of fallen warriors through direct financial assistance. ARRA brought major changes to the Homeowners Assistance Program (HAP), an initiative dating back to 1966 that traditionally has aided Service members who must sell their house at a loss due to base closure or realignment.

While continuing to provide that aid, the government is offering expanded benefits in this challenging economy – with stimulus funding of $555 million. Under ARRA, HAP is providing benefits to wounded Soldiers and spouses of Soldiers killed while performing their duties since 9/11 and those undergoing a permanent change of station during the nation's real estate and mortgage crisis. USACE manages this program for the DoD.

DoD civilians who meet eligibility criteria also can obtain assistance. "Our Service members, Department of Defense civilians, and their families deserve this assistance," said Col. Thomas C. Chapman, Sacramento District commander.

As it deftly handles these many responsibilities from civil works to military benefits, USACE also has met one other priority of ARRA – to provide regular public updates of its work in a timely manner.

"We have complied with requirements to provide the American public with transparent accountability of how their money is being spent," Loew said.

"The Corps is fully committed to achieving the president's and Congress' vision for the civil and military funding provided in the Recovery Act, and has acted to quickly put those funds to use to help get people back to work and to help with the nation's economic recovery," he added.

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Goal 1: Assessment of the State of USACE Support to Combat, Stability, and Disaster Operations

By Christopher Prawdzik

Photo courtesy of the U.S. Army Corps of Engineers
Photo courtesy of the U.S. Army Corps of Engineers, Ron Elliott
Photo Courtesy of the U.S. Aarmy Corps of Engineers, Afghanistan Engineer District-North, Hank Heusinkveld

LEFT TO RIGHT: The U.S. Army Corps of Engineers provided structural assessment capabilities in support of search and rescue efforts following the Jan. 12, 2010, Haiti earthquake; USACE provides in-theater support to combatant commanders. The hangar pictured above will house C-130 and C-17 aircraft flying into Afghanistan and will feature its own maintenance facility, April 16, 2010; A state-of-the-art trauma center became a reality Dec. 7, 2009, when the community of northern Iraqi province of Dahuk celebrated the official opening of the Zakho Emergency Hospital.

The U.S. Army Corps of Engineers (USACE) support to combat stability and disaster operations has been one of expansion and contraction overseas and one of support and education closer to the homeland during the past year.

Maj. Gen. Jeffrey J. Dorko, USACE deputy commanding general of military and international operations, noted that the past year, while largely a continuation of Iraq and Afghanistan efforts, it's also one that saw a shift in effort and emphasis.

In Iraq, contingency efforts have decreased, particularly with the reduction of the three-district Gulf Region Division to the single Gulf Region District located at Victory Base, Iraq.

"That draw-down has been matched to the workload, so it's been an incredibly well-done effort," Dorko said. "It's kind of an intricate ballet, as you draw down command and control headquarters and then realign the reporting change … to maintain that seamless oversight of what is still a substantial program."

He said the drop was steady but not dramatic or precipitous. With a newly seated government in Iraq that will take even more shape into the fall, he said there are some unknowns about long-term roles.

"We have to work with the ambassador in country along with the commander of U.S. Forces Iraq, in concert with the government of Iraq [to] determine what our role will be," Dorko said.

To be determined is the level of USACE support to U.S. interests in the region and whether the Iraqis will want or need any direct support from USACE.

Over in Afghanistan, the story is the opposite.

"In over, I think, a period of three years now, we've gone from an $800 million workload to a $1.6 billion workload last year, to a $3.5 billion workload in Afghanistan this year," Dorko said.

But this was not a surprise. With the surge continuing in Afghanistan, plus the standing up of the second district, the workload increase was sure to follow.

"There's been a lot of effort back here in the headquarters and supporting divisions to make sure that all of the people and other resources that need to go forward to Afghanistan and Iraq remain in balance with the workload they're restructuring," he added.

Back toward the United States, Dorko said in the past year, the country was lucky and did not suffer things such as a major hurricane, in which USACE would possibly respond, but he said the "most salient" event was the response to the 7.0-magnitude Haiti earthquake on Jan. 12, 2010.

As one of just two Defense Department construction agencies, USACE was not the lead for the response, as it was in the jurisdiction of the Naval Facilities Engineer Command.

"We were able to tee up all manner of support in terms of contract vehicles … and teams of people and expertise, from structural engineers to folks who were expert in debris removal," Dorko said. "While we certainly weren't the lead, it was, I think, really educational for us to work with the Navy, to watch them respond and to let them know what capabilities we had, to be able to augment the organization that they stood up on the ground to help the [U.S. Southern Command] SOUTHCOM commander and the [joint task force] commander on the ground."

Overseas Contingency Operations Continue to Support and Succeed

By Christopher Prawdzik

U.S. Navy photo by Petty Officer 2nd Class James Wagner

Despite the fact that overseas operations in Afghanistan and Iraq have been ongoing for nearly a decade, the U.S. Army Corps of Engineers (USACE) continues its efforts in these theaters with drastically different backdrops. As ground operations continue in both arenas, the two representations illustrate that of one mature theater and one maturing theater. While operations in Iraq are centered on a drawdown in the coming months, Afghanistan represents an area of growth for USACE.

In Iraq, a significant change in the command and control structure took place in the summer of 2009, when the area went from three districts to two. Then in March 2010, the Gulf Region District became the sole district responsible for USACE's presence in Iraq.

"From a strategic and operational perspective … this consolidation of all in-theater engineer operations was a long time in coming and was perfect with the stand down of the Gulf Region Division to bring that organization and that requirement under one senior engineer, and that just happened to be me," said Brig. Gen. Kendall Cox, commander of the Transatlantic Division. "It really was something that needed to be done sooner than later, but it's working out perfect in my opinion."

Even with these changes, the overall program execution hasn't changed in Iraq; the major focus is on a continuing effort to close out remaining projects, with an eye toward completion and drawdown.

Cox noted more than $1.8 billion in projects were on the books in October 2009, but the total is now down to about $1 billion.

Not only have the number of projects in Iraq decreased, the focus of and types of projects have changed as well. Cox noted that on his two previous assignments at the brigade level and division level, the focus was on establishing security in the country, helping Iraq establish a government while finding and eliminating or capturing insurgents.

In his past year at the helm, USACE operated in a much more secure environment.

"Iraq is beginning to show capacity in terms of its ability to govern the people, and so our focus has been

OPPOSITE: Mark Bridges and Rick Durham, both with the U.S. Army Corps of Engineers Afghanistan Engineer District - South, inspect the roof of an addition to the Zabul Provincial Hospital in Qalat City, Zabul province, Afghanistan, July 11, 2010. The Zabul Provincial Reconstruction Team, with assistance from USACE, facilitated 28 projects that improved the quality of life for residents in the province. ABOVE: U.S. Army Corps of Engineers Col. Dionysios Anninos, who relinquished command of the Gulf Region District on July 9, inspects progress at the multimillion-dollar National Police Sustainment Brigade Complex in Salman Pak district, Iraq, during a site visit May 22, 2010.

Photo courtesy of USACE, Gulf Region District, Mike Scheck

able to switch to essentially providing them advice and assistance – instead of being the predominant military arm in the country, it's now by, through, and with the Iraqi security forces," he said. "We have provided them sufficient training to the point where now combat operations are no longer our responsibility."

The role has become much more advisory.

"Previously, a lot of our projects came with a very difficult challenge where insurgents were constantly attempting to disrupt our execution efforts," Cox said. "Sometimes they would intimidate the workforce, literally blow up projects or kill construction managers. That has changed to a point where contractors are now bringing projects to completion and turnover. The contractors now operate because the Iraqi people understand the value and importance of having these projects."

However, even with the much improved security environment he said challenges remain, particularly because construction capability is somewhat lacking, requiring USACE to build capability while at the same time executing projects.

On the other hand, it is extremely important that the laborers on these projects, as well as the subcontractors, come from the local communities. The residents need work, but Cox said this also is tied directly to security on the ground.

"If you're bringing people from outside a neighborhood, that neighborhood is feeling slighted. That community is not getting the opportunity to employ the male military-aged individuals and we've got to give them the opportunity," he said. "Sometimes the challenge we face is having a pool of skilled laborers with the skill sets that are needed, while still having a labor force composed of typical blue-collar workers." He stressed, however, the skilled labor capacity in local markets continues to improve as Iraqis develop increasing capacity.

Iraqi and U.S. Army Corps of Engineers senior officials take part in the June 23, 2010, ribbon-cutting ceremony at Irbil Emergency Hospital. From left are USACE Transatlantic Division Commander Brig. Gen. Kendall Cox; Kurdistan region Minister of Health Tahir Hawrami; U.S. Ambassador to Iraq, Christopher Hill; and Prime Minister of the Kurdistan regional government, Barham Salih.

Photo courtesy of the U.S. Army Corps of Engineers, Gulf Region District, Mohammed Abdulrazzaq

However, it has not always been as smooth as it is now. Cox noted that early on, USACE had a difficult time understanding what essential services Iraqis had, versus which services they needed.

"They had a pretty good system in place, probably 30 to 40 years ago it was state of the art for the Middle East, but it didn't necessarily meet American standards. So early on we tried to bring something to this environment we thought would make sense," Cox said. "We attempted to force essential service capability in an area where that wasn't what they wanted; it was what we thought we needed."

But he said that over time, USACE has developed an understanding of what Iraqis need in terms of things like a solid waste management program or a wastewater treatment program, and they're working more closely with local residents on essential service projects.

"We're having a much easier time producing and essentially delivering those projects," he added.

With more than $1.2 billion worth of projects remaining, USACE still has its work cut out, as the security agreement states that the U.S. Department of Defense must not have a presence after Dec. 31, 2011.

"The intent, of course, is doing everything we can to complete our remaining projects as close to June 30, 2011, as possible to allow the last six months for project closeout, making the payments and, of course, drawing down the force structure," he commented.

Even with the drawdown in Iraq, the potential work and collaboration with Iraq remains. Cox noted an emerging growth in USACE assistance with projects Iraq is interested in completing in the future.

"We already have 28 potential projects, of which 19 of those will definitely require a long-term presence, whether it's executed directly within the country of Iraq or from outside.

"As for some kind of enduring presence from USACE, I could have an office in downtown Baghdad, tied to the Department of State Office of Security Cooperation, that continues this program," Cox said. "We're already working with the Department of State and the government of Iraq to accept these projects and expect to award some of them late this calendar year."

As USACE operations drawdown – even with the possibility of increased participation and efforts down the road in Iraq – it's nothing compared to the increase in USACE operations in Afghanistan. As the surge puts an exclamation point on operations for combat troops, it also signals an exponential increase for USACE as well.

According to Maj. Gen. Jeffrey Dorko, USACE deputy commanding general of

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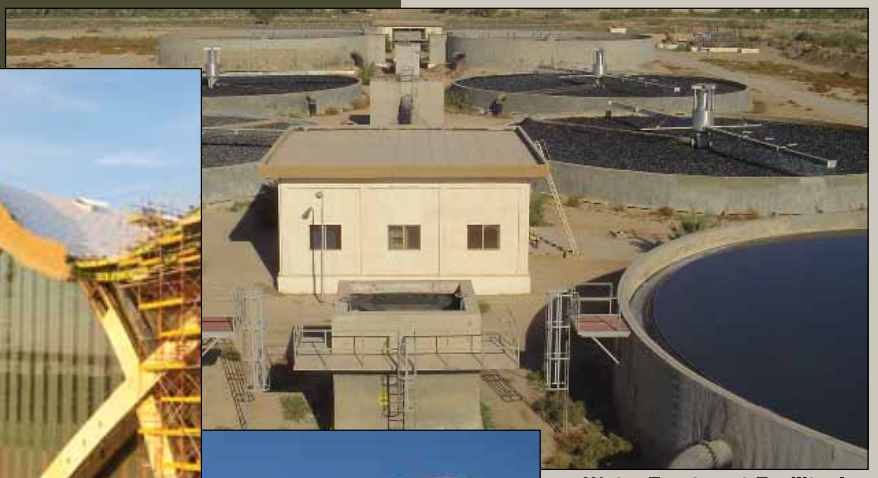
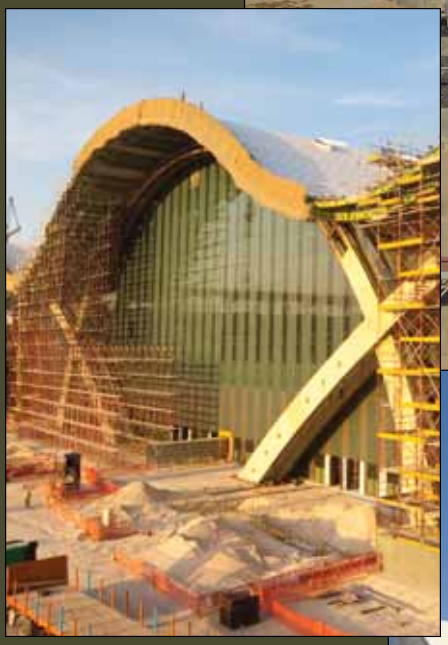


Water Treatment Facility, Iraq



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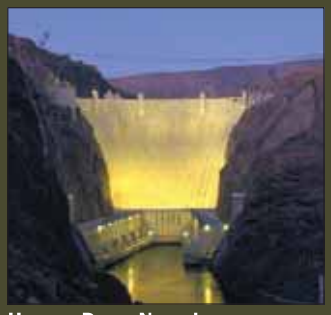

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Military and International Operations, work for the Corps has skyrocketed in Afghanistan from an $800 million workload about two years ago to a $3.5 billion workload in 2010.

For years, USACE has been building Afghan National Army and Police facilities throughout the country, helping establish an infrastructure that has the legs to hold up not only the developing security forces but the country's other efforts to return to some sort of normalcy in the midst of continued insurgent attacks and an enemy intent on removing U.S. and coalition forces from the country altogether.

Recent Afghanistan developments include the installation of Col. Thomas H. Magness IV as commander of USACE's Afghanistan North District in Kabul and Col. Anthony C. Funkhouser as commander of Afghanistan South District in Kandahar. Colonel Magness succeeded Col. Michael McCormick, under which the district's personnel increased from 450 to more than 650. Funkhouser succeeded Col. Kevin J. Wilson, who oversaw the growth of the district to 225 personnel.

As in Iraq, USACE also continues improvement efforts to bring the citizenry of Afghanistan into the fold to give them a stake in their future. In late 2009, the Corps established a new policy to ensure Afghan construction workers employed by Afghan contractors were properly paid.

There has been a problem with contractors often "skimming" wages and the common and corrupt practice of some contractors simply not paying their workers.

As a result, new USACE contracts specify that contractors pay their workers promptly. The move also provides that U.S. officials can verify an individual worker's pay status to ensure they're being paid.

But the Afghan theater is much less mature than that of Iraq, and although many might think that the theaters are similar, they're not. From heightened security threats to cultural differences, Afghanistan is far behind that of Iraq. High illiteracy rates compound these problems even further.

The USACE presence in Iraq, while having the opportunity to participate in future projects, is drawing down drastically. But in Afghanistan, even after nearly a decade of work, it's a mission that still appears to be in the beginning stages and one that will surely grow and evolve in the coming year.

U.S. Air Force photo by Senior Airman Kamaile Chan

An Iraqi construction worker watches as an electrician installs new wires during construction of new storage and training facilities at Al Kasik, an Iraqi army base near Mosul, Iraq, August 2009. Iraq's security is stable to the point where projects now are front and center as the nation's contractors work toward completion.

Preparing Partners for Emergencies

By Christopher Prawdzik

In 1996, the Civil Military Emergency Preparedness (CMEP) Program began working with former Warsaw Pact nations in Europe and Central Asia to build regional and international relationships, and develop a shared capability for disaster preparedness, response, and recovery. CMEP efforts initially supported the Warsaw Initiative Funds (WIF), a program to assist former Warsaw Pact nations and newly independent former Soviet republics make the successful transition to democratic institutions following the breakup of the Soviet Union.

That mission is now global in scope, with projects and initiatives designed to help countries establish a framework for security and address preparedness for the management of the consequences from all types of hazards. The U.S. Army Corps of Engineers (USACE) executes the program with policy guidance provided by Headquarters, Department of Army G-3/5/7 and oversight from the Office of the Secretary of Defense (Policy).

In Eastern Europe, where the program began, many countries that hosted CMEP events over the years have gone on to join the North Atlantic Treaty Organization (NATO), leaving 14 countries participating in CMEP-WIF, according to Diane Acurio, program manager for the CMEP WIF countries.

CMEP in Europe and Central Asia continues to work to help countries develop skills and capabilities to achieve security objectives, as well as meet consequence management expectations. The key is to get the countries to not only improve their national capabilities, but also develop relationships and establish formal cooperation agreements and procedures with other countries in their region.

"We also help them to achieve civil and military cooperation within their countries and build emergency management skills as we help them prepare for all types of hazards," Acurio said. "We bring in subject-matter experts from the Army Corps of Engineers as well as other federal, non-governmental, and international organizations, from a variety of disciplines, depending upon the selected scenario developed by the country."

For example, Serbia suffers from torrential downpours, so it focuses on flood scenarios, she said. Azerbaijan might focus on oil spills because of its offshore drilling in the Caspian Sea.

Within the last year, Acurio said interagency or inter-ministerial "tabletop" exercises and workshops proved extremely effective.

In these exercises, CMEP experts assist a country in developing a scenario focused on one or more disaster types and that is designed to examine the strength of existing capabilities as well as to identify areas that might require further examination or strengthening. On the first day of the exercise, all of the ministries within that country are briefed on how each individual ministry might respond to the particular scenario. The results, even of these initial briefings, are somewhat revealing, Acurio said.

"In many, many cases – almost all the cases – this is the first time any of the other agencies have heard how their fellow agencies respond to this type of emergency," she said. "We've had good discussions based on these presentations, because a number of times people say, 'No, no, no, that's my job,' or, 'Where did you guys get your training, because we're supposed to be doing search and rescue.'"

Throughout the process, Acurio said that most of the time the facilitators will let participants discuss solutions among themselves. At the same time, she said, they are trying to exercise their national response plan.

In subsequent days, each ministry sits at a separate table with a laptop computer, simulating their separate organizations and an emergency operations center as events unfold during the exercise.

"We try to exercise as many ministries as possible to get everyone involved in the event," Acurio said.

As a result, many countries either request another exercise, and/or hold internal exercises within their own countries even including regional partners.

These exercises aren't without challenges, though. One common situation is that most of the emergency response capability within these countries is under the direction of the military or ministry of defense. For NATO aspirants, countries must have these capabilities under a separate organization. Other challenges may be presented by the cultural and political characteristics of each country.

The exercises have proved effective. In May, for example, Serbia conducted an exercise to react to possible flooding, and two days after the exercise, they had torrential flooding in southeast Serbia that resulted in fatalities.

In Constanta, Romania, Romanian emergency responders douse a simulated burning building during a regional Civil Military Emergency Preparedness (CMEP) exercise. CMEP originated as a program within the Warsaw Initiative Funds (WIF). WIF was developed to assist former Warsaw Pact nations and newly independent former Soviet republics make the successful transition to democratic institutions following the breakup of the Soviet Union. CMEP has a 14-year history under the Warsaw Initiative with several events being hosted each year in partner nations. Many of the new member nations within the North Atlantic Treaty Organization hosted CMEP events in the period prior to accession.

One of the cornerstones to these exercises is the national response plan workshop, where representatives come to learn how to develop an integrated national response plan.

"We've actually had two countries go back and rewrite and reorganize their national response plan to match the U.S. national response framework," Acurio said. "If you look at the country of Georgia, if you look at their response plan, their annexes, it looks very similar to ours."

In addition to the direct support CMEP provides, Acurio noted the efforts of neighboring NATO countries that often serve as mentors. For example, new NATO members, such as Romania and Bulgaria, have served as mentors for Balkan countries during exercises.

"We cannot fund them, since they're now NATO members, but they still participate in our events, and it works out very well since they are effective mentors, and the people all know them," she said. "In the last few years, Turkey has been participating with us quite a bit, and that's been really good."

Within the next year, Acurio said the workshops will continue in the 14 countries and the focus will likely be on more hazardous material-types of scenarios, as well as infrastructure protection.

But as the process continues where its roots were established, other parts of the globe are beginning to benefit from the effectiveness of the program.

Andrew Bruzewicz, international emergency management program manager for USACE, noted the expansion to areas around the world was likely not even considered in the project at its inception. Now, projects in places such as Guyana, Kenya, and Swaziland mark the calendar for CMEP, and he said they're also looking to have activities in Nepal and Mongolia in 2010.

With the variety of countries, climates, and cultures that exist globally, it requires a lot of adaptation on the part of CMEP, but all of its efforts are rooted in some basic processes.

"We certainly try to do things in as common a way as possible, but we're dealing with different cultures in the way in which they respond to all hazards disasters [natural and man-made]," Bruzewicz said. "But within that context, there's a common process, that is, we're working with the host nation, and people from the local embassy; we're working with people from the Geographic Combatant Command and the Army Service Component Command, and the first step is to go and determine what capabilities exist at the present point in time and then how our program – which is really focused on strategic-level coordination and management of all hazards disasters – can help meet needs that are not presently being met."

The focus, he said, is the disaster management and consequence management piece, then working with the partner nation and country teams identifying needs and establishing a set of priorities.

Photo courtesy of the U.S. Army Corps of Engineers

Representatives from Azerbaijan ministries of emergency situations, defence, foreign affairs, national security, internal affairs, health, and ecology and natural resources participated in a multi-hazard preparedness exercise in September 2010 sponsored by the U.S. Army Corps of Engineers Civil Military Emergency Preparedness Program.

"You do an assessment; you develop a road map, you have priorities that are determined by the country, the embassy team, U.S. strategic interests … and then you start doing activities that are designed to help fill those gaps that were identified following the assessment," he said.

The goal is to help partner nations develop and maintain a good, national response framework including national response mechanisms and procedures through which they can respond in the case of an emergency.

But it goes one step further, as disasters don't respect national boundaries and may be so large that they cannot be met by the national response, no matter how good it is.

For example, neighboring countries must consider how they are willing to assist and how to improve their communication if they are to effectively respond to disasters that might occur along a border or that are so large that the affected nation requires help.

"We really want to be sure that countries have considered these things before the disaster takes place," Bruzewicz said. "So you know what it is that needs to be done and can actually be performed in an effective and timely manner."

A working national response plan, he added, is the critical starting point.

Other issues that countries must deal with are somewhat new, but they are the product of the information age, and it's something on which they need to focus. Along with multi-ministerial emergency operations, coordination, and communication, Bruzewicz said, a country must know how to address requests for and offers of assistance and the almost continuous flow of information.

For example, he noted the need to work with a free press on a 24-hour news cycle is of utmost importance.

"We've seen that countries have very different attitudes on how important it is to be free and open in communicating with the press and we're really seeing that in particular in the case of Ukraine," he said. "They are adamant that there be a free and open flow of information, because the last thing that they want to see is a repeat of a Chernobyl-type of event where you have people die or people who are getting sick because they had no idea that there was a very dangerous material that was filtering out of the sky, that was getting into the milk, and into other parts of the food chain."

At the cornerstone of all of this is communication. Communication is important among different agencies and different ministries in different parts of the world, and even between neighboring countries that might not see eye to eye, but must rely on one another in the event of an emergency.

Using CMEP's catalog of seminars and workshops, and its customized approach to tabletop exercises that are designed to build the capability to prepare for and manage the consequences of all hazards disasters, partner nations and regions are better prepared to manage increasingly large events without requiring international assistance. Drawing upon the expertise of the U.S. Army Corps of Engineers and that of other groups, CMEP is helping countries enhance their planning processes and improve their preparedness, response, recovery, and mitigation procedures. With assistance from CMEP as one of the tools being used by the U.S. to increase the stability of partner governments, these nations have greater capability to anticipate emergency events and are better prepared to reduce loss of life and damage to property, meeting the expectations of their citizens when disasters strike.

Photo courtesy of the U.S. Army Corps of Engineers, Rahim Alizadeh

The Green Valley: Ready for Anything

In Washington's Green River Valley, the Corps and locals are teaming up to respond to increased flood risks.

By Craig Collins

It's hard to imagine a busier region than Washington's Green River Valley. The industrialized estuary south of downtown Seattle straddles the Green River from its mouth, where it is known as the Duwamish Waterway and empties into Elliott Bay, and meanders miles upstream to embrace the towns of Auburn, Kent, Renton, and Tukwila. The valley is home not only to 170,000 residents, but also to the Seattle-Tacoma International Airport and sprawling corporate complexes and distribution centers belonging to companies such as Boeing, Microsoft, Starbucks, and REI.

The area has been protected from flood damage for so long now – nearly half a century – that most of its residents cannot remember the days of recurrent floods – including the December 1959 cataclysm that submerged buildings up to their second floors and washed irreplaceable topsoil into Puget Sound.

By then, the effort to tame the Green River was already under way about 30 miles east of Auburn, at Eagle Gorge, where the U.S. Army Corps of Engineers' (USACE) Seattle District was constructing what would become the Howard A. Hanson Dam, a flood control and water storage project that became operational Christmas Day, 1961. With major flooding under control, the Green River Valley became more attractive to industry, and by the fall of 1996, the dam had prevented flood damages amounting to more than $694 million. Today, officials estimate that the property damage alone from a severe flood could total $3.77 billion in the Green River Valley.

"FLOOD CONTROL" IS NOT FOREVER

The 21st century has introduced an era when the USACE has been changing its approach to managing flood risk. The Corps is responsible for the safety of a portfolio of dams that are increasingly either approaching or already past their intended service lives. Nobody in the Corps uses the term "flood control" anymore – because, really, who can control a flood – and nobody pretends that a dam, especially one at 50 years old, permanently erases the flood risk for a given watershed.

In January 2009, the residents of the Green River Valley were awakened to the 21st century reality of flood risk when record-high rains, spilling into the reservoir at rates up to 30,500 cubic feet per second, raised the Howard Hanson Dam's flood pool storage to a record 1,189 feet above sea level, just under the dam's authorized maximum of 1,206. Because the lower Green River Valley was already experiencing high tributary inflows, the Corps cut the dam's outflow to zero in order to prevent flooding.

After holding a record level of water behind the dam, the Corps became concerned about several discoveries: two depressions in the dam's right abutment (the valley wall against which the dam is constructed); increased water levels in monitoring wells; and the increased appearance of sediment-laden waters in the drainage tunnel beneath the abutment. Subsequent USACE studies of the depressions have discovered the likely causes of the seepage and erosion, but also compelled the organization to place temporary restrictions on the pool's elevation. While the dam itself is not in danger of failing, the inability to use its full storage capacity has raised the flood risk for those living and working in the Green River Valley.

The Corps responded immediately both to the engineering problem posed by the abutment and to the elevated flood risk to the people within the valley. In the summer of 2009, it awarded contracts to install a 475-feet-long, 150-feet-deep seepage barrier – known as a grout curtain – within the abutment's inner flank, and for additional drainage tunnels to safely control and manage seepage entering the right abutment from the reservoir. Funded by the American Recovery and Reinvestment Act, this first round of interim work, totaling about $15 million, was completed in February 2010, and lowered the risk of catastrophic flooding from a 1-in-3 chance to 1-in-32 – still an unacceptable level of risk, but a dramatic improvement.

Meanwhile, USACE launched an aggressive public

Howard Hanson Dam Reservoir at 1,189 feet on Jan. 8, 2009, during the flood event.

Photo courtesy of the U.S. Army Corps of Engineers

outreach and information campaign that included more than 100 public meetings, as well as conducting tabletop exercises and distributing inundation maps for several different flooding scenarios, as well as the distribution of risk-reduction equipment such as ring dikes, sandbags, Supersaks, and Hesco barriers – large, square baskets filled with material and stacked high. Boeing alone, over the next several months and at its own expense, constructed about $25 million worth of ring barriers – in some spots, 16 to 20 feet high – around its two key facilities in Kent.

A NEW LEVEL OF PUBLIC INVOLVEMENT

According to Lt. Col. James Rollins, deputy commander of the Corps' Seattle District, the tabletop exercises and inundation maps were a mere starting point for engaging communities in the discussions and decision-making regarding the risks of – and appropriate responses to – flooding in the Green River Valley.

Over the next several months, the U.S. Department of Homeland Security, USACE, the Federal Emergency Management Agency (FEMA), and public and private stakeholders from the Green River Valley in Washington have been collaborating to conduct the 2010 Dams Sector Exercise Series – Green River Valley (DSES-10) to address regional disaster resilience issues.

The DSES-10 effort focuses on the analysis of short- and long-term regional impacts resulting from a flooding scenario affecting the King County communities of Auburn, Kent, Renton, and Tukwila.

"The primary goals of this collaborative effort are to achieve a greater understanding of the potential impacts associated with significant flooding events along the Green River Valley, identify critical infrastructure interdependencies that influence local and regional disruptions, and assist public and private stakeholders in improving recovery strategies and business continuity plans," said Yazmin Seda-Sanabria, senior program manager for USACE's Critical Infrastructure Protection & Resilience (CIPR) Program.

She said the DSES effort enhances regional resilience and promotes robust partnerships at the local and regional levels.

Each year, the DSES program collaborates with public and private stakeholders within a region to help identify, analyze, assess, and enhance regional preparedness and disaster resilience using a series of multi-jurisdictional discussion-based activities (workshops, seminars, tabletops, etc). For any given region, the DSES collaborative process is based on a particular scenario that serves as the triggering event to analyze impacts, disruptions, critical interdependencies, and stakeholder roles and responsibilities. Implemented through a series of discussion-based activities (meetings, seminars, workshops, etc), complemented by data-gathering, information assessment, and analysis efforts. A systematic process is followed to consolidate findings, and support a framework to inform future resource requirements and investment justifications aligned with federal

Aerial view during summer pool operations, detailing the locations of important features of the dam.

grant programs.

"This year, the DSES efforts are focused on the Green River Valley, taking advantage of the multiple activities, capabilities, and proactive engagement demonstrated by Green River Valley stakeholders regarding flood-risk planning and management as a result of the operational conditions at Howard Hanson Dam," said Seda-Sanabria.

The DSES-10 Initial Planning Workshop was conducted April 28, 2010, in Seattle. More than 150 representatives from Green River Valley local government, private entities, non-profit organizations, and Washington and federal government agencies participated at this event. The workshop provided an effective forum to discuss the multiple aspects of the DSES-10 effort: the Regional Baseline Assessment, the Regional Consequence Assessment, and a Regional Resilience Strategy.

The second major event, the DSES-10 Regional Baseline Assessment Workshop, was conducted June 30 in Seattle. More than 60 representatives from Green River Valley public and private stakeholders participated at this event. The workshop served as a working session to review and evaluate the ongoing regional baseline assessment data-gathering activities focused on identifying and characterizing infrastructure interdependencies, supply chain dependencies, preparedness, and public- and private-sector business continuity capabilities that may serve as effective drivers to enhance regional resilience. The findings from this regional analysis are being summarized as part of a Regional Baseline Assessment Report that was completed in September 2010.

"The granularity of the DSES," said Rollins, "is far greater than what you would be able to do in a tabletop exercise. A tabletop, for all practical purposes, is meant to synchronize community response, synchronize the message, and it's meant to be the first step in preparing for any potential crisis. Now the DSES really drives it into second- and third-order effects. It goes all the way through to recovery. So DSES-10 is a more Herculean task than some of the preparations that we've done to date."

A series of regional stakeholders' interviews were conducted throughout July as part of a voluntary process aimed at eliciting additional information that could be of assistance in filling knowledge gaps that could be relevant to the dependencies' and interdependencies' analysis in the region. According to Rollins, this report

Photo courtesy of the U.S. Army Corps of Engineers

should offer a big-picture look at what's at risk in the Green River Valley: "Basically, DSES-10 will identify and consolidate regional baseline information as it relates to economic structure, industrial development, [and] the economic and social landscape."

"The most recent DSES-10 event [Regional Consequence Assessment Workshop] took place on Oct. 21, 2010, in Seattle. This workshop focused on the regional consequence assessment of direct and indirect consequences, to include the evaluation of short-term and long-term impacts and critical infrastructure dependencies and interdependencies associated with the selected regional disruption flooding scenario," said Seda-Sanabria.

Findings from this area will be consolidated into a Regional Consequence Assessment Report. This information will support the development of a Regional Resilience Strategy as the final outcome of DSES-10, which is intended to assist public and private stakeholders in identifying and prioritizing challenges and potential solutions to enhance regional resilience.

"This is where it really gets tricky," said Rollins, "because then you've got a facilitator trying to get all these separate entities to take on improvement activities so that they can become self-actualized, shall I say, to solving some of their own problems, as well as getting people that serve them to get ready. So FEMA is going to have some things to do. The Corps is going to have some things to do as a result of this [strategy], just as the [cities] of Kent and Renton and Tukwila and related entities. We've all got to come away with a list of things that we can do now in order to improve our regional resilience."

Placement of the grout curtain, which is a 475-foot-long, 150-foot-deep seepage barrier, at Howard Hanson Dam.

UNDERSTANDING RESIDUAL RISK

On July 29, President Barack Obama signed into law an emergency appropriation of $44 million to fund further interim repairs to the Howard Hanson Dam: extensions and enhancements to the existing drainage system, along with interim improvements to strengthen and stabilize the dam's spillway. Given the improved seepage rate already introduced by the new grout curtain, it's possible that this next round of repairs will enable the dam's operators to fill the flood storage pool to capacity without increasing the flood risk. A report addressing the question of whether this next interim fix – due to be completed in early 2011 – will be a "permanent" or long-term solution is scheduled for completion in November 2010.

"Permanent" is a word Rollins discourages; there is no such term in the Corps' risk-based approach to dam safety and flood protection. One of the successes of the DSES, he says, is that it helps communities understand the concept of residual risk. "Dams like this do such a good job of raising the odds of flooding that it takes it out of people's consciousness," he said. "I mean, if it wasn't for some of these signs of strain that we had in 2009, people would have never realized: 'Oh, geez there is a dam up on the Green River.' They just kind of took it for granted that the Green never floods. … So now that we've built their level of awareness up, the next logical step is to say: 'OK, folks, this structure will take care of the up to 1-in-146 event.' But if we are unlucky, like Nashville was this year, and get a 1-in-500 event, you're going to flood, and there's nothing that anybody can do about it because you've simply exceeded the design capacity of the dam. With weather events the way they are, that potentiality does exist. So does the DSES only look at a dam failure scenario? It shouldn't. It should look at flooding as a consequence of a floodplain. And therefore there is some chance that that could happen with the dam acting at its full operational capability."

Given the recent structural improvements to the Howard Hanson Dam, chances are that the people of the Green River Valley will not have to mobilize their resilience strategy anytime in the near future – but the awareness and capabilities the DSES has awakened in the communities of the area, Rollins said, demonstrate that it ought to be enacted in more floodplains around the country, especially those with dam safety issues.

"I think [the DSES] is absolutely a vital part of preparedness," he said. "When we start planning, we think about how to get the sandbags, how to get them filled, how to get people food and water, but we don't think about second- and third-order effects. 'What are we going to do when the risk is highest in order to maintain business continuity?' 'What are we going to do after the floodwaters recede and I've got this big mucky mess in my front yard?' 'What if my trucks can't get into my warehouse, or my whole lower level of my residence is now growing black mold?' It takes people past that initial response and into the long-term planning, asking those questions of where to turn for resources in order to recover from this," Rollins said.

Photo courtesy of the U.S. Army Corps of Engineers

Army Geospatial Center

The knowledge base for the warfighter today and tomorrow

By Christopher Prawdzik

A critical component of the U.S. Army Geospatial Center's (AGC's) mission – to coordinate, integrate, and synchronize geospatial information requirements and standards across the Army, develop and field geospatial-enabled systems and capabilities to the Army and Department of Defense, and provide direct geospatial support and products to the warfighter – is the production and operation of the Army Geospatial Enterprise (AGE) through research and development as well as acquisition and operational support.

The Army Geospatial Enterprise is an integrated system of technologies, standards, data, and processes that delivers a standard and shareable geospatial foundation, which facilitates a common operating picture to the warfighter at all echelons. The enterprise also provides the framework to integrate with the rest of the Army and other constituencies seamlessly. As a result, the center is now better coordinated to support the current and future needs of the warfighter.

The AGC's success as the Army Knowledge Center of Excellence for Geospatial Information is due, in part, to recent partnering events that have taken place between the center and the Defense Advanced Research Projects Agency, the National Geospatial-Intelligence Agency (NGA), and the Army analysis community.

"Those partnerships really have been tied back to our mission and have been the connective tissues to those agencies, their activities, and their

Photo courtesy of the U.S. Army Geospatial Center

OPPOSITE: LIDAR digital elevation model of Samarra, Iraq. LIDAR allows the BuckEye to capture elevation data, providing Soldiers with terrain detail critical to tactical operations planning. ABOVE: Sample BuckEye imagery of an undisclosed urban area. BuckEye imagery is unclassified and collected at 0.1-meter resolution.

missions," said Bob Burkhardt, AGC director and Army geospatial information officer. "We've had a great year in partnerships with all three, identifying programs and projects to work jointly."

In its second year as a major subordinate command within the U.S. Army Corps of Engineers (USACE), another highlight was the revision of USACE Campaign Plan Goal 1, which now includes the development and sustainment of the Army Geospatial Enterprise, he added.

"This is the first time we've actually found ourselves contained within the USACE Campaign Plan," he said. "We feel as though we are a greater part of the institution, and folks can now track what we do along with everybody else's work."

Until that revision, a very small percentage of what the AGC was doing could even be found within the goals and objectives of the USACE Campaign Plan, Burkhardt added.

"That, for us, is a big deal, and I think it was a big deal for a number of other organizations within USACE that were particularly focused on and in support of the Army's warfighting aspects."

A big event, especially in the past year, has been the surge in Afghanistan, where the AGC is now making a big difference in areas such as high-resolution, three-dimensional imagery and elevation data that Soldiers can use in theater-efforts that earned congressional acclaim.

"We were recognized by Congress as the leading provider of high-resolution imagery and elevation data to our Soldiers," said Burkhardt. "Soldiers in the field have expressed that our data adds tremendous value to their operations. Higher institutions are beginning to understand that tactical commanders need this imagery to conduct operations in Afghanistan's complex urban terrain."

With the BuckEye mission in Afghanistan and a new directorate to conduct that mission, the AGC's requirements have increased threefold. In addition, the AGC has been a key player in coordinating the Federal Emergency Management Agency (FEMA) missions with mission assignments to the Defense Department (DoD).

As a result, the AGC has been tasked to respond to earthquakes, hurricanes, floods, and other events that have made major headlines throughout the year. For example, the center provided tools and capabilities for Army North and FEMA to coordinate the Haiti earthquake response and BP Deepwater Horizon oil spill in the Gulf of Mexico.

Although the AGC participated in such things in the past, this year these events reached a 24/7 capacity that Burkhardt said required constant participation – and the AGC met all of its marks. It's a relevancy to current events to a degree that the center hasn't seen in the past.

The AGC also became a key integrator for the assistant secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT)).

"That's pretty much why we exist today – the change of mission to bring about this geospatial enterprise," he said. "ASA(ALT)

Photo courtesy of the U.S. Army Geospatial Center

brought us in and made us a part of their processes and their system of systems' solutions across their programs of record."

NGA has also been a key partner in developing the AGC's support to Geospatial Visualization Enterprise Services across all of the DoD and the intelligence community. The center successfully developed pilots and prototypes on ways to deliver geospatial information across a number of agencies, Burkhardt said.

But that's not all.

"We negotiated enterprise license agreements with the Environmental Systems Research Institute for Distributed Common Ground System-Army and USACE, allowing both to enjoy significant cost savings and bring about enterprise capabilities that they will be able to use to streamline their operations over the next couple of years," he added.

The AGC had additional accomplishments as well, to include being the first to provide its water resource database in the new enterprise's geodatabase standards. This asset allows combatant commands, the State Department, and others to use the data to better understand water resources, particularly in Afghanistan, but also other places around the globe where potable water is an issue.

"Having this database online increases our ability to provide reachback support where folks actually know what we know, and know what we don't know," Burkhardt said.

If anything, one of the biggest surprises for Burkhardt is that the enterprise mission is picking up momentum faster than he anticipated in its first full year of operation.

"We have a very talented group of people that are focused on what our warfighters' needs are today; we've hired some terrific, young former Soldiers; we've hired some terrific young academics," he said. "We've always had a very high-quality workforce in the sciences and the engineering realms, and the mix helps us to continue to serve the warfighter and the nation efficiently and effectively."

This success has become exponential with the increased communication and cooperation of different agencies working in conjunction with the AGC.

The backbone of this success, Burkhardt said, is that the teammates who make up the AGC are so well versed in their individual disciplines.

An aerial view of the National Geospatial-Intelligence Agency (NGA) Campus East complex being constructed at Fort Belvoir, Va., June 30, 2010. Along with NGA, the U.S. Army Corps of Engineers Baltimore District and part of the North Atlantic Division are managing design and construction of the $1.7 billion facility as part of Base Realignment and Closure 2005 programs at and around Fort Belvoir.

In many ways, this translates to dollars and cents across the DoD.

"The secretary of defense wants to find $100 billion in savings across DoD," Burkhardt said. "We are poised to provide geospatial enterprise capabilities across all Army systems, which will save terrific amounts of money across their programs and bring about greater effectiveness."

Looking into the future, however, there is definitely room for the AGC to grow and become even more effective, he said. One of these areas is the ability to tap into its potential for extracting additional useful information from all of the data that the AGC collects.

"We've been focused on providing data downrange to Soldiers who are in harm's way, but there are additional impacts that can be felt by some of the things we can do with that data, making it easier for Soldiers to use elevation data to ease troop movement, improve their intervisibility with the enemy, and placement of sensors. We haven't exploited these areas, but expect to do so," Burkhardt said.

Another area for improvement and growth is human social cultural integration.

"One of the things that really strikes me is that if you look at this organization, it had a topographic community focus for many, many years," he said. "It has really transcended into a broad, warfighting, decision-making focus, using geospatial as its knowledge base."

Photo courtesy of the U.S. Army Corps of Engineers, Marc Barnes

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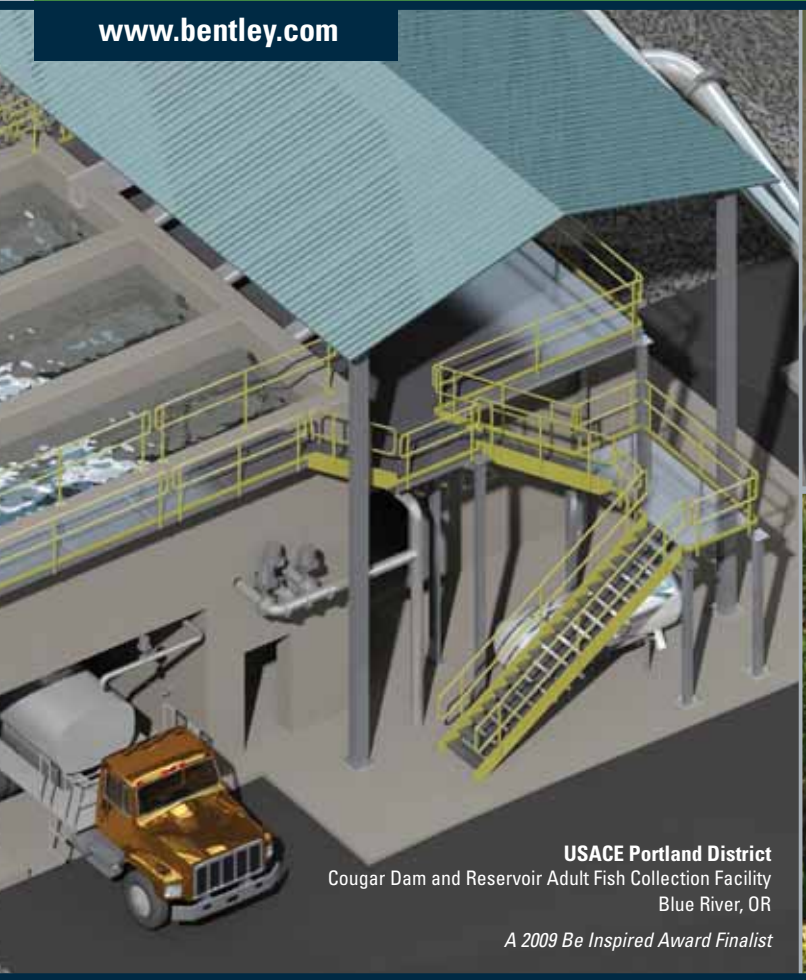

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ARRA Stimulus Expands the Homeowners Assistance Program

By Jennifer A. Lynch, USACE Headquarters Public Affairs Office

Soldiers, Sailors, Airmen, Marines, and their civilian colleagues – and their families – are often afforded the opportunity to travel the world and, with that opportunity, the accompanying relocation. The housing crisis that has dominated the news for the past year has posed unique challenges for Department of Defense (DoD) military and civilian personnel and their families. Base Realignment and Closure (BRAC), which will bring realignment to 53 bases and close 13 others, and routine permanent change of station (PCS) are increasing pressure on homeowners who have to make tough decisions on what to do with their primary residences.

Traditionally, DoD has helped homeowners who may lose value on their homes as a result of base closings. Since the United States is facing the worst real estate market decline since the Great Depression, Congress stepped up efforts to provide Service members and DoD civilians and their families with additional assistance to weather the economic downturn by expanding the DoD Homeowners Assistance Program (HAP), which is managed by the U.S. Army Corps of Engineers (USACE).

The American Recovery and Reinvestment Act of 2009 provided $555 million for the expansion of HAP. Recovery Act funds are being used to temporarily increase support for eligible military and civilian employee homeowners who are affected by the economic downturn as they are forced to sell their home at a loss.

"Like many Americans, DoD families feel the economic downturn's impact as they also cope with the unique challenges of military life. They often don't get to choose when they move and may be forced to sell their homes when they don't want to. Often, Service members are ordered to change duty stations and establish new homes sometimes every two to three years," said Scott Whiteford, USACE director of real estate.

The temporary expansion includes assistance for homeowners affected by BRAC 2005 and Service members receiving PCS orders dated between Feb. 1, 2006, and Sept. 30, 2010 – depending on funding availability. Also, included under the new program, expanded by the Recovery Act, military members and civilians who have become wounded, injured, or ill in the line of duty and surviving spouses of fallen Service members are among the newly eligible categories. This includes surviving spouses of warfighters killed in the line of duty or in the performance of their duties during a deployment on or after Sept. 11, 2001, in support of the armed forces, or who died from a wound, injury, or illness incurred in the line of duty during such a deployment. Service members and civilians who have become wounded, injured, or ill in the line of duty while deployed since Sept. 11, 2001, and are seeking medical care are also eligible for HAP assistance.

HAP was created by Congress in 1966 to financially compensate eligible military members and civilian employee homeowners faced with a loss on the sale of their property related to base closure or force realignment. Generally, the HAP provides assistance in three possible ways: reimburse for part of the loss of selling a home; assist in paying off a mortgage if the sale of the home didn't bring in enough proceeds; or buy the home by paying off the mortgage.

USACE administers the program through three District field offices located in Savannah, Ga.; Fort Worth, Texas; and Sacramento, Calif. These field offices analyze real estate market conditions to evaluate applications to determine eligibility and award benefit payments.

Since the details were announced for the temporary expansion of HAP on Sept. 30, 2009, the USACE has issued $293.2 million in benefits to more than 2,135 applicants.

"Currently 96.8 percent of applications for HAP assistance come from service members who have received permanent change of station orders and are forced to sell their homes at a loss," said Ilse Merryman, USACE HAP program manager.

To date 9,700 applications have been received. Out of the 9,700 applications, 7,201 are eligible for HAP benefits. The majority of the applications are from Florida, California, and Virginia.

The first recipient of the expanded HAP benefits was U.S. Air Force Maj. John Orchard Jr. of Colorado Springs, Colo. Orchard and his family was reassigned to the U.S. Air Force Academy from Nellis Air Force Base near Las Vegas, Nev. The housing market in the area had suffered a considerable decline during the economic downturn, forcing the sale of their home at a loss.

"It's been a roller coaster," said Orchard. "Selling a home at a loss, we eventually had to dip into savings. This [HAP claim] puts us back on the map towards

U.S. Air Force Maj. John Orchard Jr. and family after relocating to Nellis Air Force Base thanks to the benefits of the Homeowners Assistance Program.

Photo courtesy of the U.S. Army Corps of Engineers

retirement and college savings. It's a great gift from our country to our Servicemen and Servicewomen."

There has been one new development since the Sept. 30, 2009, announcement of the expansion of the HAP. The tax liability on HAP benefits has been eliminated. President Barack Obama signed HR 3548, the Unemployment Compensation Extension Act of 2009, into law on Nov. 6, 2009, exempting benefits from taxation. Applicants who received benefits and had taxes withheld can apply for refunds from the Internal Revenue Service when they submit their tax returns.

The priority with HAP and other DoD housing assistance programs is to minimize operational impacts during the relocation process.

"We think this is really important … because it's hard to concentrate on defending your country if you're worried about your house being foreclosed upon back home. And so it's great to be able to actually start to take care of some of those families that are out there right now," said Joseph Sikes, director for Housing and Competitive Sourcing, Office of the Deputy Undersecretary of Defense for Installations and Environment, in a teleconference announcing the expansion of the program.

CIVILIAN EMPLOYEE RELOCATION PROGRAM

Another program managed by USACE that is designed to help homeowners make PCS and Base Realignment and Closure

The Orchard family was the first recipient of expanded benefits of the DoD Homeowners Assistance Program.

Photo courtesy of the U.S. Army Corps of Engineers

transitions easier, is the Department of Defense National Relocation Program (DNRP). DNRP is a civilian employee relocation program that provides relocation services, including a guaranteed home buyout process, to eligible DoD civilian employees so they can sell their homes at the prior duty station and locate housing at the new duty station.

DNRP's primary benefit, known as Guaranteed Home Sale, offers an optional alternative to the PCS reimbursement process. It also offers other valuable services such as the home marketing incentive payment, a financial incentive bonus payment that may be authorized for employees participating in the DNRP who successfully market their homes to obtain a buyer value option or amended value sale.

Since its inception in 1987, the relocation program has helped thousands of employees sell their homes through the Guaranteed Home Sale Program, rent their homes through the Property Management Program, and purchase or rent in a new town through Destination Services.

In fiscal year 2009, the USACE National Relocation Office received 1,260 service requests and bought more than 750 employees' homes, valued over $197 million in total real estate value. The Corps expect the service-request volume to increase by 50 percent in FY 2010.

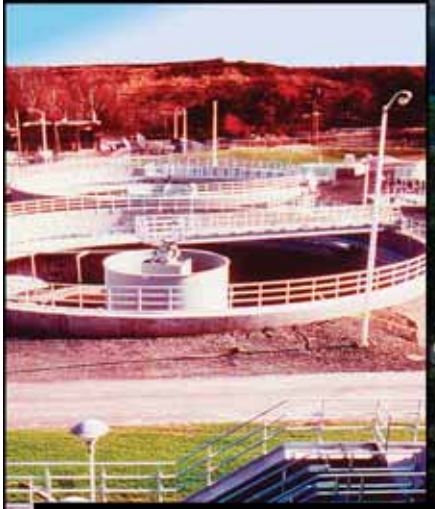
"USACE is proud to support programs that help sustain the all-volunteer force as the best in the world, give wounded warriors care that has no equal, and provide military families a quality of life matching their service and sacrifice," said Whiteford.

HAP Eligibility Categories

The American Recovery and Reinvestment Act funding allows the Department of Defense (DoD) to temporarily expand the Homeowners Assistance Program (HAP) to partially reimburse losses from the sale of a primary residence in the following priority order:

1. Homeowners wounded, injured, or ill in the line of duty while deployed since Sept. 11, 2001, and relocating in furtherance of medical treatment;
2. Surviving spouse homeowners relocating within two years after the death of their spouse;
3. Homeowners affected by the 2005 BRAC round, without the need (which existed under previous law) to prove that a base closure announcement caused a local housing market decline; and
4. Service member homeowners receiving orders dated on or after Feb. 1, 2006, through Sept. 30, 2010, for a permanent change of station (PCS) move, based on the availability of funds.

Each of these general categories has more specific eligibility requirements and is available at the DoD HAP Web site: http://hap.usace.army.mil.



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Goal 2: Civil Works

By Stacy A. Ouellette, USACE Headquarters Public Affairs Office

U.S. Army Corps of Engineers photos

U.S. Army Corps of Engineers photo by Mylene Guron

LEFT TO RIGHT: A U.S. Army Corps of Engineers Los Angeles District Emergency Management response team coordinates with other agencies as water flows through the Nogales Wash by damaged concrete panels lining the channel. A USACE team deployed July 31, 2010, at the request of Arizona Emergency Management to provide technical assistance in the wake of flooding that damaged the waterway; A project engineer exits Ohio's William H. Harsha Lake conduit after inspecting the bronze seal replacement on the service gates; Construction at the pump station in New Orleans, La., that will house 11 pumps, which will help eliviate hurricane and storm damage risks. Seen here Oct. 6, 2010, each pump will be powered by a 5,400 horsepower diesel engine.

The U.S. Army Corps of Engineers (USACE) is dedicated to accomplishing a vast, worldwide mission while remaining focused on the importance of professional development for all employees. By providing opportunities for growth, USACE is able to sustain a technical, proficient, and dedicated civilian workforce.

Steve Stockton, USACE director of Civil Works, explained how USACE has worked to meet the goal – to deliver enduring and essential water resource solutions through collaboration with partners and stakeholders – of USACE Commander Lt. Gen. Robert L. Van Antwerp's four-part Campaign Plan to transform, unify, and standardize USACE operations.

"In collaboration with stakeholders, USACE consistently facilitates the solution of water resources' challenges in ways that are innovative, enlightened, sustainable, and demonstrates a balance of responses to regional, watershed or basin-wide conditions," Stockton said.

The Campaign Plan's Goal 2 is divided into four objectives. The first objective (2a) is about delivering holistic solutions using an integrated water resource management approach rather than a project centric approach.

The second objective (2b) recognizes that USACE doesn't have enough resources to accomplish projects by itself and many stakeholders are an important part of the decision-making process. Collaboration is necessary to create long-term sustainable solutions.

"As we work through different challenges for projects, it's truly a multi-agency effort. By combining our efforts when possible, we are able to come up with strong, more efficient solutions to common problems," Stockton said. "This approach not only increases the likelihood that the best solutions will be found, it also fosters important relationships with other agencies that we will work with again in the future to address the nation's critical water resources' challenges."

The third (2c) is to improve and streamline regulatory processes and systems. Nationwide, USACE divisions and districts are moving forward and continuously show progress in support of long-term goals. These activities are expected to provide positive results by challenging the current permit review process and increase the public's understanding of the USACE regulatory program.

The fourth objective (2d) is to enable Gulf Coast recovery. The main emphasis of this objective is to ensure corporate commitment to achieving hurricane and storm damage risk reduction for the Gulf Coast. Many actions are under way to complete 100-year risk reduction for Greater New Orleans, construct interim projects for the Mississippi coast, and identify plans for long-term recovery of the Gulf Coast that require risk assessment/management, risk communications, and a system approach in working with all stakeholders and partners.

New Hope for the Louisiana Coast

Five years after Hurricane Katrina, you can see its new hurricane protection system from space.

By Craig Collins

Aug. 29, 2010, marked the five-year anniversary of Hurricane Katrina's landfall at Buras, La., in Plaquemines Parish, more than an hour south of New Orleans. The storm, which was moving with Category 5 strength less than 12 hours prior to landfall, generated a 28-foot storm surge and 55-foot waves, and the damage it wrought was unprecedented – what the Federal Emergency Management Agency (FEMA) called the costliest natural disaster ever to occur in the United States. More than 1,500 people lost their lives during the storm and subsequent floods, and $90 billion worth of property was lost or damaged. The surge and waves all but destroyed the region's hurricane and storm protective structures, causing 50 major levee breaches; damaging 34 of 71 pumping stations; and compromising 169 of 350 miles of levees. Also contributing to the flooding was the storm's heavy rains: 14 inches in 24 hours. In its wake, Katrina left about 80 percent of New Orleans under water – in many areas, more than 15 feet.

The federal government's response to Katrina was carried out in two distinct phases, and the U.S. Corps of Engineers (USACE) played an integral role in both: First, to help the area recover from the damage, USACE established recovery offices in Mississippi and Louisiana to handle all emergency response missions requested by FEMA. It removed more than 200 billion gallons of water – approximately 11 percent of the volume of neighboring Lake Pontchartrain – from New Orleans in 53 days.

USACE also established Task Force Guardian immediately after Hurricane Katrina hit, with the mission of repairing and restoring New Orleans-area Hurricane and Storm Damage Risk Reduction System (HSDRRS) to pre-Katrina conditions – a task accomplished by the beginning of the 2006 hurricane season.

PLANNING A BETTER SYSTEM

Of course, even as USACE was laboring to restore the HSDRRS to its pre-Katrina strength, the nation was struggling to come to terms with the fact that this level of protection hadn't been enough. USACE commissioned an independent team – the Interagency Performance Evaluation Task Force, or IPET, comprising more than 150 international and national experts to analyze how the system performed or failed to perform during both Hurricane Katrina and Hurricane Rita, which struck the region almost one month after Katrina.

After the IPET issued its report, the federal government directed USACE to essentially rebuild the HSDRRS to provide protection from a 100-year flood. USACE responded promptly by forward-deploying a team within its Mississippi Valley Division: Task Force Hope.

The lessons learned from the IPET report, said Task Force Hope's director, Karen Durham-Aguilera, were stark: "Before Katrina, people in the industry designed for the maximum probable storm – the biggest storm that had ever occurred," she said. "But Katrina, with the amount of surge it brought in, was really of biblical proportions. Nobody even thought something like that could happen."

Following on IPET's findings and recommendations, Task Force Hope designed an HSDRRS that differed from the pre-Katrina system in several significant ways. Most important, the Task Force conducted computer analyses of 152 storms, both historical and potential, and placed them on literally hundreds of trajectories toward the Gulf Coast. The new system, they determined, would prepare for the combined effect of these storms, rather than the characteristics of a single historical precedent.

The new HSDRRS would also differ in its strategy, said Durham-Aguilera. "What was in place in Greater New Orleans with Katrina was called a parallel catchment system – in other words, you had interior floodwalls and you had floodgates. So instead – similar to what is being done in the Netherlands, United Kingdom, Russia, and Italy – we went to a perimeter protection, where you put in surge barriers to block most of the water that could come in from a hurricane.

This satellite image shows the Greater New Orleans area, which totals more than 180 square land miles. The U.S. Army Corps of Engineers Hurricane and Storm Damage Risk Reduction System (HSDRRS), which traverses much of the area shown, will be completed by 2011. The HSDRRS will be a component of a larger effort to safeguard the entire Louisiana Coast.

Image by Robert Simmon, based on data provided by the USGS/NASA Landsat 7 Science Team

So the primary line of defense now is the perimeter system, with the connecting elements being the interior floodwalls, levees, and floodgates."

In designing the system, USACE had to keep the unique urban location in mind – the system needed to have enough real estate to operate, and at the same time, keep disruptions to both homes and businesses at a minimum. Simultaneously, the project had to comply with the National Environmental Policy Act, which requires public input on the environmental impacts of the project. "That requirement alone," said Durham-Aguilera, "has resulted in more than 300 public meetings, and we're probably well over 500 public interactions by now."

Five years and seven emergency congressional appropriations later, the new HSDRRS is fully funded at nearly $15 billion – many times greater than USACE's annual Civil Works construction budget of approximately $2 billion.

"When I think about it," said Durham-Aguilera, "to be able to get all that done – design criteria, form a cost estimate, persuade the administration and Congress to fund it, manage all the pieces to it, do the environmental process, acquire real estate, get the construction contractors – there's really just a lot of history being made to get all that done in the space of a few years."

THE HSDRRS TODAY

By the summer of 2010, amidst a big surge in construction activity, the new system was about 50 percent complete, and the Greater New Orleans area had the strongest HSDRRS in its history. USACE is on track to complete the system – one of the largest engineering projects in U.S. history – by 2011.

The scope of the undertaking is difficult to comprehend, even for those witnessing it firsthand. The amount of "borrow" required to build and improve the system's levees is about 66 million cubic yards – enough to fill the New Orleans Superdome 15 times. One of the system's flagship projects, the Inner Harbor Navigation Canal (IHNC) Surge Barrier, at the western edge of Lake Borgne where Katrina's surge was funneled into New Orleans at the confluence of two waterways, is the largest of its kind in the world, and USACE's largest-ever design-build civil works construction project. When complete, the IHNC Surge Barrier, fitted with

The Inner Harbor Navigation Canal Surge Barrier floodwall is the Corps' largest-ever design-build project of its kind. At almost 2 miles long, this $1.3 billion project is being called the "Great Wall of Louisiana" and is scheduled to be completed by 2011.

three navigation gates, will extend 2 miles across the entrance to the canal and 26 feet above the waterline. At the height of the 2010 hurricane season, 90 percent of the massive barrier wall – easily visible in satellite images – will be in place.

In August 2009, USACE began work on another flagship project, the Gulf Intracoastal Waterway West Closure Complex, a surge barrier that will reduce flood risks for west-bank portions of Jefferson, Orleans, and Plaquemines parishes by protecting 25 miles of levees, floodwalls, and pumping stations. South of the intersection of the Harvey and Algiers canals, the project will include one of the largest pumping stations in the world, capable of moving nearly 20,000 cubic feet per second when the structure is closed during storm events.

The system's interior floodwalls, Durham-Aguilera said, are massive in and of themselves, some as tall as 30 feet. The urban setting of the system has presented a challenge for engineers, in that it requires rolling floodgates and ramps at more than 250 vehicle-entry points – one of the most visible where the Lake Pontchartrain Causeway enters downtown New Orleans. "The bridge abutments, the floodwall, and the ramp itself will become part of the flood-protection structure," said Durham-Aguilera. "We will have to raise the ramp where you enter the causeway to be able to accommodate that and get that floodwall under the bridge at the height we need."

USACE is working closely with the community to keep disruptions to a minimum as the HSDRRS is built, working with the Louisiana Department of Transportation and Development to schedule road closures that will be the easiest for locals to accommodate. "We also have a 1-800 line where people, if they see something going on with construction that is really disruptive, whether it's dust or whatever it is, they can call in," Durham-Aguilera said. "We have people taking those calls and then seeing what we need to make things better." But USACE's commitment to local communities, many of which are still suffering economically, goes beyond that. Of the $9 billion in contracts awarded so far for the project, about 70 percent has been awarded to Louisiana firms and about $2.2 billion has gone directly to small businesses.

Even within the self-imposed constraints placed on its contracting, Durham-Aguilera said, Task Force Hope has been able to leverage savings and efficiencies that have paid dividends

Photo courtesy of the U.S. Army Corps of Engineers

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Construction on the St. Bernard Parish floodwall, Bayou Bienvenue to Bayou Dupre, Sept. 14, 2010. This floodwall will reduce risk from storm surges generated in the Mississippi River Gulf Outlet, Lake Borgne, and the Gulf of Mexico.

Photo courtesy of the U.S. Army Corps of Engineers

to taxpayers. "Last year, around February, we met with the steel mill industry and found out that we could take advantage of a lull in steel prices," said Durham-Aguilera. "We could take advantage of a low price, as well as speed up the delivery, because then you wouldn't have construction contractors trying to compete with each other to order, in this case, steel sheet piles. So we actually went out and bought steel sheet piles in bulk, set up a staging yard, set up an automated inventory system – we've even got businesses asking to borrow the technology. We saved about $50 million on the first contract alone. It worked so well that we went out and did another one. I think most people don't believe a government agency can do things like that. I'm pretty amazed that we continue to look for creative ways to speed up construction, ways that are not the norm for a government public works agency."

THE WAY AHEAD

Despite the amazing pace of progress made on the system's construction in the past year, Durham-Aguilera said there is still much to be done. "We're almost finished with the real estate piece," she said. "That's been a huge effort, to apply the real estate easements and rights of entries that we need, but we still have just a few places left. Then the rest of it is just continuing to manage the program to the scheduled milestones, within the funding levels."

Ultimately, the New Orleans HSDRRS will be a component of a larger effort to protect the entire Louisiana Coast. In the spring of 2010, USACE submitted a final report of its own analysis of what could be done to protect the region – the Louisiana Coastal Protection and Restoration study – to Congress and Louisiana officials. USACE also is on schedule to complete six Louisiana coastal area ecosystem restoration feasibility studies by the end of the 2010 calendar year.

Meanwhile, said Durham-Aguilera, Task Force Hope and its partners continue to make history in New Orleans. "This area is better protected than at any time in history," she said. "It's resulted in over 4,000 direct jobs – and then there are also all the indirect jobs, such as the guys who drive trucks to deliver fuel and stop in the nearby restaurants to eat. I could go on and on about how much this has meant to the economy of the area, as well as the risk reduction. We're five years in, and we're not going to back off until we're done."

Aliens Among Us

The U.S. Army Corps of Engineers battles invasive species.

By Jan Tegler

Giant salvinia, hydrilla, Eurasian watermilfoil, water hyacinth, Melaleuca, Brazilian pepper, zebra and quagga mussels, Asian carp, armored suckermouth catfish … You may not know these names, but each represents an invader, a species that has moved into an area that it previously did not inhabit – usually as a result of man's intervention. They are aliens among us, just a few of the invasive species the U.S. Army Corps of Engineers (USACE) battles every hour, every day.

Left unchecked, invasive species can critically deplete valuable food reserves and sources of cover for native species, and negatively affect human needs such as water supply, transportation, recreation, and resource utilization. So widespread are they that no aspect of USACE activity is untouched by them.

"They are pervasive," said Alfred F. Cofrancesco, director of the USACE-ERDC Invasive Species Center. "Invasive species integrate themselves into every functional area that USACE has from navigation and flood control to hydroelectric power, the environmental mission, recreational sites, and more. Invasive species pose a significant challenge for restoration activities within the Corps," Cofrancesco noted. "The Corps has a mission to restore aquatic habitats. From the Louisiana coastal areas to the Florida Everglades, invasive species drive a significant amount of the costs of restoration, compounding the problem."

Today, responsibility for research and development on effective management strategies to control these alien species falls to the Corps' Engineer Research and Development Center (ERDC) in Vicksburg, Miss. But the battle has been joined since 1899 when the River and Harbor Act, the oldest federal environmental law in the United States, tasked USACE with a number of duties including the control of certain aquatic invasive plants in Gulf Coast states. Initially geared toward assuring freedom of navigation, duties in this area expanded nationally. By the mid-20th century, under the 1958 River and Harbor Act, Section 104, the Corps was instructed to initiate an Aquatic Plant Control Program.

"There are two components to the Aquatic Plant Control Program," Tim Toplisek explained. He is the USACE Headquarters program manager for the Aquatic Plant Control Program. "On the navigable waters of the U.S. and their tributaries, we're tasked with a 50-50 cost-share with non-federal government entities to control aquatic plant invasive species. The other side of the program specified USACE as the only federal agency authorized to do research and development on methodologies to control nuisance aquatic plant species."

"However, since 1996 it continues to be administrative policy not to fund the cost-share control component of the program."

It's a mission that invasive species experts at the non-federal government level contend is still vital. State, county, and municipal government entities explain that without a comprehensive aquatic plant cost share control program, the ability to control existing populations of invasive aquatic plants and restrict their proliferation to additional areas of navigable waterways is significantly hindered.

USACE is authorized to control invasive and aquatic plant species within the agency's reservoirs and waterways, but today the USACE mission is primarily focused on the research and development of methodologies to control nuisance aquatic plant nuisance species. Make no mistake; the size of the effort is still impressive. In fiscal year 2009, the USACE spent approximately $120 million to control all kinds of invasive species, both aquatic and terrestrial. Many districts conduct O&M-funded management projects to control invasive aquatic and terrestrial plants on their projects. The management objectives vary from small-scale control of several acres of target vegetation per year to large-scale yearlong efforts targeting 25,000 acres of aquatic vegetation. The Mobile, New Orleans, and Jacksonville districts all have large on-going programs. Jacksonville District also administers the Aquatic Plant Control Operations Support Center, which offers support to all USACE offices with operational management issues or site visits to assist with developing work plans or initiate planning efforts.

The zebra mussel is one of several invasive species that causes ecological and economic damage, most notably by fouling floodgates and other structures. These mussels were found in the Detroit River.

Photo courtesy of the Center for Great Lakes and Aquatic Sciences, Environmental Protection Agency

USACE currently has two research programs that focus on aquatic invasive species: The Aquatic Plant Control Research Program (APCRP) and the Aquatic Nuisance Species Research Program (ANSRP).

The APCRP is the nation's only federally authorized research program providing technology for managing invasive aquatic plant species. Linda Nelson, the assistant technical director for Civil Works, Environmental Engineering and Sciences, and program manager for APCRP and the ANSRP, describes the four focus areas in which APCRP conducts research.

"We investigate methods of biological control, using insects and pathogens for managing invasive plant species," she explained. "We research chemical control, trying to identify the best herbicides and plant growth regulators, and how to apply these products in an environmentally compatible manner. We also conduct ecological assessments to study the underlying factors which cause these plant invasions in our bodies of water and investigate how we can use that information for restoration efforts and to prevent new species invasions. Additionally, we identify specific management strategies and applications to control these species, provide technology transfer, and develop Web-based information systems so we can get information out to districts, divisions, and resource managers on how to identify these plants and management options for these plant species."

The Aquatic Plant Information System is one such online resource for Corps personnel. Knowing your enemy is the point of the research and of the Web-based resources says Cofrancesco. By studying invasive species in their native habitats, ERDC and USACE can better understand how to control them.

"In their native range, these plants generally are not problematic," Cofrancesco said. "In Australia, hydrilla is not abundant. We try to couple our work with that of the USDA [U.S. Department of Agriculture], which has laboratories overseas, and try to identify insect biocontrol agents that are useful in helping to regulate plants in their native range. To date, we've brought in 13 biocontrol agents in collaboration with the USDA. We've also been working with industry and the EPA [Environmental Protection Agency] to develop new herbicides for use in aquatic environments."

The ANSRP is aimed at identifying and evaluating control strategies for all non-plant invasive species. Initiated in 1990, the program focuses on species including zebra mussels, quagga mussels, Asian carp, armored suckermouth catfish, and on AVM (avian vacuolar myelinopathy) disease, a disease that is caused by a toxic cyanobacteria that commonly grows on the invasive aquatic hydrilla plant, and affects water birds including coots, which eat the plant, ingest the toxin and develop the disease. The disease can then be transferred to bald eagles and other birds that prey on coots.

Zebra and quagga mussels cause fouling of floodgates and other structures. The ecological and economic damage caused by both species is considerable. Meanwhile, armored suckermouth catfish burrow into levees and cause serious damage and degradation.

The ANSRP provides USACE managers and operational with up-to-date information on aquatic nuisance species including basic life history and ecological information, risk assessment tools, preventative strategies, and cost-effective and environmentally sound management options.

In addition to the research and development programs on invasive species, the Water Operations Technical Support (WOTS) program provides district personnel with direct technical assistance regarding aquatic nuisance species. Developed in 1995, the program makes ERDC researchers available to personally

A lateral view of the armored suckermouth catfish, displaying its heavily armored body, was photographed at Lake Okeechobee, Fla.

advise USACE personnel at the district and project level.

"We can send one of our researchers to a district if requested for up to five days on any invasive species problem they have," said Bob Gunkel, the former program manager for the APCRP. "It also provides funding for technology transfer and demonstrations so that we can actually go out and demo some of the research techniques we've developed."

Finally, USACE invasive species experts offer a word to the wise: prevention of invasive species infestations can be done much more efficiently and economically if done early.

"The tendency is that we wait until the problem gets out of hand and then try to manage it," Linda Nelson pointed out. "But if we can deal with invasions on the front end when we have only 10 to 20 acres of an invasive species, we can control it more easily and economically before it becomes a massive problem."

ADDITIONAL PROGRAMS AND ACTIONS

In 2005, USACE established an Invasive Species Leadership Team (ISLT). The 18- member team consists of a representative from each division, a representative from one of the districts within a division, and a headquarters and ERDC proponent. Responsibilities of the team include providing recommendations to headquarters staff on fulfilling agency duties under Executive Order 13112 (Feb. 3, 1999 – Invasive Species), providing strategic direction to the invasive species research programs, developing and implementing cost effective strategies to address invasive species problems that affect USACE missions, disperse relevant information concerning invasive species, providing input to USACE regulations concerning invasive species, and coordinating team initiatives with Environmental Communities of Practice and business lines.

On June 2, 2009, the ISLT developed the first USACE Invasive Species Policy. The policy establishes a consistent nationwide policy that is applicable to all Civil Works projects and programs concerning the prevention, introduction and control of invasive species across USACE. The policy also provides actions for the early detection and rapid response of invasive species, restoration, information management, and education and public awareness.

To offer assistance and support to the districts at all Civil Works program levels, the ISLT is in the process of developing a virtual Center of Expertise for Invasive Species. Some of the duties of the proposed center will be to coordinate and implement invasive species prevention strategies, perform risk analysis for new invasive species, develop/coordinate a rapid response team to manage and prioritize rapid response efforts, establish a national training program, facilitate cooperation between districts, agencies and private organizations, and to develop and execute public outreach and education programs for the prevention of invasives on USACE project lands.

Photo courtesy of the U.S. Army Corps of Engineers

Reviving America's Water Garden

USACE changes course to restore the Everglades.

By Eric Tegler

The Florida Everglades are, in effect, America's water garden. This vast collection of marshes, swamps, forests, rivers, and tributaries in southern Florida is home to myriad species of animals, fish, and plants, and one of the most diverse ecosystems on Earth. The system begins near Orlando, including Lake Okeechobee, and extends southward to Florida Bay at the southern tip of the state. The Everglades are the major fresh water source for southern Florida and the key to regulating its propensity for flooding and drought.

For more than a century, human efforts to remake the Everglades to suit the development needs and desires of a burgeoning South Florida population literally transformed the natural landscape, erasing nearly half of the Everglades and diverting their fresh water to the Atlantic Ocean and the Gulf of Mexico. By the late 20th century, recognition of the harm done to this amazing resource and the potential loss of the remainder of the Everglades prompted the state and federal governments and local authorities to join together to reverse the decline.

The U.S. Army Corps of Engineers (USACE) has been actively involved in major alterations to the Everglades for more than 50 years. Today, USACE is just as involved in restoration – reviving America's water garden.

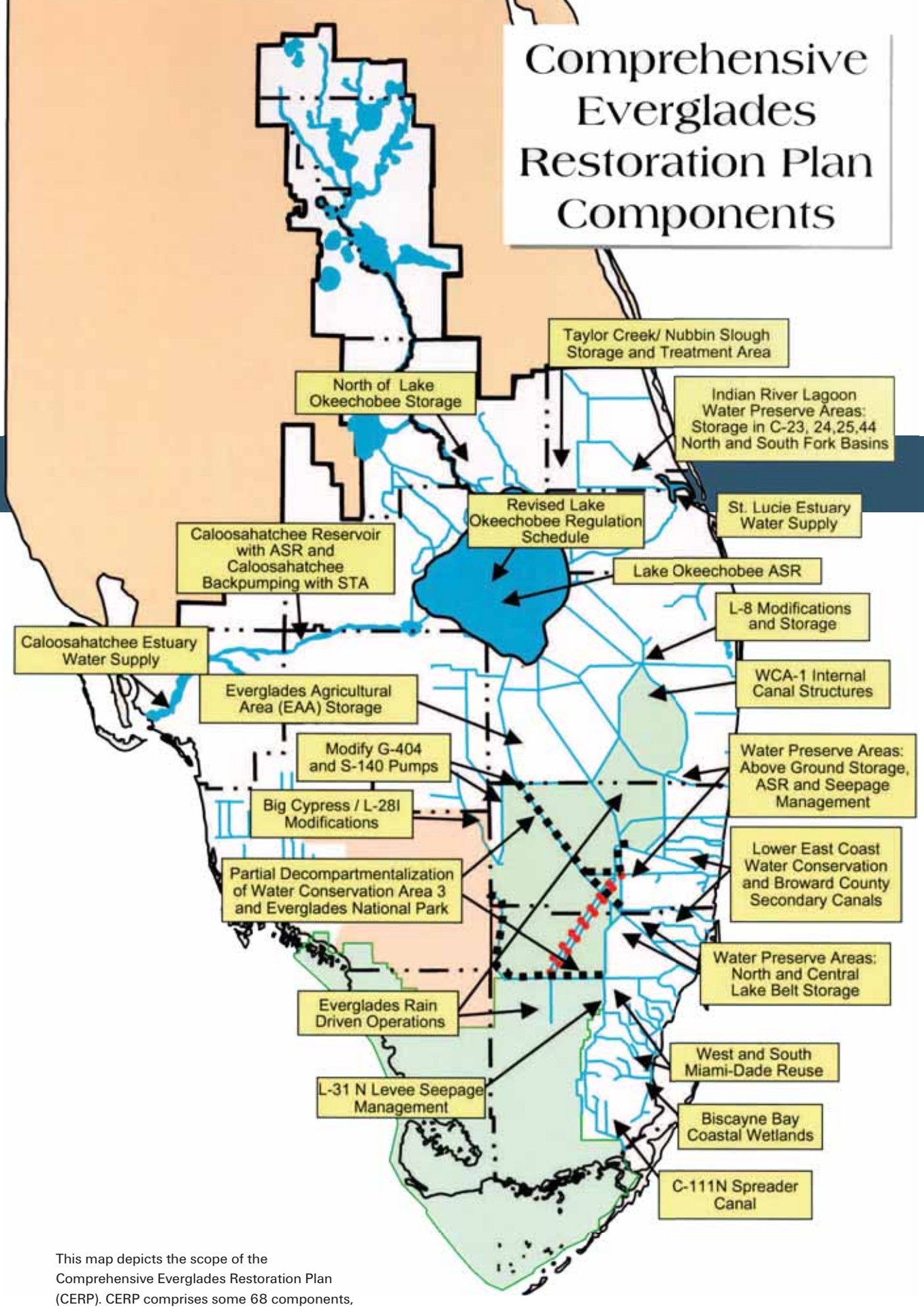
"The Everglades are a wetland of international significance, one of the largest fresh water wetland systems in the world," Steven Kopecky, USACE's South Florida Everglades Ecosystem Restoration program manager said. "As a result, they are one of the primary nurseries for all sorts of fish and bird types including lots of endangered species. We're talking about a wilderness and wildlife gem, so much so that in the 1940s it was designated as the first national park that was essentially a wildlife reserve. It's also the only one on the east coast preserved for its biologic diversity rather than big mountains or scenery."

Kopecky oversees the program from USACE Headquarters in Washington, D.C. Understanding Everglades restoration he pointed out, requires understanding the history of South Florida.

"Almost the entire concept of what we think of as South Florida today was related to or originated in the Everglades somewhere. When we talk about places like Miami, Fort Lauderdale, or any of the cities down there, they were basically carved out of the Everglades. They all used to flood, so badly that back in the 1940s, the Corps was brought in to do what was called the Central and Southern Florida (C&SF) Project. That's really the plumbing system of South Florida. It's what allows South Florida to exist. It is still the most important feature of the landscape that prevents flooding."

Indeed, flood control made possible the development of South Florida and forever changed the Everglades. In 1948, Congress directed the Corps to undertake the C&SF Project, which essentially drained much of the marsh to prevent flooding, irrigate farm lands, and provide drinking water to facilitate new development. USACE's work ultimately resulted in the drainage of more than 1.7 billion gallons of water from the Everglades to coastal waters each day. Since then, the altered water flow has eaten away half of the Everglades and water quality has been compromised.

As recognition of the significance of the Everglades dawned, Congress enacted the Everglades National Park (ENP) Protection and Expansion Act in 1989. The act directed the secretary of the Army to take all measures feasible consistent with the C&SF Project to protect natural values associated with ENP. Several years later, the Corps completed the C-111 General Reevaluation Report. This and several other reports ultimately gave rise to the Comprehensive Everglades Restoration Plan (CERP).



This map depicts the scope of the Comprehensive Everglades Restoration Plan (CERP). CERP comprises some 68 components, five of which kicked off this year.

Map courtesy of Everglades Comprehensive Restoration Plan

Shown here is the Site 1 Impoundment Project area. It is located adjacent to the Arthur R. Marshall Loxahatchee National Wildlife Refuge, which covers 1,660 acres, and will provide water storage that is considered essential to restoring the Everglades' health and viability.

CERP was developed in the 1990s with widespread public interest and support. Numerous public meetings were held and thousands of people provided input, resulting in a widely supported plan that balances many competing interests. In 2000, Congress authorized the plan, the largest environmental restoration effort in history. CERP is intended to enhance Everglades' wetlands and associated lakes, rivers, and bays in the 16-county region of South Florida. CERP projects will capture and store much of the water currently lost to the Atlantic Ocean and Gulf of Mexico. Essentially, CERP will ensure that the biodiversity of the Everglades can be preserved and expanded. Without it, both the size and diversity of the Everglades would diminish.

"One of the things that is unique about the Everglades is that most of it is still Everglades," Kopecky said. "It's still there from a footprint standpoint despite the many things we've done to it over the last 100 years. The problem is that it's too dry and too wet at the wrong times. So much of the goal is to try to rehab as much of the existing Everglades as we can. There are certain places we know we'll never get back – there are large cities there now. But what this is about is trying to take what remains and use it as best as possible."

CERP can't happen without the cooperation of a variety of agencies and governments. USACE actively works with the South Florida Water Management District, the Department of the Interior, the U.S Fish and Wildlife Service, the Everglades National Park Service, the Florida Department of Environmental Protection, and the Miami-Dade Department of Environmental Resources Management to name a few.

Though CERP has been in existence for a decade, its multitude of projects has only recently received funding and has just begun. Kopecky noted a significant amount of work was already under way.

"You must recognize that there are really two sets of Everglades projects; firstly there's what we call foundation projects. These are projects that have been on the books or ongoing for years – many of which pre-date CERP. There's a whole suite of landscape-level foundation projects out there. They're all over South Florida and they come from a variety of different authorizations, different political pressures, but they're all generally good ideas. We call them foundation projects because they're things you need to have in place before you can do CERP."

Such foundation projects are generally aimed at water management and have confusing names, like the "C-111 Spreader Canal Western Project."

"There's an Everglades code and the names all come from the 1940s C&SF Project," Kopecky said. "C is for canal; L is for levee; and S is for structure. So C-111, for instance, is actually a big ol' ditch that was dug as part of the C&SF. When we talk about the C-43 Reservoir Project, we're talking about the Caloosahatchee River. The nomenclature is hard to figure out. There's the natural landscape and a superimposed engineering landscape."

Confusing the names may be easy, but the projects are important building blocks for CERP. C-111 affects the critical Taylor Slough area of ENP.

"The Everglades are marsh so the topography variation is measured in inches," said Kopecky. "The natural landscape is called region slough. Largely, you have slightly higher marsh followed by wet, slow rivers, which are referred to as a slough. There are two main sloughs in ENP. The largest of the pair, Shark River Slough, is one of the biggest in the world and Taylor Slough is a good model to work on because it's a bit smaller with a watershed of its own. The C-111 Western Project now under way is designed to keep more water in Taylor Slough instead of flowing out to the ocean."

Most foundation projects are complete or nearing completion according to Kopecky. Among the most ambitious of these is the Kissimmee River Restoration Project. "The Kissimmee River was the first large-scale ecosystem restoration project the Corps did. It's really what inspired the whole restoration mission. It has reached the point where it's almost done and the benefits are astounding."

CERP comprises some 68 components. Five CERP projects have kicked off in 2010, including the restoration of the Merritt Canal area of the Picayune Strand in Collier County. The project will restore water flow across the landscape, rehydrate drained wetlands, improve estuarine waters, and return habitat to threatened wildlife communities. It is the closest thing to rehydrating the ENP, Kopecky said, and the only CERP project that actually enlarges the Everglades.

"If you remember the 'buy some swampland in Florida' thing that was going on in the 1960s and 70s, that was an area that was dug out for a development that was called Golden Gate Estates. They basically sold plots out in the middle of the Everglades. They drained them and sold them and when people went out there to build, they found out the land was wet and they couldn't build properly. So they dug all

Photo courtesy of the U.S. Army Corps of Engineers

these canals and really made a mess of everything. Before anyone could really build, the company went bankrupt."

The Picayune Strand Restoration Project includes wetlands and uplands located between Alligator Alley (Interstate 75) and the Tamiami Trail (U.S. Highway 41) in the southwestern corner of the state. The ecological condition of the project area affects not only the immediate project, but also significant regional resources. Public lands nearly surround it, including treasures such as the Florida Panther National Wildlife Refuge, Fakahatchee Strand Preserve State Park, Everglades National Park, Big Cypress National Preserve, and more.

Florida ended up with 55,000 acres of confused canals and other features that debilitated the local ecosystem. Since the development failed, the state has been buying back the land. As part of CERP, USACE is filling in the canals, building pumps to direct water where desired, and rehydrating the area.

"Picayune Strand is a crown jewel of the Comprehensive Everglades Restoration Plan," said Paul Souza, field supervisor of the U.S. Fish and Wildlife Service's South Florida Office. "Restoration of this area is vital to establishing connections between regional habitats and a host of endangered species that depend on it. Because of leadership shown by our Everglades partnership, we're another step closer to achieving its restoration potential, one step closer to saving our endangered Florida panther, wood stork, manatee, and many other species."

The Merritt Canal portion of the project requires several major alterations, including installing 55 plugs in 13.5 miles of the canal that was originally dug to provide flood protection for a later-abandoned residential development. USACE contractors will build an 810-cubic-feet-per-second pump station and spreader canal that will allow natural resource and water managers to direct fresh water to drained wetlands. This will also maintain current flood-reduction conditions on land outside the project area. USACE will oversee the removal of 95 miles of roads and non-native vegetation. The construction/alteration will take about two years to complete.

"We're adding 55,000 acres of habitat to the Everglades system," Kopecky said. "That, to me, is one of the most beautiful projects we have."

Its beauty he added will be visible in satellite photos, a highly tangible sign of progress from which to draw inspiration and energy. But it is the cumulative effect of the many smaller CERP projects that will tell over time in a positive way. "Where we build a project and where we see the benefits in the Everglades are not one and the same," Kopecky admitted.

Those projects have to address the peculiar topographical conditions of South Florida and employ a variety of tools.

"The geology of South Florida makes this really bizarre but the ground is basically limestone," Kopecky said. "It looks like hard Swiss cheese. If you pour a cup of water into the ground in Florida, it might pop up somewhere else. So you're actually trying to fool water that has gone underground to stay in the Everglades rather than [draining] into Miami. By putting some pressure against the water it will go where the least resistance is so it will flow south instead of east or west.

"Mostly what we're doing is installing pumps and hydraulic ridges which are essentially small, shallow reservoirs that can be used to create a ground water gradient. That allows more water to stay on the Everglades side while staying dry on the other developed side."

What often comes as a surprise to those unfamiliar with USACE is that all of the CERP and foundation project work is funneled through just one district: Jacksonville. One of the largest USACE districts, Jacksonville has no significant military mission but works across a huge area over 16 counties. The population in South Florida alone makes the area roughly equivalent to the 19th largest state by population. While CERP must work around all of those people, its South Florida focus has advantages.

"One of the strengths and weaknesses of the Everglades Restoration is that it's in one state," Kopecky maintained. "Sometimes that causes [political jealousy] from other states but on the other hand, that means we only have one state to deal with in terms of a government. It's a very large state with a very strong congressional delegation."

Another CERP project that got under way this summer was the Site 1 Impoundment Project (Fran Reich Preserve) near Boca Raton. The project will capture and store excess surface water runoff from the Hillsboro watershed, as well as releases from the Arthur R. Marshall Loxahatchee National Wildlife Refuge and Lake Okeechobee. Capturing the excess runoff – water currently discharged to the Atlantic Intracoastal Waterway – will supplement water deliveries to the Hillsboro Canal. These supplemental deliveries will reduce demands on the Loxahatchee Refuge. The 1,660-acre impoundment will also provide groundwater recharge, reduce seepage from adjacent natural areas, and prevent saltwater intrusion by releasing impounded water back to the Hillsboro Canal when conditions dictate.

The Site 1 Impoundment is a good example of a project that will add capability to the existing Everglades infrastructure and allow for more flexible management of the resource. Collectively, such projects will also return the Everglades to a more natural (albeit still managed) state. A healthy ecosystem is in fact a self-reinforcing proposition where water management is concerned, Kopecky said.

"If you have a healthy marsh instead of a degrading marsh, there's a lot more flexibility to do things. That's what we're after. The trick now, I guess, is to make the Everglades as little-managed and as flexible as possible. That's the whole concept. We still have this human infrastructure. Let's use it smarter and give it more capability to do more beneficial things."

While the recent American Recovery and Reinvestment Act unlocked significant funding with which to move CERP forward, restoring the Everglades will be a long and costly process. When CERP passed in 2000, the plan was expected to spin out over 30 years and cost $8 billion. Now about a decade behind schedule, CERP will of course be costlier and take longer, in part because of its sheer magnitude.

"Every single thing we do is always the biggest in the world," Kopecky stated. "The spaces and the size of this aren't something I can explain to people. You have to take them down there to see it. You can be in a helicopter in the middle of the Everglades and look in every direction on the horizon and see nothing but marsh. Everything is so huge; the CERP will be very expensive and very time-consuming."

But Kopecky said it will definitely be worth it.

"As a restoration guy, the one thing I can say about Florida, which is different than working in the Chesapeake Bay, is that if you get the water management right or even close, it is such a productive environment that the right stuff grows. If you look at the Kissimmee River, the vegetation came back like crazy. Florida has a wet subtropical system full of nutrients. Despite all we've done, the Everglades are still there. They're not thriving, but they have persevered."

Tread Lightly

The Environmental Community of Practice works to make USACE the nation's environmental engineer.

By Jan Tegler

It may be a cliché, but the phrase "tread lightly" neatly describes the philosophy James B. Balocki, the U.S. Army Corps of Engineers Environmental Community of Practice chief, wants the U.S. Army Corps of Engineers (USACE) to adopt and keep firmly in mind across the missions it performs, making environmental responsibility as fundamental to the Corps as sound and innovative engineering.

"I see the Corps of Engineers as federal experts in the environment. Much like the Corps has a reputation as the nation's federal engineer, I see us as the nation's environmental engineer," Balocki said.

It's a cultural shift in the way the Corps approaches the many challenges it undertakes and recognition that the organization's environmental mission goes hand-in-hand with its worldwide military and civil works responsibilities. From the cleanup of contamination and construction of sustainable facilities to ecosystem restoration and climate change, the environmental mission touches nearly every aspect of Corps business.

The challenge for the multiskilled workforce of approximately 6,000 environmental professionals Balocki oversees is not only to develop and deliver solutions and provide advice to support the Corps' missions worldwide, it's to apply the concept of sustainability to all aspects of design, engineering, and problem-solving from the outset.

"We have worked very hard this year since last Oct. 5, when the president signed the sustainability executive order, [Executive Order 13514: Federal Leadership in Environmental, Energy, and Economic Performance]," Balocki explained.

"We've worked hard to imbue the principles of sustainability and accounting for greenhouse gases and making consideration of our carbon footprint part of the way we do business. That will continue to be a priority this year and into 2011. We're operationalizing that in our divisions and districts, and we're listening to them to hear what kind of projects and programs they need to help bring that to fruition."

The idea is to instill environmental principles throughout USACE and beyond, broadening the Corps' Environmental Community of Practice (ECoP) to include people and organizations outside of the agency itself.

"The Community of Practice is comprised of all the folks I would consider practitioners, part time or full time," Balocki said. "These are folks who need to include environmental features in the designs or projects they are working on. They can be contractors if we believe that's a capability we need to seek. It could include engagement with NGOs [non-governmental organizations] or academic institutions if they've got skills or experience that we don't have."

The point, Balocki said, is to tap as many resources as possible inside and outside the Corps to help develop solutions for the challenges presented by the USACE environmental mission. Sustainability should be at the root of planning and execution in each of the mission areas. Cleaning up contamination, constructing sustainable facilities, restoring ecosystems, and taking steps to address climate change are tasks associated with a wide range of Corps projects. Often, the missions overlap, but each is distinct, he highlighted.

"The organization's mission relates to a number of different functional areas. For example, we deal with cleanup issues, undoing or remedying past practices, which may have been in line with policy at the time, but in the following years or decades, we [the Corps] found weren't wise. We know more now than we did in 1912. We also have people involved in natural resources management. We, the Corps, manage and oversee about 12 million acres of land and water resources on behalf of the nation. The Army itself manages 13 million acres. So the Corps holds an almost equivalent amount of land and water to what the Army holds for its training and to garrison forces.

"We deal with water quality issues for clean-water permitting," he continued. "We execute the National Environmental Protection Act, and though that's not an

One of USACE's ecosystem restoration missions includes the Mississippi River and its tributaries (above).

Photo courtesy of the U.S. Army Corps of Engineers

actual program, it does provide a structured means of evaluating all of the activities and actions we take. We do ecosystem restoration in areas like the Chesapeake Bay, the Everglades, and the Mississippi. We also have a mission to develop our infrastructure and facilities in a sustainable manner. The idea is that we put as much back into the environment as we take. That's a pretty broad responsibility."

There are as many opportunities for the ECoP to contribute as there are Corps projects. Often, one project leads to another as in the case of a recent contamination cleanup effort by personnel from the Corps' New England District in New Bedford Harbor, Conn., which segued directly to an ecosystem restoration mission.

"An example that I love because it represents the multi-disciplinary nature of our work is a project I visited in New Bedford Harbor," Balocki recalled. "It's a Superfund site [part of the federal government's program to clean up the nation's uncontrolled hazardous waste sites] where we're working for the EPA [Environmental Protection Agency], cleaning up PCB [polychlorinated biphenyl] contamination in the harbor. A lot of the Superfund sites are just old burial pits where we've disposed

Newly planted salt marsh cordgrass, seen here Aug. 4, 2010, grows where construction debris once littered the shoreline of Scuffletown Creek, choking out the natural wetlands. USACE's Norfolk District and the city of Chesapeake, Va., restored about 1 acre of natural wetlands along Scuffletown Creek, a tributary of the Elizabeth River, in an effort to bring the river system back to a healthy, thriving waterway after centuries of industrial activity impaired it.

of various waste like the Love Canal [area of Niagara Falls, N.Y.], the quintessential example.

"But in New Bedford Harbor we've got sediments underwater in this saltwater harbor. So our guys are out there dredging, hydraulically taking the dredge material to an area where they're drying it, then trans-shipping it to Michigan. We're also looking at how we might be able to put it in a confined disposal facility. This harbor is fed by a freshwater river and incidental to that; we found several marine areas that had lost substantial natural ecosystem habitat. Well, we also worked to restore that ecosystem. So here we've got a remediation being carried out via dredging and then ecosystem restoration being done in addition. It shows that we can bring the multidiscipline capability of the Corps' environment team to bear on a problem at hand, even when that's not the problem we set out to solve."

Ecosystem restoration is a widespread mission with work under way from Florida to Washington. It's also a mission that requires the Corps to take a more holistic approach to solving the complex problems this work involves.

"What we're finding today obviously is that these problems have to be approached and viewed in a more holistic way, as a system of systems. I think as a society we've learned there's great environmental value and quality-of-life value having healthy ecosystems in and around where we work, live, and recreate."

Balocki views such holistic problem-solving as a practical method to help achieve sustainability. He pointed out that a truly sustainable solution would mean restoring the natural state of an area or system as the Corps is trying to do with the Everglades, but that's not possible in every instance. He also recognizes that USACE doesn't always have all of the answers for any given challenge and since his tenure as ECoP chief began in July 2009, he has continued to emphasize the need for the Corps to reach out to other organizations.

Outreach and forming partnerships provides a multiplier effect for USACE. It can greatly expand the knowledge base the agency has access to, bringing in competencies from quarters the Corps may never have worked with before and it can extend the Corps' limited resources. Because the agency depends on federal appropriations and therefore has limited funding, partnering with other environmentally focused organizations can yield broader, more creative and environmentally sound solutions to Corps projects.

"One of the interesting relationships that I've learned about since I've been here is the one we have with The Nature Conservancy," Balocki said. "Our two organizations have worked in partnership for more than a decade. The Corps has signed a number of national and regional memorandums of agreement with The Nature Conservancy and other conservation organizations that enable us to leverage the strengths to find sustainable water resources solutions."

Working in harmony with other federal and state agencies also is paramount. Balocki explained that ecosystem restoration efforts in the Everglades and the Chesapeake Bay, in particular, require that the Corps continue to embrace collaboration.

"The Everglades is a problem that has been studied for many years so we have a pretty robust program to restore that ecosystem on

U.S. Army photo, Patrick Bloodgood

a schedule, depending on appropriations. The challenge on the Chesapeake Bay is newer in terms of the level of planning we have done collectively, because the Bay restoration effort is headed by the EPA and includes many agencies, and each of the agencies has a role, a level of responsibility.

"For example, the EPA has a role in controlling and mitigating agricultural runoff and the Navy is actually the DoD [Department of Defense] lead on the effort. They have responsibility for controlling and mitigating the stormwater runoff from our 62 military installations in the Chesapeake Bay watershed, mostly Navy. The Corps of Engineers has its own role but we're collectively not far enough along in planning to present a program to Congress and ask them to authorize and fund discreet projects. But we're forming a good strategic plan with good partners and good agreements. We just need to flesh out a few more details. I'm confident that the overall effort won't take as long as it has to implement solutions in the Everglades. There's more political will but keep in mind we are dealing with several states which touch the Bay and they have rights in this process too. It will be more challenging from that perspective."

Stormwater runoff can be a problem but in the right circumstances, the water that falls from the heavens can also be put to good use. The idea of working with nature when possible instead of consistently bending it to human will is at the root of sustainability and has implications for addressing climate change. As Balocki observed, sustainable, environmentally sound solutions can be simple.

"In some of our recreation facilities out West, the Sacramento District is including photovoltaic solar capability for electricity. It pulls the facilities off the grid and enables us to reduce the Co2 [carbon dioxide] we release into the atmosphere. More importantly, it represents a fundamental shift in the way we acquire and maintain the facilities we operate and how we think about designing them," Balocki said.

"Another interesting example is the huge hospital at Fort Belvoir [Va.] where, incorporated into the design of the facility, is the rain-collection design of its roof. I was talking with a guy I was in a training class with in Australia some time ago and he asked if our buildings had rain barrels. I said, 'What do you mean?' He said, 'We collect rainwater from our roofs in these barrels and then use it to irrigate our lawns and gardens.' I said, 'No, we don't.' He thought that was as dumb as a box of rocks and I had to agree with him. What we're doing at Fort Belvoir is exactly that. I don't know that it's as simple as a barrel, but we are collecting rainwater from the roof. It's an interestingly shaped roof, a concave shape. As you might imagine, it comprises several acres of space that we can reclaim the rainwater from to irrigate the landscape."

Workers install solar electricity panels at the U.S. Army Corps of Engineers Sacramento District's Stanislaus River Park Headquarters office with funds provided by the American Recovery and Reinvestment Act.

Photo courtesy of the U.S. Army Corps of Engineers, Todd Plain

Design and construction decisions as fundamental as the site a building will occupy can make a vast difference as well. The LEED® (Leadership in Energy and Environmental Design) Certification is administered by the U.S. Green Building Council. It accounts for design factors that when included in the design of structures, combine to make them environmentally and energy friendly – everything from furnishings and wall fittings to floors and siding. The greener a building is, the higher LEED Certification it achieves (Bronze, Silver, Gold, or Platinum).

"Siting decisions are helping us as well," Balocki said. "We're specifying LEED Silver in every military construction project that we build for the Army and the Air Force. We just cut the ribbon on a division headquarters at Fort Carson [Colo.], the 4th Infantry Division Headquarters, a LEED Gold facility. We're constructing a LEED Platinum facility now at Fort Bragg [N.C.], an emergency services building. We've still got a lot to do ourselves and a lot of education to do with our contractors. But we're into this in a big way."

The ECoP's efforts are leading the Corps toward sustainability not as an end but as a concept applied at the beginning of every project, an idea for the long term, Balocki said.

"For me, you have to start with sustainability in mind when you lay out the concept for any project. People understand the notion of putting something back into the environment when you take resources

An exterior view of the Oaks Pavilion (main hospital) under construction at the Fort Belvoir Community Hospital project site in Virginia, July 26, 2010. Its design includes a concave-shaped roof to collect rainwater, which can be used for irrigating the grounds around the facility.

Photo courtesy of the U.S. Army Corps of Engineers, Marc Barnes

from it, including economic and social resources. But we need to have our people taking a long view of this. It's the idea that if you're going to use water for instance, you're going to reuse it and reuse it so that you're not simply taking a resource and depleting it. Sustainability has to be a part of every project we undertake from the start, as we conceive them."

Balocki has a broad view of USACE, having been a part of the organization on several occasions during his 28-year Army career. "This is the fourth time I've served in USACE. And I've been a customer of the Corps on several occasions, most recently as a member of the Army staff. So I have both views of what it takes to be successful."

People, he contends, make the greatest difference. Balocki views the current era of Corps operations as an interesting one given that the agency has committed to hiring aggressively, bringing in a new generation of employees with fresh ideas. He thinks the idea of treading lightly will be second nature to them.

"This sustainable way of thinking is being taught to the young men and women coming out of college and much as we take for granted now that facilities will have ADA [Americans with Disabilities Act] compliance for example, at some point in the future, we won't even have to have this much of this environmental discussion, because the new generation will bring with them the concept of sustainability as a part of what we consider as a baseline of acceptable design."

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Corps Balance: Making Sustainability Systemic

By Eric Tegler

Through most of its history, the U.S. Army Corps of Engineers (USACE) operated with one goal in mind: executing the mission, whatever it might be. But for years now, the Corps has recognized that simply building a piece of infrastructure or altering a waterway to suit a singular purpose is not sufficient. Because of its special status as steward and manager of environmentally critical national land and water infrastructure, USACE must thoughtfully weigh the positives and negatives of accomplishing any mission before pressing ahead. Today and in the future, the Corps will measure mission success by overall environmental impact as much as by the achievement of a particular end.

This philosophy is called "sustainability" and USACE has crafted a document to guide and encourage this critical new Corps balance. The Strategic Sustainability Performance Plan (SSPP) will change the way the Corps approaches new projects and manages its existing infrastructure and mission activities.

The SSPP is a response to the Obama administration's October 2009 Executive Order (EO) 13514: Federal Leadership in Environmental, Energy, and Economic Performance, which requires all federal agencies to meet expanded energy reduction and environmental performance criteria. Reviewed by the Council on Environmental Quality and the Office of Management and Budget, each agency's SSPP, including the Corps, will be subsequently updated and reviewed annually.

The Corps' SSPP sets out 10 sustainability goals, many of which include sub-goals and targets. All are compatible with the federal sustainability requirements enumerated in EO 13514. While the SSPP, unveiled on Sept. 9, 2010, lays out specific goals and performance targets, it also is intended to foster an institutionalized mentality of sustainability within the Corps.

"The goal is to manage the Corps missions in a way that is consistently sensitive to environmental and sustainability requirements," John Coho, USACE's senior adviser for environmental compliance, said. "Whatever missions the Corps [are] engaged in must be planned and executed in ways that are inherently sustainable."

Coho is quick to point out that the Corps has embraced the sustainability ethic for some time. The Corps formally institutionalized sustainability in 2002 with the adoption of its "Environmental Operating Principles" (EOP). Consistent with the Army's "Triple Bottom Line Plus: Mission Environment, and Community, plus economic benefit, USACE's EOP made sustainability its first principle. It emphasized that "an environment maintained in a healthy, diverse and sustainable condition is necessary to support life."

USACE Commanding General Lt. Gen. Robert L. Van Antwerp is fully committed to institutionalizing sustainability. In an April 2010 Earth Day blog post ("The Nation's Environmental Engineer"), he discussed the Corps's environmental policy, recognizing that no other federal agency is addressing environmental issues of the same scope and magnitude as the Corps. Van Antwerp also acknowledged USACE's legacy, citing Lt. Gen. Henry J. Hatch, the 48th chief of engineers, who, in the early 1990s, laid out a vision for taking care of the environment, which neatly sums up the sustainability ideal the Corps is currently embracing.

"Environmental ethics and values must be more than an overlay," Hatch affirmed. "They must be a bone-deep part of our way of doing business."

Similarly, USACE's Campaign Plan, rolled out in late 2008, recognized sustainability as one of its four main goals. Goal 3 – delivering effective, resilient, sustainable solutions – joins overall readiness, enhanced water resources management, and quality recruiting as a pillar of the Corps' 21st century vision. Thus, the SSPP actually builds on more than a decade's worth of increasing emphasis on a culture of sustainability.

While the SSPP is a policy statement, its performance targets will challenge USACE across the board, requiring personnel to apply sustainable logic in every aspect of their mission activities to achieve the stated requirements.

"The real meat of [the SSPP]," Sustainability Program Manager Antonia Giardina said, "is in the second section, which covers goals, targets, federal requirements, and performance. Goal 1 is reducing greenhouse gases, primarily through a reduction in energy and petroleum consumption and increased use of alternative energy sources. There is a lot rolled into this goal and it has the most emphasis from the administration."

Specifically, the SSPP and federal requirements call for a 23 percent reduction in greenhouse gas emissions, an undertaking that Coho explained will require focus on "facility energy consumption, non-tactical vehicle fleet petroleum consumption, and floating plant petroleum energy consumption. Looking Corps-wide, most of that consumption falls on the Civil Works side of the house.

Juan Marin Delgadillo, a carpenter with TRICON Construction, cuts a metal track for installation in a bulkhead wall while working at the Department of Defense Office Complex (Base Realignment and Closure 133) project site at Mark Center, Aug. 30, 2010. The Corps is aiming to qualify for LEED Gold certification with the construction of the Mark Center, a facility for 6,400 personnel. USACE's environmental strategies are expected to yield significant water savings and the center's two principal office towers are forecast to use 30 percent less energy than comparable office buildings.

Photo courtesy of the U.S. Army Corps of Engineers, Marc Barnes

Civil Works will have the challenge of figuring out, over the next 10 years, how to make those reductions happen.

"One of our key thoughts on implementing this," Giardina added, "is that we don't want to [figuratively] peanut butter spread a 23 percent reduction in greenhouse gases across every division and district. We want to strategically target where we might get the biggest bang for the buck in terms of benefit to the Corps and performance toward the goal."

And there are other targets. USACE will strive to reduce its potable water consumption by 26 percent by 2020. By 2015, the Corps expects to have reduced its overall facility energy consumption by 30 percent. Propelling it to that goal will be a greater utilization of renewable energy sources, which, as soon as 2013, are to provide 7.5 percent of the agency's electricity.

The Corps has already made progress toward these and other sustainability goals whether by building green, cleaning up environmental damage at formerly used and active military sites, or by leveraging alternative energy sources such as hydro and solar power.

Among its wide range of responsibilities, USACE is the Army's construction agent. To square its construction tasking with the goals set forth in the SSPP, the Corps has adopted standards set by the U.S. Green Building Council (USBGC) for sustainable design and development. USBGC Leadership in Energy and Environmental Design (LEED) standards have become the building industry's green benchmark, applied to all types of building projects. LEED® Silver certification is the baseline standard the Corps is using for military construction and is in the process of adopting for Civil Works' facilities.

Solar panels power more than 1,200 street lights, providing illumination for more than 35 kilometers of roadway in and around Fallujah, Iraq.

Photo courtesy of the U.S. Army Corps of Engineers

The Corps is supporting its customers' requirements by building to LEED standards on construction projects including the 4th Infantry, 1st Brigade and Battalion Headquarters building at Fort Carson, Colo. With guidance from Omaha District USACE personnel, the design team and contractors employed native plants, natural daylight, an interior courtyard, and reflective, energy-efficient, blast-resistant windows to create a sustainable building that earned LEED Gold certification.

The Corps is likewise aiming to qualify for LEED Gold certification with the construction of the Alexandria, Va., Mark Center, a new office facility for 6,400 Defense Department personnel that is part of the Army's Fort Belvoir Base Realignment and Closure Act relocation. Environmentally sustainable construction and site development strategies are expected to yield significant water savings and the center's two principal office towers are forecast to use 30 percent less energy than comparable office buildings.

Green remediation is being executed in a sustainable fashion, for example, at a former ordnance plant in Mead, Neb. A groundwater recirculation well there (which treats groundwater and soil contaminated with hydrocarbons) is receiving approximately 30 percent of the energy its pump requires from a wind-powered turbine. Other remediation efforts have earned the Corps recognition and awards.

For its work on Tanaga and Ogliuga Islands in the Aleutians, the Alaska District's Formerly Used Defense Sites (FUDS) Program received the highest honor in the field of environmental science and sustainability conferred by the Army, the Secretary of the Army's Award for Environmental Restoration. The FUDS team used innovative approaches and technology to clean environmental contaminants, unexploded ordnance, and buried munitions on the remote islands, 1,350 miles southwest of Anchorage, Alaska. The team relied on private-contractor support, bolstering economic sustainability by working with 17 contractors, 14 of which were small businesses. The team saved more than $5.2 million in mobilization and demobilization costs and its work is estimated to yield a potential $5 million to $15 million savings in future Aleutian Islands remediation costs.

Solar-powered lighting is part of the Corps' infrastructure improvement projects in Iraq where the sun is always blazing. USACE's Gulf Region Division is helping the Iraqi government install approximately 1,500 solar-powered streetlights in the cities of Fallujah, Basra, Kharma, Saqlawiyah, and Baghdad. The streetlights have an 80-watt solar panel, a lead-acid battery, and an 18-watt fluorescent light bulb. For urban areas that are often without or low on electric power, the solar streetlights are an elegant, sustainable solution. Emissions-friendly, they also do not rely on any remote source of power. Solar panels are in use in Corps projects in parks and recreation areas in the Corps' Sacramento and Pittsburgh Districts as well.

Having the SSPP in place will encourage, facilitate, and normalize sustainable projects like those listed above and lead to a true system of sustainability, Giardina said.

"It's just a matter of continuous improvement. [The SSPP] is a big step toward institutionalizing sustainability within the Corps," she said.

Water resource management will be a key area to which a renewed sustainability approach will apply. As Coho explained,

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Photo courtesy of the U.S. Army Corps of Engineers' Sacramento District, Todd Plain

the interrelated nature of water systems and resources make coming up with a carefully considered management strategy absolutely vital.

"Very often you'll hear discussion about regionally based, systems-based management of water resources. One of the best examples is integrated watershed management. Each of the water resource management missions that we have has significant environmental impacts.

"Hydropower has a certain pool elevation that they want to maintain to generate the power to meet their customers' needs. Navigation needs a certain amount of water to effectively move commerce up and down rivers through locks. Recreation has [high public profile] resource issues. Endangered species considerations are another aspect. At times, we have to maintain a certain water level in a pool or release certain amounts of water and that requires an integrated management approach to our facilities to ensure that we're meeting requirements with limited water resources," he said.

Integrated water resource management has been a sustainability priority since 2002 when USACE commenced collaboration with The Nature Conservancy in the Sustainable Rivers Project (SRP). The SRP assesses ecosystem needs downstream of Corps projects, evaluating water management opportunities for potential operational changes or reallocations that enhance ecosystem values while improving primary project goals (water supply, hydropower, and flood risk). The SRP has now been broadened to eight river systems encompassing 36 federal reservoirs in 12 states. The quantification and implementation methodology it uses is similar to that being developed for the Corps' Environmental Management System (EMS).

USACE has been at work on EMS for some time. The concept, which emphasizes systematically identifying and controlling environmental aspects of a project, will actually become part of the Corps' SSPP. Coho likens the still-developing EMS to an engine that will propel USACE to achieving the sustainability objectives in the SSPP.

"The SSPP embeds that concept, the systematic management of the environmental aspects of our business whether that's military, civil, research and development, or any of the Corps missions. We want to manage the environmental aspects of those missions within an EMS framework."

To get a feel of how the SSPP might apply to a large-scale USACE program, Coho described the sustainability discipline the document would bring to the Chesapeake Bay Environmental Protection Program (CBEPP). This vast $53 million program provides design and/or construction assistance to non-federal interests in Maryland, Virginia, and Pennsylvania for environmental projects that support the Chesapeake Bay estuary.

At least one project has been established in each of the three states. Design and construction costs are shared, 75 percent

In USACE's Sacramento District, its New Hogan Lake Park Headquarters facility is operating a solar electricity system. New Hogan is one of nine Sacramento District park and dam operation offices to install solar systems, paid for with funds provided by the American Recovery and Reinvestment Act.

federal and 25 percent non-federal. The states are collaborating to select high-priority projects that meet multi-agency goals of restoring and protecting the Bay. That collaboration is important because of the size of the Chesapeake Bay watershed that includes numerous civil works and military facilities.

"Let's say we focus on the Civil Works' facilities within the watershed," Coho proposed. "We're looking at locks and dams, canals, and reservoirs that stretch well up into Pennsylvania, throughout the Baltimore and Norfolk Districts. We have to identify within our various missions what activities, products, or services impact the watershed. Once you've identified those, looking as broadly as flood control products in Pennsylvania and others, you have to identify what negative or positive environmental impact they may have on the watershed.

"For instance there are multiple aspects of sediment control, which may influence the Chesapeake. Because we have dams across major rivers throughout the watershed, we're automatically taking sediment out of the rivers and holding it behind our dams. There are positives and negatives to that. The more sediment you build up in a flood-control dam, the less storage capacity you have. On the other hand, we are contributing to a decrease in the sediment load, which gets into the Chesapeake," he said.

"That's an example of how one of our activities or products impacts the Chesapeake. We have to consider whether we have policies and programs in place to enhance the positive or to reduce the negative. Where we don't have programs in place or they're not functioning properly, we need to improve those programs and measure their effectiveness in achieving sustainable objectives. These need to be reviewed annually and the results communicated internally throughout the Corps and to external stakeholders who reside in the same watershed or have political or statutory interests. We try to align Corps' priorities for managing the watershed with the EPA [Environmental Protection Agency], the Chesapeake Bay Program Office, and concerned congressmen and senators. Its broad-looking systemic management of the environmental aspects of our business."

Such management is certainly the aim of the SSPP but meeting its stipulations will require the work and forethought of everyone in USACE, Coho said. There will have to be consistent open dialogue between headquarters and the districts.

"The folks at the grassroots level are going to make or break the Corps in terms of achieving these goals. They're the folks who are going to produce innovative ideas and they're going to have to implement those ideas. We have the broad strategy but the details have to be worked out at the field level," he said.

The Baltimore District's status as a major player in the CBEPP is giving it real-world experience as a leader in sustainable planning for the regional watershed management team. The fact that this team includes local, state, and other federal agency officials deepens that experience and reinforces the reality that sustainable planning requires the Corps' to consult and strategize with a variety of outside interests.

Inside, USACE will continue building a culture of sustainability by steadily communicating the message to its people.

"Over the years, we've been trying to get this idea embedded within our culture," said Candice Walters, a Corps public affairs specialist. "We want Corps personnel to consider the environmental consequences of their actions at the beginning of a project instead of dealing with those consequences as an afterthought. So we're sharing the information through all the command levels down to the districts, to all of our field personnel."

Will Mangano (left) and Jacob Sweet, USACE Alaska District, are operating the Ultra-Violet Optical Screening Tool (UVOST®) and Geoprobe™ drill rig on Tanaga Island in the Aleutians. The innovative UVOST field-screening technique allowed real-time identification of petroleum and confirmed clean areas as part of a U.S. Army Corps of Engineers environmental project. The district was the winner of the FY 2009 Secretary of the Army Award for Environmental Restoration (Team).

Photo courtesy of the U.S. Army Corps of Engineers, Alaska District, Scott Kendall

Sustainability will continue to be covered in articles in internal newsletters, internal blogs, through messages from the chief of engineers, on the Corps' Web sites, and feature articles appearing in outside media outlets. USACE will seek to grow a sustainability community of practice with an emphasis on an active flow of ideas between individuals and commands. As diverse and far flung an organization as it is, Walters said USACE should be a particularly fertile ground for sustainability ideas.

To "prime the pump" Giardina said the Corps is developing an awards program for sustainability, incentivizing the field to regularly submit ideas.

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Dam Safety

With a new dam safety regulation drafted and the National Risk Management Center up and running, USACE's Dam Safety Program is reaching new milestones.

By Craig Collins

For the past five years, the U.S. Army Corps of Engineers (USACE) put its portfolio of approximately 675 dams through the first level of rigor in its risk analysis methodology, Screening for Portfolio Risk Analysis (SPRA). This screening yielded a clear but basic understanding of where the greatest risks and priorities are located.

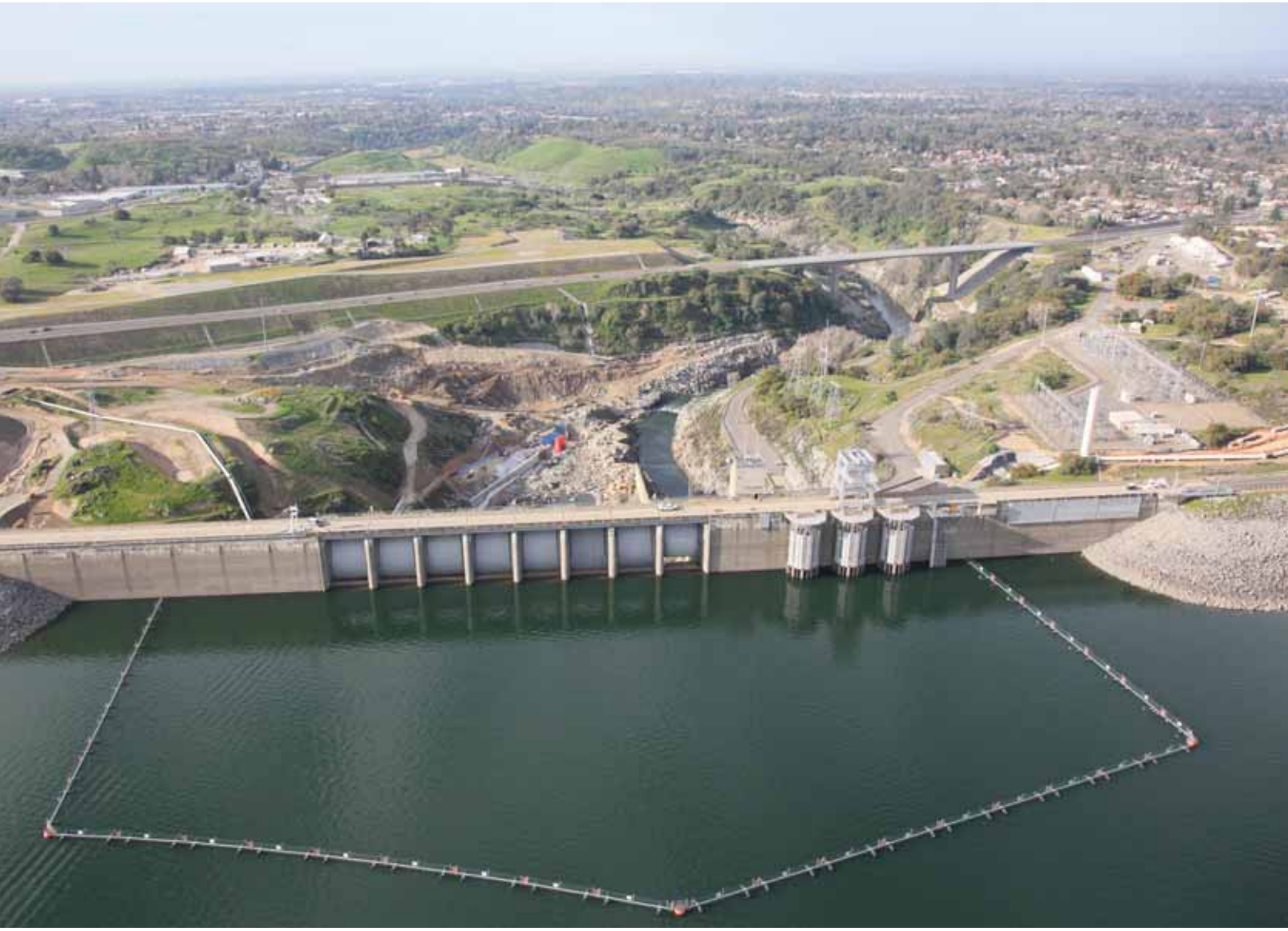
Now that SPRA is complete, USACE placed all of its dams into a dam safety action classification based upon project risk considerations, and its 12 highest-risk dams are either under construction or undergoing a modification report. USACE now moves further into its risk management process and portfolio investment plan, which includes routine and non-routine activities, and organizational and administrative improvements to the safety program.

Nearly 95 percent of the dams managed by USACE are more than 30 years old, and 52 percent have reached or exceeded the 50-year service lives for which they were designed. Because USACE is responsible for making sure its dams do not present unacceptable risks to the public, it underwent a transition to risk informed decision-making, which quantifies risk, or how three main elements of risk often combine in unexpected and illuminating ways: The likelihood that natural events will take place, the performance of the infrastructure during these events, and the consequences of failure – loss of life being of paramount concern. In this manner, risk allows USACE to peer into the tangle of project purposes, ecosystems, constrained budgets, the uncertainty of future events and current knowledge, past design decisions, and combinations of these factors and make sense of it all.

According to Eric Halpin, USACE's special assistant for Dam and Levee Safety, completing SPRA has allowed USACE to develop a Portfolio Investment Plan for more than 300 dams within the portfolio determined to be "actionable," or posing moderate to extremely high risks. "That plan was developed, and we've implemented it this past year," he said. "We have been investing about a half a billion dollars a year in dam safety modifications, essentially fixing the problems we find within the program. And what we've found out is that we have a substantial amount of dam safety modification work on the horizon, to the tune of about $26 billion right now. So this Portfolio Investment Plan has led us to a couple of other actions this year."

The Portfolio Investment Plan was developed by a new national organization established by USACE: the Risk Management Center (RMC), which became operational in November 2009. The RMC, said Halpin, has two primary offices – one in Denver, Colo., and another in Pittsburgh, Pa. – and continues to staff its organizational elements. The RMC will also play an important role in USACE's future engineering and construction efforts as a permanent centralized home for risk-assessment competency in USACE. It works closely with the Federal Bureau of Reclamation, the Federal Energy Regulatory Commission's Dam Safety Division, and various professional organizations such as the Association of State Dam Safety Officials, the U.S. Society of Dams, and the Association of Engineering Geologists.

"In support of that," Halpin said, "we've also stood up a Mapping, Modeling, and Consequence Production Center in Vicksburg, Miss., which essentially looks at the hydrologic modeling and the flood mapping that goes with that, and the estimation of consequences in loss of life and property damage that could occur from a dam failure. That's the data we use both in risk assessments



Looking down stream at Folsom Dam and Lake in Folsom, Calif. Granite Construction Company was awarded a $126 million contract in September by the U.S. Army Corps of Engineers (USACE) to build a new auxiliary spillway-control structure for Folsom Dam. USACE and California's Bureau of Reclamation, the dam's current owner and operator, will perform several upgrades to the dam and reduce the region's flood risk.

Photo courtesy of the U.S. Army Corps of Engineers, Michael Nevins

and in assessing critical infrastructure, protection programs, and in updating emergency action plans. So we've centralized that in Vicksburg, and it's a national effort that has already done about 200 mapping efforts."

Given the substantial workload indicated by USACE's screening-level analyses, the organization is now actively engaged in analyzing itself, as well, asking: How will it make dams safer for many decades in the future? USACE's National Technical Competency Team, formed in 2007 to evaluate the organization's future mission and workload, has selected dam safety to be the most urgent of its missions. "The portfolio investment plan, along with a critical review of our technical competencies, form the basis of our evaluation for how to best organize our agency approach to dam safety and to look at how we might better position ourselves to do dam safety work in the future. That's really the big look ahead: How we're going to design and construct all of these fixes."

To determine the nature of those fixes, USACE will have to go beyond initial screenings – an effort already under way for the most critical, high-risk dams in its portfolio. These higher-level analyses – the Issue Evaluation and Dam Safety Modification Studies – are poised to accelerate considerably in the coming year.

"We've started the process that will lead us to doing roughly 40 or 50 Issue Evaluation studies per year," Halpin said. "This past year, we've completed a number of Issue Evaluation studies, and those are informing the fiscal 2012 budget."

Halpin said the most significant event for the dam safety program to occur in the past year was the completion of a comprehensive dam safety regulation that will fully embrace and operationalize

Spill test at Chief Joseph Dam in 2009, on the Columbia River in Washington. Chief Joseph Dam is the second-largest hydropower-producing dam in the United States. It is the largest hydropower-producing dam operated by the U.S. Army Corps of Engineers. Alone it produces enough power to supply the Seattle metropolitan area.

Photo courtesy of the U.S. Army Corps of Engineers, Nola Leyde

USACE's new risk-informed approach. "We had a comprehensive dam safety regulation in place before we went to a program that was risk-informed," he said, "and most of the decision-making laid out in it was based on traditional and deterministic methods – we relied primarily on a district-centric decision process. The new process that incorporates risk in the regulation keeps the routine dam safety activities led at a district level, but for significant dam safety investments – for assessing and modifying dams – it essentially calls for a national-level approach, where decisions are made jointly among the districts, divisions, and headquarters. The biggest single change in the regulation is that our decisions are now risk-informed, and nationally and jointly decided." The regulation, which has already been used on USACE's 2010 Issue Evaluation and Modification studies, is scheduled to become final in late 2010.

Overall, the past year has been one of tremendous progress in USACE's Dam Safety Program, as many different elements finally made it out of the planning stages and began to achieve real momentum. "It's been a significant year for the Dam Safety Program," said Halpin, "mostly because we've really transitioned from developing and testing new organizational policies, procedures, and organizational elements to actually operationalizing. We've kind of gone into a production mode, if you will, with all the good ideas we've put in place over the last couple of years."

Levee Safety

By Craig Collins

U.S. Army Corps of Engineers photo by Chris Gray-Garcia

The U.S. Army Corps of Engineers (USACE) Levee Safety Program was created in the wake of hurricanes Katrina and Rita, whose consequences exposed a lack of consistency in the way levees were inspected and rated for safety. In the years since, USACE has developed new tools for better levee inspections and also focused efforts on communicating the risks associated with levees to the people who live and work in floodplains.

USACE Levee Safety Program covers about 14,500 miles of levees, including federally authorized levees, which USACE operates and maintains; USACE constructed (or authorized to be within program)/locally operated and maintained; and locally constructed/locally operated and maintained in USACE PL 84-99 Rehabilitation and Inspection Program.

One of the most labor-intensive tasks for the Levee Safety Program has been the compilation of a National Levee Database that may eventually provide a comprehensive view of the nation's levee systems, including attributes such as design, construction, operation, maintenance, repair, inspection results, and performance potential. According to Tammy Conforti, program manager of the Levee Safety Program, the compilation of data on USACE's approximately 14,500 miles of levees is nearly complete.

"When we first started thinking about and developing the National Levee Database, we did what we called an administrative survey, just to get a general idea of what we had out there," she said. "Once we got that general idea, we started sending out surveyors to districts in order to collect detailed information. So there's a set number of fields we're going to collect to input into the database: the number of pump stations, number of gates, what kind of gates they are, and the actual geo-reference position of the toe of the levee and the crest of the levee. That was a lot of detail. So we're now about 94 percent

OPPOSITE: A Portable Lightweight Ubiquitous Gasket (PLUG) device blocks a levee breach during a demonstration of USACE's and U.S. Department of Homeland Security's Rapid Repair of Levee Breaches Program (RRLB) technology at the U.S. Department of Agriculture's Hydraulic Engineering Research Unit. USACE's Engineer Research and Development Center designed the device to quickly and temporarily repair levee breaches, potentially helping flood-fighting agencies more effectively protect lives and property in a flood. ABOVE: Mike Dahlquist, a civil engineer with the U.S. Army Corps of Engineers St. Paul District, inspects a HESCO Bastion emergency levee recently built in Fargo, N.D. Since March 19, 2009, USACE has overseen the construction of dozens of miles of emergency levees in communities along the Red River of the North to help combat what turned out to be record-breaking spring flooding.

Photo courtesy of U.S. Army Corps of Engineers, Shannon Bauer

complete in collecting all those hundreds and hundreds of fields on each of the levees with USACE's program, and populating that into the National Levee Database."

Of course, not all the information about levees in the database will be made available to the public, Conforti said: "We're going to release that data in a staged fashion, meaning different levels of access among federal, state, local, and the public. We're working with the Department of Homeland Security to determine what fields we're able to release to the general public and what fields we'll able to release to stakeholders and others who will use the database."

Obtaining this kind of detailed information about the approximately 14,500 miles of levees under USACE's authority is challenging enough, but USACE's levee portfolio is a small fraction of the miles of concrete and earthen barriers that hold back water in the U.S. – the exact figure is unknown, but a standard estimate is about 100,000 additional miles. USACE, however, is forging ahead with a plan to collect information from the operators of levee systems outside USACE's authority with a voluntary Web-reporting tool designed by the Army's Cold Regions

Research and Engineering Laboratory in Hanover, N.H. For levees about which USACE is not officially authorized to collect data, the tool provides a portal through which other levee sponsors and operators – states and regional or local authorities, typically – can input relevant levee information into the database. Throughout much of the previous year, USACE has been developing user manuals and training videos for the launch of this tool.

USACE was able to accelerate its inspection program over the past year with $90 million in funds from the American Recovery and Reinvestment Act of 2009 (ARRA), which enabled it to begin the second, more comprehensive level of levee inspection, the periodic inspection, performed by teams of engineers who walk and study every inch of the levee. To date, USACE has issued 73 task orders to do about $72 million worth of periodic inspections. The use of engineering contractors from around the nation to conduct these inspections, Conforti said, reinforced the desire to ensure consistency throughout the program.

"So we developed a standardization workshop, which all inspection crews from the contractors had to attend," she said. Inspectors were trained in the use of USACE's tablet-computer inspection system, the process, and the preparation of a final report. USACE also recently stood up a national quality assurance team, to review a sample of periodic inspection reports for consistency with the program. Ultimately, ARRA funding will allow USACE to complete periodic inspections on about 60 percent of the federal levees in its portfolio.

The next step for levees that have been inspected, Conforti said, is to screen them to determine relative risk using USACE's Web-based Levee Screening Tool. "The output of the levee screening tool is going to be a relative risk index that will give us a ranking," she said, "so we'll be able to rank from higher risk to lower-risk levees. And it takes into account potential consequences behind the levee." Screening is under way in all of USACE's districts. Once the process is complete, individual safety classifications will be assigned to levees on a national level.

When levees in the program begin to be classified as high risk, Conforti said, the Levee Safety Program is looking at another potential phase of assessment. "If we have levees we've classified as high risk … we want to validate those concerns. We are beta-testing a process called an issue evaluation study, which goes into more detail on the probable failure mode analysis. That process is being beta-tested this year." Further study will also require further coordination with local levee sponsors – communicating the risk to stakeholders in a way that is understandable and actionable.

Future guidance in levee safety will come from a comprehensive engineering regulation (ER) for levee safety, a document that will pull together everything the program has done to date. "Right now we're implementing things," said Conforti. "We've been issuing various policy memoranda here and there on certain things, whether it's inspections or levee screenings. We're hoping to have one comprehensive consolidated ER, and we hope to have it wrapped up in the next year or two."

In the coming years, said Conforti, USACE Levee Safety Program is likely to achieve new levels of stakeholder involvement. "One of the things that we've recognized, with this engineering regulation, is that we can't do it just within the Corps."

Levee Safety Nationwide

Under the National Levee Safety Act of 2007, Congress authorized the formation of a 16-member committee on Levee Safety to develop recommendations for a National Levee Safety Program – one that will encompass not only the 14,500 miles of USACE program levees, but the 100,000 miles of levees total estimated to exist in the United States today.

In early 2009, the committee, consisting of representatives from USACE, the Federal Emergency Management Agency, state and local levee safety agencies, private industry, and tribes, issued draft recommendations for the establishment of this program, which were delivered to Congress by Eric Halpin, the vice chairman of the committee.

While the committee's report remains with the White House Office of Management and Budget, the committee has re-convened to further refine its recommendations, offering not only goals but a strategic implementation plan. The plan, said Halpin, consists of three main elements: a legislative framework for establishing the program; a stakeholder involvement plan that will set up public meetings in a number of locations around the country; and a finer definition of the costs and benefits of a National Levee Safety Program.

"Essentially," said Halpin, "the recommendations on the national levee safety program seek to extract the nation from the disaster-relief environment we're in today, where you can spend hundreds of billions of dollars after a large catastrophe. It's probably smarter to invest some fraction of that ahead of time to reduce those losses, and particularly to prevent the loss of life."

In the meantime, committee members have been asked to commit themselves to working all the way through its 2013 authorization, or until a permanent National Levee Safety Commission is established by Congress. Most committee members have agreed. "We see that as a commitment to the nation, to take the recommendations and develop an implementation plan as far as we can," Halpin said. "So there's been activity both within the administration and on Capitol Hill regarding a potential new Levee Safety Act and a future Levee Safety Commission. We'll just have to see where those activities go."

Flood Risk Management

Piece by piece, USACE is helping to lay the foundation for a unified national approach to managing flood risk.

By Craig Collins

Not long ago, flood risk management was considered to be the work of individual communities. Within the U.S. Army Corps of Engineers (USACE), decisions were made at the district or division level, and USACE, frequently tasked with overseeing the infrastructure that reduced the risk of flood damage, had little interaction with other organizations that had a stake in reducing flood risks – local or state agencies, or even federal counterparts such as the Federal Emergency Management Agency (FEMA).

In 2006, USACE established the National Flood Risk Management Program (NFRMP) and named Pete Rabbon its director, specifically for the purpose of creating a more collaborative culture, and to instill a view of flood risks that better reflected USACE's own shift in organizational emphasis from arbitrary geographical distinctions to functioning watersheds. USACE would reach out and coordinate its activities with local, state, and federal partners, and transition from a narrow focus (reducing flood damages to communities) to a broader emphasis on managing the risks of flooding within a given region.

In USACE's new expanded approach, flood risk management is a combination of managing floodwaters, typically with structures such as levees and dams, and managing a floodplain to reduce the consequences of flooding. An important goal of the NFRMP is to manage flood risk in a "life-cycle" framework within a watershed, integrating emergency management, dam and levee safety, and planning and operations.

Within the past year, the NFRMP has achieved several collaborative milestones. In October 2009, it issued guidance to its divisions and districts about how to engage with partners to reduce flood risk – how the program will operate, what its goals are, and the activities to be performed in order to meet those goals. Several collaborative programs are already under way, such as the California Levees Roundtable, a partnership of federal, state, and local agencies formed to comprehensively address levee safety issues in the Central Valley. In February 2010, the roundtable released a preliminary framework for improving the Central Valley's 1,600 miles of levees while protecting endangered species habitat in or near adjacent ecosystems. A comprehensive state plan is due in 2012.

Rabbon sees this type of interaction as a model for how flood risk management might work in other districts. "I'm envisioning another collaborative effort in the Seattle area, Puget Sound," he said. He also foresees one in North Dakota, around the closed-basin drainage of Devils Lake, where a state-built flood-control outlet has created a controversy that extends across the border into Canada. "They have state and interstate water-quality issues," Rabbon said. "They have flood issues, upstream and downstream. They've got agricultural issues and they actually have international water-quality issues. Somehow we need to bring all the parties together."

Since its inception, the NFRMP has focused on partners at the state level with its Silver Jackets Program. Silver Jackets teams are continuously operating, state-led interagency collaboratives that devise life-cycle flood risk reduction strategies. "The state takes the lead in terms of the issues that are important to them," Rabbon said. "We've got 18 teams assembled now and efforts are ongoing in another 27 states. It has taken off in terms of becoming a mechanism to support the state in addressing water management issues."

The program recently demonstrated that, for particularly flood-prone regions, a broader partnership may be appropriate. In the Midwest, after a 2008 flood season that wrought serious damage throughout the region, USACE and its associates began working on a partnership that was recently formally chartered within the Mississippi Valley Division as the Regional Flood Risk Management Team, the first of its kind in the nation. Consisting of the state governments of Illinois, Indiana, Iowa, Missouri, and Wisconsin, the team also includes USACE, FEMA, the Environmental Protection Agency, and the federal departments of Commerce, Agriculture, Interior, and Homeland Security. "Now we can start looking at the long-term vision for that region," said Rabbon. "What kind of flood risk reduction they

Volunteers from Americorps assist personnel from the Iowa Department of Natural Resources to fill U.S. Army Corps of Engineers-supplied sandbags at the Rathbun Lake Hatchery, July 22, 2010. The area, in south-central Iowa, was preparing for a spillway discharge. USACE dam safety and flood-fight experts, as well as local, state, and federal agency representatives also responded.

FEMA photo by Jace Anderson

want and how they're going to get there – not just through state or federal construction programs, but through different activities such as emergency management, planning, preparation, [and] mitigation."

Meanwhile, the NFRMP continues to solidify partnerships at the national level, providing clear leadership for flood risk management. In June 2010, it hosted its first-ever national workshop, USACE Flood Risk Management Program Workshop in St. Paul, Minn., hosting stakeholders at the federal, state, and local levels to come together and discuss and learn about flood risk management issues.

Probably the most significant event of the past year for the NFRMP, according to Rabbon, was the establishment of the Federal Interagency Floodplain Management Task Force, a leadership-level body, co-chaired by the FEMA administrator and the assistant secretary of the Army for civil works, of 12 federal agencies with a stake in flood risk management. The Task Force recently completed a draft five-year work plan, Rabbon said. "We believe this federal work plan is extremely important because it brings together the mission of the 12 agencies into a single plan. What is important from a flood risk management perspective to [the U.S] Fish and Wildlife Service, or the U.S. Geological Survey, or the Corps of Engineers, or FEMA will be different because of our different missions."

For the future, Rabbon said, "We want to better combine both coastal and riverine issues, to bring those programs within flood risk management. We also want to quantify flood risk both regionally and nationwide, and to identify what federal policies are working and not working, to help reduce risk nationwide."

The NFRMP is so eager to learn and share knowledge about managing flood risks on a national level, Rabbon said, that USACE will be hosting, in late 2010, its first international workshop on the issue, hosting participants from the United Kingdom, the Netherlands, Japan, and possibly China. In the meantime, the program continues to combine the expertise of its partners, looking ahead to a truly national, unified approach to flood risk management in the United States.

The Protection and Permission Mission

USACE's Regulatory Program protects the nation's aquatic resources and facilitates responsible economic development.

By Jan Tegler

Meg Gaffney-Smith and the 1,300 U.S. Army Corps of Engineers (USACE) regulators she oversees nationwide as the USACE Regulatory Program chief have a tough job on their hands. Every day, in every district across the nation, they perform a balancing act, protecting America's navigable rivers, streams, and wetlands while simultaneously allowing, often with conditions, reasonable economic development in and around these resources. They are stewards of the nation's aquatic ecosystem and arbiters for public and private interests, both environmental and economic.

Working under the authorities of the Clean Water Act and the Rivers and Harbors Act, USACE regulators evaluate the environmental impacts of proposed development projects that involve work or a discharge of dredged material into waters of the United States and U.S. territories. USACE regulators weigh the benefits and detriments of any proposal, taking into account the views of federal, tribal, state, and local agencies, interest groups, and the general public. They are communicators, facilitators, and frequently, diplomats.

Decision-making on the diversity of project proposals evaluated each year, and the required compensatory mitigation for unavoidable impacts to aquatic resources, is driven by a watershed approach. Why? Because current scientific thinking is that doing what is best for a watershed is sound ecologically, and cost effective. USACE collaborates with local, state, tribal, and federal agencies to gather the best available data and make informed decisions based on the needs within an affected watershed.

Once all relevant factors have been considered, USACE may grant or deny permission for projects to proceed, deciding whether to issue a permit for activities as diverse as construction and dredging, commercial and residential development, ecosystem restoration, navigation projects, transportation projects, and energy projects. In short, the primary task of the USACE Regulatory Program is the protection and permission mission. It's an undertaking with a scope best-understood numerically.

Each year, USACE regulators process between 60,000 and 80,000 permit applications, running the gamut from people applying for minor discharges under the general permit and nationwide permitting programs to applications that involve more complex projects, requiring public notice and processing through an individual permit review.

"One of our mantras is, 'We're neither a project proponent nor opponent,'" said Gaffney-Smith. "Our responsibility is to be fair and to communicate the rationale behind our decisions. That can be pretty tough especially when you're looking at energy projects or proposals coming into a community that will support the tax base. Or maybe there's a small land owner's proposal to construct a crossing or a house in or near wetlands. One of the most important things we can do is make sure we communicate early and often so that people understand the importance of protecting a resource while allowing development.

"It's a balancing act," she continued. "We don't authorize every project. We first consider whether or not proposed impacts to these valuable resources can be avoided and minimized, then we consider the unavoidable environmental impacts of a project, evaluate the project to ensure compliance with Army regulations, the Clean Water Act guidelines, and to make sure that it is not contrary to the public interest. When we issue or deny permits, we make some people happy and others angry. That's part of the job."

In an effort to make the permitting process more efficient and user-friendly, USACE has significantly streamlined application forms and the requirements for permitting. Currently, general permits that the program employs to authorize minor activities are available nationwide, allowing decisions to be made in less than 60 days. Decisions on individual permits for more complex project proposals that carry a greater amount of impact to the aquatic resources take longer to process.

According to Gaffney-Smith, some applications involving complex energy, water supply, commercial,

USACE's Regulatory Program protects waters of the United States, including navigable waters and federally delineated wetlands, like this one in central Florida.

residential, or industrial development can take as much as a year or longer to fully evaluate and make informed and balanced decisions. Nevertheless, USACE has made substantial improvements in communicating to the public what is required to initiate the permit process and navigate the evaluation.

"We've changed our approach to public interaction," she said. "We used to take a lot of phone calls to answer questions. Today we use a tool that's available on the Internet that will allow people to access what we refer to as an avatar. It walks the public through the application process, using our individual standard permit application form. It highlights the various requirements and describes the information required. We launched the avatar in many of our districts in the Mississippi Valley Division and South Atlantic Division. It's also on the USACE Headquarters Web page."

While this new tool requires less manpower to aid permit applicants, the process of reviewing applications is still handled by individual project managers. Assigned to various geographic areas (typically several counties in a watershed), project managers build relationships with local- and state-planning entities and regulators in that area. This allows interaction with local regulators and planners early on when they're developing land-use plans and are beginning to identify what might be critical areas to avoid or areas that have high-value aquatic resources. Multiple project managers may be assigned to more complex projects.

"If it's a very large or complex project that requires a site visit to meet with the applicant to learn about what they're proposing and meet with other federal and state agencies, we may send several regulators so that we can walk the site," Gaffney-Smith said. "That way we verify the scope of federal jurisdiction and have an understanding of the resources present. This process usually results in a written jurisdictional determination so that applicants can begin to estimate the size of unavoidable impacts. We often talk with applicants about the importance of the resources and the process and regulations we apply in our evaluations. It helps when they understand why we do what we do. If there are areas of expertise that our regulators don't have, for example, if we need an engineer to look at a design or to run some models to ensure a proposed project won't create other problems upstream or downstream, we reach out and bring in the needed technical expertise into our evaluation process. We have a lot of those technical experts in our other USACE organizations at the district level."

Regulators cooperate closely with applicants on permits in what amounts to a three-step or "triangle" process. Their first concern is to work with applicants to avoid impacts to aquatic resources. The second step is minimizing the impact to resources. Lastly, if those effects cannot be minimized, effort is made to mitigate for the impacts.

"We require applicants to demonstrate that they've avoided or minimized impacts to resources," said Gaffney-Smith. "If they can't avoid or minimize the effects, then we require compensatory mitigation."

That gives applicants options. A private land owner might perform compensatory mitigation by restoring a wetland or restoring a stream on their property. Or a permitee might opt to make a contribution to a program administered by a non-governmental organization, such as The Nature Conservancy, through an in-lieu fee program. In this case, The Nature Conservancy, or other entity, other than the applicant, would

Photo courtesy of the U.S. Army Corps of Engineer

identify and construct a project that would compensate for authorized impacts and contribute to the overall health of a watershed. An applicant can also elect to purchase credits from an approved mitigation bank strategically located within a watershed to improve water quality and the functions of the aquatic resources USACE strives to protect.

In the 2009 edition of this publication, Gaffney-Smith wrote about the issue of jurisdictional determinations (JDs). Each year, USACE regulators are called on to make thousands of determinations about which waters fall under USACE jurisdiction as defined by the Clean Water Act. Supreme Court rulings on JD cases over the last decade have complicated the determination process and in 2010 the challenge of identifying the jurisdictional status of waters on a given property is still time-consuming.

"It comes up on a daily basis at the district level," Gaffney-Smith said. "Every permit decision also carries with it a jurisdictional determination. Clarifying the extent of jurisdiction and understanding what we regulate is the first step in the process. One of the things we continue to rely on is the use of preliminary JDs where land owners can make a conscious decision to set aside the question of jurisdiction given the uncertainty brought about by past Supreme Court decisions. We're continuing to express support for legislation and giving thought to the potential for future guidance with respect to the Clean Water Act jurisdiction in the absence of legislation."

Compliance remains a vital part of the regulatory mission as well, ensuring that permittees take the actions needed to protect water resources as stipulated by their permits. As Gaffney-Smith observed, the Regulatory Program must have a presence along with other enforcement agencies to make sure that it's not easier to break the law than it is to get through the permit process itself.

"Often we work with our state partners when there's an issue involving an unauthorized activity or alleged unauthorized activity. Frequently, people discharge fill or construct something without knowing there was any rule or requirement in place to follow. In cases where there's not a flagrant violation, we work with that person to either restore the area or process an application after the fact to make sure their project complies. In the case of flagrant violators, we'll often refer them to the Environmental Protection Agency. They have greater authority for enforcement. We'll help the Environmental Protection Agency with the field work and investigation. If you don't have a strong compliance and enforcement program, then you'll have a weak permit program."

A USACE inspector from Wilmington District's Regulatory Office, Onslow County, N.C., discusses details about the Corps' policies on a permit site with applicants.

Gaffney-Smith is excited with the program's advances from 2009 through 2010. She cites progress on the environmental review of surface coal mining, a mining activity that typically results in discharge material being placed in mountain streams or wetlands and therefore falls under the Regulatory Program; disaster response to the April 2010 Gulf oil spill; and the efficiencies gained from the nationwide permitting process. In 2009, the Regulatory Program also received $25 million in American Recovery and Reinvestment Act funds, which resulted in the hiring of additional temporary staff and greater latitude in addressing activities related to compliance with watershed plans and aquatic resource inventories.

"The past year has been one of incredible accomplishments and challenges," Gaffney-Smith said. "We are currently working on the development of the nationwide permit program, which is to be reissued in 2012. Eighty percent or more of the actions we take are through the nationwide permit program and affect a huge part of the nation's economy. We have strengthened our approach for evaluating surface coal mining. We did so by suspending the use of a nationwide permit covering surface coal mining activities in the Appalachian region and now requiring applicants to use an individual permit for these kinds of activities. And we've been instrumental in working with the U.S. Coast Guard in responding to the challenges associated with the Gulf oil spill."

In addition, USACE is continuing to develop scientific tools to aid in making sound permitting decisions, including technical documents like the regional supplements to the *Wetland Delineation* manual and a recently published guidebook for ephemeral and intermittent streams in Appalachia. The Corps is getting ready to publish for public comment the National Wetland Plant List to improve the science behind the vegetation parameter of the manuals. USACE is putting the final touches on a cumulative impact strategy document and the development of an analytical tool to help regulators with their decisions. These programmatic initiatives are based on sound science and the analytical tools, which will allow the Army Corps of Engineers to continue to protect the nation's aquatic resources.

Photo courtesy of the U.S. Army Corps of Engineers, Bud Davis

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Corps Recreation: Opportunities and Activites to Engage

Goals of the U.S. Army Corps of Engineers' recreation program are to provide safe and enjoyable recreation spaces, get more Americans outdoors, and gain momentum as partnerships flourish.

By Craig Collins

For years now, the U.S. Army Corps of Engineers (USACE) has been urging Americans – 80 percent of whom live in cities or suburbs – to take advantage of the outdoor recreational opportunities available to them at USACE's 422 lake and river projects in 43 states. Many Americans are unaware the Corps is the nation's largest federal provider of outdoor recreation: 370 million visits a year to Corps projects, 90 percent of which are within 50 miles of a major metropolitan area. In all, USACE manages nearly 12 million acres of public lands and waters at its project sites. This number includes more than 55,000 miles of shoreline, 6,700 miles of trails, almost 94,000 campsites, and more than 3,500 boat ramps.

The Corps has always sought out public and private partners to help get the word out about the wealth and variety of outdoor recreation activities available at its projects. In the spring of 2010, its efforts received a boost when President Barack Obama signed a presidential memorandum establishing the 21st Century Strategy for America's Great Outdoors. "Today … we are losing touch with too many of the places and proud traditions that have helped to make America special," he wrote. To reverse this slide, the president said, "The nation's largest land manager, the federal government, must reach out to engage with partners at the local level – farmers, ranchers, community park groups, conservation societies, sportsmen, local agencies, and other stakeholders – to develop innovative programs to develop a conservation agenda for the 21st century." Within these partnerships, the president wrote, the people who care about America's Great Outdoors will "identify the places that mean the most to Americans, and leverage the support of the federal government to help these community-driven efforts to succeed."

What the USACE chief of natural resources, Mary Coulombe, finds most exciting about the new initiative is that it places the federal government in the role of listener. The bottom-up effort is designed to be driven by local communities. "The lead federal agencies – USACE and several others – are going out and asking communities and local groups and states and private organizations: 'How can the federal government help you achieve your goals for conservation and getting people outdoors?'" she said. In a number of listening sessions around the country, USACE and its partners in federal land management have been getting an earful.

"We're hearing over and over and over again," Coulombe said, "that there is a really strong interest in creating and maintaining places for outdoor recreation that are accessible, particularly to people in urban areas, and that provide a diversity of outdoor recreational opportunities." Several sessions devoted specifically to youth have been particularly revealing, she said: "It seems many urban kids are not even aware of where they can go outdoors."

For USACE, the stakes couldn't be higher in this new federal initiative, whose goals intersect with those of its recreation program. Ultimately, when the listening sessions result in a strategy, USACE intends to integrate the federal objectives into its own long-term strategy, the National Recreation Road Map distributed by USACE Headquarters in 2009.

"In 2008," explained Coulombe, "we were confronted with the problem of not having enough money to keep all our recreation areas operating at their current capacity, and possibly even looking at closures of some of our areas. That was a big wake-up call." USACE, acknowledging that its programs were unsustainable given unpredictable trends in appropriations, launched an investigation into potential program elements – partnerships, visitor reporting, communications, shoreline management, staffing and labor analysis, and others – that could help it to develop a long-term strategy for the agency's civil recreation future. While the plan is still under development, USACE estimates that some elements of it will be available in 2011 and used to help develop the fiscal year 2013 budget.

No matter what happens with the federal budget, USACE will continue to foster the partnerships that have provided it with far more resources for managing lakes and recreation sites than the agency could have managed on its own. After forming a "handshake partnership" with USACE in 2006, for example, the Lake Ouachita Citizens Focus Committee – a non-profit dedicated to enhancing the management of one of Arkansas' most beloved recreational lakes – took its $10,000 in seed money and leveraged

more than $1 million in grants and donations from the public and private sectors – funds that have gone to the development of the Lake Ouachita Vista Trail (LOViT), a 20-mile stretch that winds among the mountains and coves near the Shangri-La Resort on the lake's south shore.

Likewise, the Friends of W. Kerr Scott Reservoir, an organization that supports the Corps' lake in northwest North Carolina, has leveraged its partnership with the Corps into several million dollars in enhancements and improvements, including trails, waterfowl enhancement programs, community events, and even the construction of the Forest Edge Community Amphitheater, a 900-seat facility, outfitted with a complete professional sound and lighting system, that hosts outdoor concerts, theater productions, festivals, reunions, corporate functions, and arts and environmental education and training.

"When these outside groups get really involved and interested in a particular lake," said Coulombe, "it's amazing what can happen. And that's probably one of the ways we're going to have to try to cope with our future budget situations – to interest more involvement from stakeholders in the management of our lakes."

With the national movement to enjoy the Great Outdoors, USACE, as the largest land manager, offers a wide range of activities from bike and equestrian trails to camping and golfing to boating and hiking. Above, these two youths enjoy a canoe ride while adhering to safe water practices.

Boating Safety: Studying a New Life Jacket Policy

America's Great Outdoors, a new federal initiative to spark public involvement in outdoor recreation and the conservation of public lands, has already produced many public listening sessions across the nation. Among many participants from urban areas, said Mary Coulombe, the USACE chief of natural resources, a primary concern about outdoor recreation has been the safety of water-based recreation. And rightly so: For example, at four USACE lakes in northern Mississippi, there have been 326 water-related fatalities since 1940.

Noting that more than 90 percent of those who drown during recreational activities on USACE waters were not wearing a life jacket at the time, the Corps, prior to the summer season of 2009, began a pilot project on these four north Mississippi lakes: Arkabutla, Sardis, Enid, and Grenada. At these lakes, Coast Guard-approved life jackets were made mandatory for all children under 16 years of age; anyone being pulled by a boat (i.e., tubers or skiers); anyone in a boat smaller than 16 feet in length; anyone in a boat between 16 and 26 feet long while under main engine power (i.e., not using a trolling motor); and anyone swimming outside a designated beach area.

The objective of the new regulation, explained Coulombe, is to save lives, not write tickets. The idea is that once people become accustomed to wearing life jackets; they will realize that a life jacket is no obstacle to fun in the water. "During the first year of policy implementation, they were able to elevate the wear rates without writing one citation," she said. "The policy gave us new opportunities to educate the public about the value of life jackets."

The final results of the three-year study will be available in 2012, but early indications are that the new policy is a success. Seventy-eight percent of the boaters at these four lakes are wearing their life jackets – a huge improvement over the 8 percent voluntary wear rate nationally.

Photo courtesy of the U.S. Army Corps of Engineers

Goal 3: Military Programs Overview

By J.R. Wilson

LEFT TO RIGHT: National Geospatial-Intelligence Agency (NGA) Campus East project under construction at Fort Belvoir North Area, Va., Sept. 8, 2010; Heavy Brigade Combat Team (HBCT) barracks at Fort Bliss, Texas; Neonatal Intensive Care Unit at Basrah Childrens Hospital in Iraq.

Photo courtesy of the U.S. Army Corps of Engineers, Jack Matthews

Photo courtesy of the U.S. Army Corps of Engineers, Marc Barnes
Photo courtesy of the U.S. Army Corps of Engineers, Scott Harris

For the past decade, the U.S. Army has been simultaneously fighting two wars while undergoing a major transformation in equipment, structure, and operations. All this, while moving toward completion of a sweeping Base Realignment and Closure (BRAC) process. Moving through its own transformation to support those efforts has been the Military Programs Office of the U.S. Army Corps of Engineers (USACE).

Bob Slockbower, director of USACE Military Programs, explained how the Corps has worked to meet the goal of "Delivering Effective, Resilient, and Sustainable Solutions," goal three of USACE Commander Lt. Gen. Robert L. Van Antwerp's four-part Campaign Plan to transform USACE's worldwide operations.

"We have transformed the way we deliver our military missions," Slockbower said. "We started out to improve both the efficiency and effectiveness in how we deliver our MILCON [Military Construction] program even before we got into the significant growth in work we experienced in the last few years, which began with BRAC and a number of other initiatives, such as 'Grow the Army' and then ARRA [the American Recovery and Reinvestment Act]."

Grow the Army is a transformation and restationing initiative announced in 2007 and scheduled to be completed by fiscal year 2013. The ARRA is a centerpiece of the president's 2009 economic stimulus package.

"In addition to significantly improving our installations through repair and maintenance that was long overdue, this process was helped by our MILCON transformation and, more importantly, our current focus through September 2011 on delivering projects to meet the needs of the Army and complete the BRAC requirements," he continued.

"Even though we are celebrating successes to date, it really has laid a firm foundation for our future business processes to address new challenges the Army faces to achieve very aggressive energy and sustainability goals. We must drastically reduce the energy consumption of our facilities, increase the use of renewable energy sources, reduce greenhouse gas emissions, and more effectively manage all utilities, particularly water," Slockbower said.

Goal three is divided into four objectives. The first (3a), to deliver sustainable infrastructure via consistent and effective military construction and real estate support, addresses the Corps' key role in real estate support to all of the Department of Defense. That ranges from acquiring land for training programs to compensating eligible military and civilians for drastic losses of value in their homes through the Housing Assistance Program.

"Objective 3b focuses on ensuring facility protection, resilience, and good life-cycle investment decisions. That also is closely linked to Objective 3c, where we are attempting to deliver infrastructure based on risk-informed system-wide asset management strategies," Slockbower said.

"Objective 3d is an enabler for the entire campaign strategy – developing and applying innovative approaches to quality infrastructure. We're doing that through a couple of initiatives: how we manage knowledge across the enterprise; how we encourage and reward innovation; and, lastly, taking the best from our research labs and industry and transferring that knowledge to delivery of our products."

The most important overall goal, he added, is to provide the Army with vital engineering services to support the execution of its missions. And a major part of that is supporting Soldiers, military families, and Army civilians in such a way that we provide them with the facilities necessary to prepare, sustain, and reset the force to execute current and future missions to include Overseas Contingency Operations.

"What the Campaign Plan has done is provide a laser-like focus on critical areas of our mission. If we concentrate on these areas, we will continue to improve our value and relevance to the armed services and the nation, providing critical facilities and engineering services on time, on budget, and with the highest quality," Slockbower said.

"Our ability to deliver barracks, training ranges, and maintenance facilities is carefully synched with units moving from location to location within the U.S. and being able to deploy in and out of overseas theaters. Delivering these facilities at the right time and place is absolutely critical to meeting the nation's objectives during a time of war. And I can't think of anything more important," he concluded.

Technical Service at Its Best

Interagency and International Services is always ready to serve.

By J.R. Wilson

"If the Corps of Engineers can't do it, who will?" asked Don Kisicki, deputy chief of Interagency and International Services (IIS) at the U.S. Army Corps of Engineers, referring to a vast array of international work that has become a vital – and growing – part of U.S. foreign policy. The goal ranges from improving relations with emerging nations in Eastern Europe, Asia, Latin America, and Africa to helping those nations build internal capacity to help themselves, decrease poverty, and stabilize their societies.

"We work with non-DoD [Department of Defense] entities domestically, including, to a limited extent, state and local governments and Native American tribes. Internationally, the IIS role is much larger, encompassing all support the Corps of Engineers provides that is not in direct support of U.S. forces," he explained, although IIS' efforts typically are in cooperation with combatant commanders.

"We support all the COCOMs [combatant commanders] and have liaison officers with all of those who help with contingency efforts and work with those commands on their partnership programs. One of the most beneficial programs for national interests the COCOMs perform is the humanitarian assistance work done overseas, which falls under International Services," Kisicki said.

IIS' non-DoD partners include the U.S. Agency for International Development (USAID), the Millennium Challenge Corporation (MCC), the U.S. State Department, and others involved in humanitarian relief or infrastructure-improvement programs.

"This is the way the talent and expertise of the Corps of Engineers can be used to support those other agencies' programs, both domestically and internationally," Kisicki said. "For the Corps, I think it is very interesting work, very challenging work in some ways and a good way to attract new talent by offering not only our traditional programs, but also the opportunity to work on critically important programs for the nation.

"It also helps keep our skills sharp. We haven't had to worry about not having enough work to do in the past decade, but in slower periods, IIS work helps us enhance abilities for the future," he added.

Most of those working on IIS projects – some full time, some part time – are located in the Corps' district offices. The districts have an understanding of the local culture and the differences with the overall Corps' culture.

"Sometimes, engineers can be rather rigid and see only the engineering part of the problem, while other agencies might have a different perspective, so it is a blending," Kisicki said. "When we support USAID, their main interest [is] not engineering but helping other nations, so they bring in the whole suite, from governance to institution building. But while we bring in the engineering piece, we also have to understand the other parts of the problem.

"Capacity development applies to what we do overseas – a concept of teaching others 'how to fish instead of just giving them fish.' You might say we're trying to work ourselves out of a job because it is important for them to learn how to plan and develop their own infrastructure. With that infrastructure comes economic development and, with that, stability; it's poverty that creates instability."

The largely civilian Corps functions primarily in the role of finding contractors to do the work, then monitoring their progress. To the extent possible, they look for local contractors – or, if the size, complexity, or timing require an experienced outside company, one that will use as many host-nation workers as possible. That is especially true in Iraq and Afghanistan, where a top focus of the U.S. effort is capacity development.

"It really depends on the nature of the project, on a case-by-case basis. Where we do hire large international contractors, our contracts sometimes require that they provide capacity development for the host nation, which can be done by hiring and training local workers, teaching them how to do project management, how to make contract proposals as a company, how to win contracts, [and] how to perform well on projects," Kisicki explained.

Depending on the nature of the activity, IIS workers typically go into the host nation for very short periods of a few days or for much longer durations of a year or more, providing technical advice, contracting and construction, or engineering contractor management at levels higher than those inherent in other agencies.

"Any international work is probably going to be more challenging and difficult than work in the U.S., including a higher level of danger in some areas," Kisicki said. "If

Iraqi workers on the site of the $1.8 million sewer project managed by USACE Gulf Region District, in the Adhamiyah district, a suburb northwest of Baghdad. This project calls for major reconstruction of the existing system to include replacing the sewer lines, manholes, manhole covers, and connecting the sewer network to homes. Part of U.S. foreign policy is to oversee projects, like this sewer project, that facilitate capacity development in Interagency and International Services-led nations.

Photo courtesy of the U.S. Army Corps of Engineers, Scott Harris

we are going into a country, we always work with the U.S. Embassy, including U.S. military at the embassy and often USAID. In some cases, we can work with the host nation's military, where they provide labor.

"The ideal state is to send in someone with knowledge of the local language and culture. Unfortunately, that isn't always easy to do. In supporting the MCC in certain parts of Africa, they may ask if we have a French-speaking road engineer, which may be hard to find on the schedule required. Africa probably presents a greater problem than other areas, due to the wide variety of languages there. But our overall goal is to blend in as best we can with the language and culture of the nation we're in," he added.

The Corps' international operations have grown substantially since the end of the Cold War, especially with nations that were behind the Iron Curtain.

"One of our first IIS projects after the fall of the Berlin Wall was to renovate buildings in 10 central Eastern European countries to serve as U.S. embassies, often while State Department people were working in them," he said.

"Currently, one of our most successful efforts is the Civil Military Emergency Preparedness [CMEP] program, where the U.S. government wants us to work with other countries in preparing for any kind of disaster response. A lot of the focus is on getting countries to cooperate regionally and to get the civilian and military agencies within their own governments to work well together. The Corps has conducted more than 75 CMEP events, with a current focus primarily on Eastern Europe but expanding as Emergency Management International into Africa and Latin America. The COCOMs see this as a great tool for diplomacy, holding workshops based around disaster scenarios and getting neighboring countries to work together."

IIS is not a line item in anyone's budget; actual project work is fully funded by whichever agency enlisted IIS assistance. The office has no authority to spend USACE funds on projects for another agency and is not allowed to make either a profit or a loss.

ABOVE: Steady progress continues on a $50 million design-build project at Novo Selo Training Area in eastern Bulgaria to construct a training base to be used by Bulgarians, Americans, and international allies. The U.S. Army Corps of Engineers (USACE) Europe District, which is managing the project, is committed to working in the spirit of cooperation and continuing project development. RIGHT: Renovations are under way at the Kalivac High School, a rural and under-funded school in Tirana in northern Albania. U.S. European Command is funding the project, which seeks to stabilize the community through providing a solid education facility. The project is expected to be completed by the end of 2011.

Photos courtesy of the U.S. Army Corps of Engineers, Justin M. Ward

In 2009, IIS performed about $2.5 billion in work for non-DoD agencies, compared to about $2.1 billion in DoD projects, such as CMEP, the Cooperative Threat Reduction Program, and Foreign Military Sales (FMS). FMS was by far the largest – about $2 billion for major military facilities' construction, mostly in the Middle East.

"One of the most interesting IIS projects under consideration will be to complete the ring road in Afghanistan, which will be at least a $500 million project that is critical to Afghanistan's future. Our customer there will be the Asian Development Bank, which, if negotiations are successful, will be the first major project we've done for any of the international development banks," Kisicki said. "I also see growth in the area of water and security, with water strongly linked to individual nation and global stability.

"In the past decade, there has been an increase in IIS work, especially on the domestic side. A big chunk of that in 2009 was for Customs and Border Protection along the border with Mexico. But even without that, we have seen a generally steady increase in the amount of IIS work the Corps of Engineers does. Although there will be fluctuations, we think the IIS program will be a very important part of the Corps' future."

BRAC:
USACE Rebuilds to Meet "Soldier Readiness"

By J.R. Wilson

As part of the Department of Defense (DoD) Base Realignment and Closure (BRAC) process, the Army continues its largest organizational change since World War II. This organizational change is centered on transforming the Army to a brigade-centric, modular force. The Army plan calls for re-stationing one-third of the force, as well as growing the force to have a 547,000 active component, 358,200 National Guard, and 206,000 in the Army Reserve.

The Army has 47 percent of the entire DoD BRAC 2005 Program, which is scheduled to conclude in September 2011, the U.S. Army Corps of Engineers (USACE) is executing $16 billion of Military Construction (MILCON) for 275 Army, 127 Air Force, and 32 DoD BRAC projects.

"We are executing the facilities portion of the Army's BRAC program. Overall, we are on target to meet all milestones and are within budget. For FY 09 to FY 10, we've been experiencing a favorable bid environment. That in concert with our business processes to make our facilities less costly and easier to construct, i.e. MILCON Transformation, has led to significant cost savings as compared to estimated amounts," said Carl Penski, USACE BRAC team leader.

"The Army and USACE planned an execution schedule with big workloads in fiscal years 10-11. We're executing toward that plan and facilitating the Army's overall BRAC movement timelines so the individual commands and activities can come online and be in their installations in time to meet the BRAC law. So the peak years have been FY 09 through FY 10," he said.

BRAC law does not actually mention the construction of new facilities, so it has been up to the Army to identify those needs and create budgets for the Corps to use in providing new or expanded buildings to house Soldiers moving from bases being closed or turned over to a new command or function. The result was a $16 billion, five-year effort, with about 80 percent of that involving facilities and the remainder for infrastructure improvements.

In addition to engineering and construction management-related work, as part of the BRAC program, USACE handles real estate acquisition and disposal, environmental (most notably the National

Photo courtesy of the U.S. Army Corps of Engineers, Jim Gehle

Environmental Protection Act compliance documentation; environmental studies and cleanup supporting BRAC closure and disposal actions), and equipment and furniture procurement.

"The furnishings were ordered through Huntsville's Centralized Furniture Procurement & Installation program. By using centralized procurement resulted in $80 million BRAC cost avoidance to the Army, and resulting in zero contract protests," said Penski.

"Real estate acquisition is typically for the BRAC Armed Forces Reserve Centers, which includes site selection; engineering feasibility studies; title work; land acquisition/closing; disposal activities associated with closure of BRAC and BRAC legacy closing installations," he said.

"Since, Aug. 31, 2010, we have 275 projects in the program, with 97 completed and turned over to the garrisons and end users," according to Edward Rozenblat, USACE national account manager for BRAC. "BRAC is a huge program. We awarded the large projects first and a lot of smaller projects – between $20 million and $70 million each – were pushed back to start between 2008 and 2010, which is why nearly two-thirds of the program is still active."

Penski said in some cases it made more sense to repurpose existing buildings for new uses, rather than to tear them down and build new.

"At Aberdeen [Proving Ground, Md.] for example, some buildings were previously used by the ordnance maintenance school for work on tanks," he noted. "Those high-bay facilities have been turned into suitable facilities for inbound tenants from Fort Monmouth and now are being used for the C4ISR [command, control, communications, computers, intelligence, surveillance, and reconnaissance] community, primarily because they already have infrastructure in place for things like overhead cranes."

The Corps has faced two major challenges in meeting the BRAC requirements and schedule, Penski said.

"First is the magnitude of the program. We have projects, such as the San Antonio Military Medical Center North, Belvoir Mark Center, Fort Belvoir Community Hospital, and Fort Bliss Brigade Combat Team Complex, where we are spending greater than $1 million a day in construction – which was unheard of before. The sheer size of the program has caused the Corps to have to ramp up in terms of process, design, and construction contract capacity, and staffing to administer the construction projects. And that is in concert with all the other work the Corps is performing on the civil works side of the house," he explained.

OPPOSITE: The future home of the headquarters for U.S. Army Forces Command and U.S. Army Reserve Command at Fort Bragg, N.C., April 1, 2010. ABOVE: Army Chief of Staff Gen. George W. Casey Jr. speaks to members of the USACE and the National Geospatial-Intelligence Agency Campus East project team during a visit to the Integrated Program Office (IPO) at Fort Belvoir, Aug. 11, 2010. The $1.7 billion project is being completed as part of 2005 Base Realignment and Closure programs.

"Second was the time component. In the normal MILCON process, there's a notional four-year cycle to plan a project, get it programmed, designed, and execute it. With BRAC, the Army managed to condense the planning and programming down to about two years. For construction, we've been compressing schedules and employing fast-track design-build contracts. Our focus is on hard completion dates so that building tenants have a firm date from which to plan their other BRAC movement activities, such as equipment and personnel moves. So across the board, there's been a real compression of all activities. In some instances, we've also been concurrently performing fit-out activities with construction, including IT installation, furniture installation, and tenant-installed equipment. These activities ordinarily happen sequentially. By employing this joint occupancy technique, we're further able to compress the time it takes to make a facility 'Soldier ready.' We focus on no loss of quality and still meeting the end-user's operational requirements. In doing so, we can reduce the time it takes to turnover a facility from months down to weeks."

Rozenblat said to accomplish that, USACE devised new standards for various types of facilities, enabling them to put out contracts for bid that were identical regardless of location.

"There was an initial learning process on the new standards, but they enabled the contractors to move quickly through the solicitations and come up with build-out proposals. It also allowed the use of more commercial means of construction and standards, moving away from old, strict, federal requirements, which allowed us to

Photo courtesy of the U.S. Army Corps of Engineers, Marc Barnes

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get facilities at less cost and quicker," he said. "So a contractor building barracks knew exactly what we wanted.

"As part of the MILCON transformation, we established eight Centers of Standardization and developed over 40 standard designs. For example, Fort Worth [District] is responsible for barracks, Norfolk [District] is responsible for dining facilities, and so on. With so many projects and moving pieces, it was a difficult and unique effort. For the overall program, throughout 2007-08, we were looking at $10 to $15 billion each year between BRAC and all the other MILCON projects we had," according to Rozenblat.

With so many major contracts, including some developed just for BRAC, USACE sought to preselect four or five contractors, each making proposals based on new standards and requirements, then make awards based on a fast response, cost and time, and quick construction.

"There also is a great emphasis on completion of construction," Rozenblat added. "Normally, on a MILCON program, the award of the contract is the goal. But with our Sept. 15, 2011, [BRAC] deadline, we are very careful in measuring how construction is going, with an additional monitoring requirement by the Corps and all the other Army components, making sure all projects are completed."

With all of this under way in the midst of an ongoing war, and the recent occurrence of several major natural disasters, such as the Haiti earthquake, even the best-laid plans are subject to delay and change.

"Our construction mission, in a lot of cases, is predicated by the movement timelines of the Army," Penski concluded. "If you have activities in buildings we are going to renovate or in the construction footprint of a new building going up, that can't happen until the unit has made its exodus. We also have to start the purchase of long-lead items based on known movement schedules. In a lot of cases, we have had to adjust our construction schedule to work around those, where in the traditional MILCON arena, you get a clean footprint, ready to go.

"Everything in the BRAC program happens at a rapid-fire pace, with no rest for the weary; our program is the leading indicator for the Army's success in meeting BRAC compliance. Without facilities, none of these movements could happen, even though the law only talks about closures and movements, not facilities construction," Penski said.

Photo courtesy of the U.S. Army Corps of Engineers, Lee Roberts

Photo courtesy of the U.S. Army Corps of Engineers, Billy Birdwell, Savannah District

LEFT: Workers from Hansel Phelps Construction Company, the prime contractor building the Army Forces Command and Army Reserve Command co-located headquarters at Fort Bragg, N.C., watch as the last steel girder goes into place. The Savannah District is overseeing the construction of the new headquarters. The facility must be completed and occupied by September 2011. RIGHT: A contractor places concrete Feb. 26, 2010, at Weinstien Village, a U.S. Army Corps of Engineers Los Angeles District construction project to provide new barracks, a dining facility, a physical fitness track, and battalion headquarters for advanced individual training Soldiers at Fort Huachuca, Ariz.

Major BRAC Accomplishments as of Aug. 31, 2010:

- Obligated 86 percent of the $16 billion received;
- Awarded 323 major military construction projects – 107 of which have been completed;
- Completed or initiated 55 percent (633 of 1,147) actions required to complete the Army BRAC recommendations;
- Closed six major Army installations (Kansas, Mississippi, Lone Star, and Riverbank Army Ammunition Plants, Newport Chemical Depot, U.S. Army Garrison-Selfridge) and one minor (C.E. Kelly Support Center), and 25 U.S. Army Reserve Centers; and
- Disposed of 4,308 acres of excess property.

Navigating Into the Future

The U.S. Army Corps of Engineers' navigation and waterways mission assures the continued – and underappreciated – value of America's ports, harbors, and inland waterways.

By Craig Collins

The General Survey Act of 1824 authorized the U.S. Army Corps of Engineers (USACE) to formulate surveys for waterways that were of commercial or military importance, or were used for mail delivery. In the same year, USACE was assigned to improve navigation on the Ohio and Mississippi rivers, and later the Missouri River. It marked the beginning of USACE's involvement in civil works projects, and provided a foundation for economic development and westward expansion.

Today, USACE is responsible for ensuring safe, reliable and sustainable movement of vessels through the nation's inland and intracoastal waterway system, and its activities include the planning and construction of new navigation channels, locks and dams, and dredging operations to maintain channel depths in waterways and coastal ports. The Corps operates and maintains 12,000 miles of commercial inland navigation channels and 13,000 miles of coastal navigation channels. The waterway system under USACE's authority includes 196 lock and dam sites. To keep the nation's waterways navigable, USACE dredges nearly 300 million cubic yards of material every year – nearly twice the amount of earth moved to create the Panama Canal.

BENEFITS TO THE ECONOMY – AND TO THE ENVIRONMENT

The value of waterborne commerce to the United States is staggering, accounting for more than $2.3 trillion in economic activity – nearly a third of the nation's gross domestic product (GDP). More than 95 percent of the nation's volume of foreign trade moves through U.S. waterways and ports, and about one-sixth of the cargo traveling between U.S. cities is moved through the nation's inland and coastal waterways.

While the overall volume of goods moving through American waterways is remarkable – 630 million tons, valued at more than $70 billion annually – the efficiencies and savings associated with waterborne commerce are also worth noting. According to the Tennessee Valley Authority, it is $11 cheaper per ton to send goods by water as opposed to other means of transportation – truck or train. A single river tow consisting of 15 barges carries as much cargo as 870 large semi-trailer trucks, or slightly more than 200 rail freight cars. Overall, shipping by water saves nearly $7 billion annually.

A less direct benefit of USACE's navigation projects is that they help to limit air pollution by enabling multiple-

Poplar Island, in Maryland, is currently being rebuilt by the U.S. Army Corps of Engineers and the Maryland Department of the Environment. The agencies are pumping dredge material from the Chesapeake Bay's shipping channels into the island's "cells," which will be planted with a mixed variety of wetland and upland vegetation. The area is already habitat to thousands of birds of many different species. Each "cell" that the island is divided into is being built up to attract different species of both local and migratory birds.

barge tows to move cargo long distances while using considerably less fuel than trains or trucks would need. On average, a gallon of fuel allows one ton of cargo to be shipped 155 miles by truck, 436 miles by rail and 576 miles by barge.

As it carries out its mission to keep ports and waterways navigable, USACE works hard to protect the often-fragile river and coastal environments in which its navigation projects are conducted. First, USACE uses dredge material as a resource, said Jim Walker, the USACE Navigation program manager. "Dredging used to be viewed as creating a waste product," he said. "What we try to emphasize is that … the material that we dredge is a resource opportunity. It can be used to create wetlands, nourish beaches, build protective berms, any number of things. There are beneficial use opportunities for this material, and to show how far public perception has come, now there are folks fighting over it. They want that dredge material to be beneficially used. Certainly, the vast majority – about 96 percent of the material – is clean, uncontaminated sediment."

In addition to encouraging the beneficial use of dredge material, USACE often times its dredging operations to minimize disruption and damage to marine or aquatic species. For example, along the Southern Atlantic Coast, where four threatened and endangered species of sea turtles live and breed, USACE worked with National Oceanic and Atmospheric Administration (NOAA) Fisheries to see that each of the agencies could carry out its mission: USACE to keep coastal channels navigable and NOAA Fisheries to protect the turtle species. Using USACE data from past South Atlantic dredging operations, the agencies issued a Regional Biological Opinion that, Walker said, "basically stated that our hopper dredging in the South Atlantic Coast must be accomplished within a four-month window. Additionally, there are steps taken while we're dredging to try to minimize the chances of any incidental taking of turtle lives. We've got more than 15 years of history of our dredging activities and turtle takes so that we can learn, refine and improve our ability to reduce those takes in future years."

USACE uses technology to further limit harm to turtles. Through its Dredging Quality Management Program, it uses instruments that monitor precisely where the drag head of a hopper dredge is operating at the time of a turtle take or other incident. "We've been able to use that technology," said Walker, "and refine the dredging operation characteristics to try and reduce our turtle takes."

Photo courtesy of HDR | e2M

GROWING PAINS FOR THE MARINE TRANSPORTATION SYSTEM

In 1970, waterborne commerce accounted for a mere 13 percent of the nation's GDP. By 2007, the figure had grown to more than 30 percent. The growth already achieved in the inland and coastal waterways is set to increase further. Many of the nation's coastal ports are nearing capacity. Over the next 20 years, the shipment of cargo by container ship is expected to increase by 65 percent, creating an even greater need for the Corps' services.

USACE is currently struggling to keep pace with rapid changes in the maritime transport industry. Ships are getting larger and require greater drafts. The newest generation of large cargo vessels entering the world fleet are deep-draft vessels requiring an unprecedented 45 to 50 feet of channel depth. Very few U.S. ports today are sufficient for handling such vessels.

Likewise, the standard configuration for several inland navigation systems is 15 barges maneuvered by a single towboat. This size tow can be accommodated in a single lockage at the largest USACE locks – 1,200 feet in length – but just over 10 percent of the nation's 237 functioning lock chambers are this size. "Now that you've kind of achieved this characteristic 15-barge tow, having to break it into two separate lockages can take you four hours," he said, "where being able to lock it all through at once takes only one hour. There is a tremendous transportation cost savings, time savings, in being able to have 1,200-foot lock chambers as a standard."

USACE long ago began to modernize its ports and waterways infrastructure. The first 1,200-foot locks were built in the 1960s on the Ohio River, and the modernization continues today with additional locks being built in Illinois, Kentucky, Louisiana, Pennsylvania, and West Virginia.

Capital investments on coastal and inland navigation assets are not keeping pace with aging infrastructure and industry changes. "In an asset's life cycle," said Walker, "you'll reach a point where you've got to make the decision about recapitalizing, replacing or retiring it. The majority of inland projects that were built back in the post-Depression era are now reaching their original service life of 50 years. We're at that point of needing to make difficult decisions on capital investments – and then the issue becomes whether you've got the money to do the additional improvement to reach that new standard or not."

Making decisions about where to direct funds are complicated, Walker said, by two different factors. First is the lack of a nationwide "master plan" for the marine transportation system. The Committee on the Marine Transportation System, with representatives of more than 20 federal agencies that have marine transportation responsibilities is working at the Washington level to discuss these issues, Walker said, but it has no formal authority to establish a marine transportation policy.

A master plan, Walker said, could help the nation prioritize its resources and attack its deficiencies with greater focus – for example, the lack of ports able to accommodate the newer deep-draft cargo vessels. "Under a master strategy," he said, "you could decide how many ports you need to maintain at a particular depth. Let's say eventually you'll need greater than a 55-foot depth. You'll need to stay in front of that requirement. The idea is to have a conscious discussion of what a national strategy ought to be, as opposed to the pursuit of individual projects."

The other important factor in keeping pace with industry changes, of course, is funding. The mechanisms under which USACE pays for its navigation projects – the Inland Waterways Trust Fund and the Harbor Maintenance Trust Fund – were established nearly a quarter-century ago in the Water Resources Development Act of 1986, and they need revision to produce the revenue USACE needs to keep the nation's navigation infrastructure reliable and efficient. The reasons for each fund's shortcomings are different, and complex enough that only an accountant could explain them; the simplest explanation is that each has constraints on how revenues are collected, calculated, and spent.

"With the money we are receiving out of Harbor Maintenance Trust Fund," Walker said, "we just aren't able to keep the full dimensions, depth and width, of navigation channels open and available. So the result becomes that ships may have to lighten their loads, or alter their schedules. It's impacting their ability to maximize their economic return." There is an effort by navigation interests to structure the Harbor Maintenance Trust Fund like the Aviation and Highway Trust Funds, which Congress appropriates based on the prior year's revenues.

One of the biggest priorities for the Corps of Engineers is to have these funding mechanisms restructured to accommodate the work that is urgently needed on America's waterways and ports infrastructure. "The trust fund legislation is really going to set the future course of our navigation program," Walker said, "and we're excited because there is draft legislation, consisting of changes to both of those trust funds, currently being considered by Congress."

A MORE COLLABORATIVE FUTURE

The legislation for the new Inland Waterways Trust Fund was the result of a joint effort between USACE and private-sector partners to develop a 20-year capital investment plan. The public-private collaboration, Walker said, was "the closest thing to a national marine transportation strategy we've seen. This approach will allow us to optimize the constrained funds to reduce the risk of unscheduled lock closures at locations of the greatest potential for adverse economic impact. It's serving as a model for other USACE civil works business lines in terms of trying to develop investment strategies for those programs as well."

In the meantime, USACE is implementing an asset management approach to its navigation lock inventory, conducting a nation-wide operational condition assessment. "We're focused on passing traffic through the lock," said Walker. "So these assessments will provide us with a very good road map for making the best use of constrained Operation and Maintenance funding." The first baseline assessments are under way already, and the current timeline calls for the results to inform longer-term budget discussions that will begin in spring of 2011.

"Ultimately, having that type of information is going to enable us to develop life cycles for these navigation components," said Walker, "to where we would, if the funds are available, be able to get into a preventive maintenance mode on our highest use projects and to assure reliable transportation in others."

In summarizing what he sees as the future for the USACE navigation program, Walker concluded, "I'm confident we have the foundation in asset management and the trust fund legislation adjustments to set the course for reliable and efficient navigation infrastructure for the next 25 years."

Engineer Research and Development Center: Making the World Safer and Better

By Wayne Stroupe

The U.S. Army Engineer Research and Development Center (ERDC) is the research organization of the U.S. Army Corps of Engineers (USACE). It provides innovative support to our Soldiers, military installations, and water resources and environmental projects. ERDC research projects run the realm from polar regions to arid desert sands to ocean waves; its technologies range from protecting the environment to protecting our Service members.

The organization has more than 2,500 employees and an annual research program exceeding $1.5 billion. ERDC's seven laboratories in four states are complimented by field offices for specialized research in the U.S. and abroad.

"With over 1,000 researchers in a multitude of different engineering and scientific disciplines – civil engineering, physics, biology, computer science, you name it – ERDC can assemble multi-disciplinary research teams to address the most complex problems facing our nation," said ERDC Director Dr. Jeff Holland.

"Protective technologies, blast-resistant windows, and wall retrofits developed at ERDC, saved lives at the Pentagon on 9/11. ERDC technologies today are saving our Soldiers' lives in Iraq and Afghanistan. Our research solutions are addressing invasive species such as the Asian carp, river flooding, and coastal storm-protection issues, even response to the [April 20, 2010] Gulf of Mexico oil spill," Holland said.

"ERDC is truly solving problems to help make the world safer and better."

CIVIL WORKS' RESEARCH AND DEVELOPMENT

ERDC's seven laboratories apply their collective specialized expertise to solve critical civil works problems. There is a rich tradition in this research that goes back more than 80 years. Today, ERDC is widely recognized as an international leader in civil works research in several key areas:

- Navigation,
- Flood Risk Management,
- Environmental Aspects, and
- Watershed Assessment and Management Systems

ERDC is the nation's federal hydraulics laboratory and center of expertise in coastal engineering, with unmatched capabilities in physical and computer models, including supercomputer models. ERDC was one of the early leaders in environmental research in the 1970s and continues to conduct advanced, world-class research in the civil works-environmental arena.

ERDC research technologies not only support Corps projects across the country, but also such sponsors as the Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (USFWS), and other federal and state agencies. Partnerships have also been forged with non-government organizations such as The Nature Conservancy.

ERDC products include both project-specific tools and watershed or regional modeling and assessment technologies that provide invaluable information for decision-makers. Since these technologies support our commerce and economic strength, enhance the environment, and help us as a nation access and manage our national resources and infrastructure, civil works research greatly benefits the U.S. population.

"Our researchers are supporting the most difficult water resources and environmental challenges facing our nation today," stated Dr. Beth Fleming, director of the ERDC Environmental Laboratory. "Asian carp moving into the Great Lakes, response to the Gulf of Mexico oil spill, levee vegetation issues, even mountain top mining impacts – we have the expertise, facilities, and equipment to address the most difficult challenges."

ERDC experts are doing advanced research in such areas as contaminated sediments and groundwater (detection, treatment, remediation), wetlands restoration, threatened and endangered species, dredging impacts (effects on fish, sea turtles and other river and marine life), and invasive species – fish, aquatic plants, and other introduced exotic species.

"We're unique in our research capabilities," added Fleming. "For example, with the oil spill, we have all of

ERDC and U.S. Fish and Wildlife Service personnel make final adjustments to video cameras of the Automated Route Reconnaissance Kit (ARRK) on a contract helicopter. Developed to recon military convoy routes, the ARRK is being used to perform critical marsh bird population counts in response to the Gulf of Mexico oil spill.

Photo courtesy of the U.S. Army Corps of Engineers, Engineer Research and Development Center

the disciplines necessary to address this complex issue – chemists, hydraulic and environmental engineers, toxicologists, and risk assessors, to name a few. In collaboration with the EPA, we developed a framework for approaching contaminated sediments related to the spill. No other research organization could do this."

ERDC also provided modeling support for Mississippi River and coastal flow conditions to help make decisions related to the Gulf of Mexico oil spill. ERDC experts supported USFWS team activities with coastal bird counts, sea turtles, and marine mammals. An innovative aerial survey system was pulled from the ERDC military research program and modified to rapidly provide bird population data. ERDC information technology experts provided advanced databases for use in gathering, storing, and retrieving vast amounts of wildlife data related to the oil spill.

"The 'can-do' attitude of ERDC's team members drives our research. They see a problem and know they can provide a solution," Fleming said. "That's why we get the hard problems."

ERDC's civil works research is providing tools for long-term environmental and engineering issues. These technologies provide vital information for decisions and solutions; they also advance a state of knowledge of natural processes and how ERDC can work with them intelligently and effectively and be used to address pressing, complex problems as they arise.

ENGINEER HURRICANE MODEL

The Engineer Hurricane Model, known as MORPHOS, is a physics-based modeling capability developed by ERDC for tropical storm risk assessment. The integrated suite of models incorporates improved objective estimates of winds, waves, currents and water levels, and coastal response during extreme events. MORPHOS provides a robust, standardized approach to establish the risk of coastal communities to future storms. This advanced modeling technology was used to design Gulf Coast ecosystem and barrier island restoration projects and storm damage reduction and flood risk infrastructure following hurricanes Katrina and Rita.

Applications have been extended to include the Federal Emergency Management Agency flood risk mapping for Texas, Louisiana, Mississippi, North Carolina, Virginia, and Maryland; plant licensing support for the Nuclear Regulatory Commission; evaluation of navigation channel-deepening project alternatives; and the development of large national storm databases and

ERDC uses explosive blast tests to validate computer models of blast effects for force protection, antiterrorism designs and retrofits, and infrastructure protection.

Photo courtesy of the U.S. Army Corps of Engineers, Engineer Research and Development Center

information systems for the coastal communities. ERDC is continuing to advance the capability of MORPHOS by developing the capability to predict coastal morphology response and evaluating the beneficial impacts of wetlands and other features on storm surge and waves.

SYSTEMWIDE WATER RESOURCES RESEARCH

ERDC is also developing a suite of tools for hydrologic, hydrodynamic, water quality, and ecological modeling. These tools are used in watershed assessments, ecosystem restoration activities, and environmentally friendly and sustainable operation of flood damage reduction and navigation structures. This modeling structure is extremely flexible, and can be adapted to address issues of temporal and spatial scale and interactions with climate change, sea level rise, and coastal storm modeling.

The versatility of these modeling tools was demonstrated when the Adaptive Hydraulics Modeling (ADH) system and particle tracking techniques were quickly used to assess the effectiveness of altering flows in the Lower Mississippi River to reduce impacts associated with the Gulf oil spill. The ADH model was also used to examine the impact of berms and distribution of oil and dispersants associated with waves and storms. Recently developed knowledge management technologies were used in collaboration with USFWS to catalog and visualize oil spill impacts on wildlife. These advanced modeling tools have been used for project decisions in the Upper Mississippi River, Chesapeake Bay, Columbia River, Missouri River, to name a few.

MILITARY RESEARCH

ERDC prides itself on years of military support – not just technological support, but direct Soldier support. ERDC brings this wealth of capabilities to bear on some of the most complex military problems,

TOP: The USACE Reachback Operations Center (UROC) portable communications kit is completely self-contained in two small cases. This ruggedized and secure communications tool links deployed Soldiers around the world to subject-matter experts in the U.S. to solve field engineering problems. It also is being used in disaster operations. ABOVE: The Engineer Research and Development Center (ERDC) developed the high-strength fabric levee PLUG that is filled with water to rapidly repair levee breaches. This is a 1-5 scale. ERDC, with Department of Homeland Security funding, is constructing a multimillion-dollar facility to help develop and test these technologies at full scale. This facility will be operational in early FY 11.

many of which extend far beyond what might be considered traditional Corps operations.

"The goal in ERDC's military research is to provide real solutions the warfighter can use," ERDC Geotechnical and Structures Laboratory Director Dr. David Pittman said. "ERDC military research encompasses the broad areas of force protection, force projection, maneuver/counter-maneuver, terrain battlespace environments, and military facilities and infrastructure.

"R&D is important to the warfighter because it gives them the extra edge in technology that it takes to stay ahead of the enemy. It gives the Soldiers that extra capability to quickly and effectively conduct their missions. It gives them that extra protection from enemy or terrorist attacks – extra protection that might make a difference in safely going home," Pittman stated. "Because of what is involved, our researchers take this work very seriously."

Military research also involves all of ERDC's research laboratories and expertise. International support is provided to warfighters across the spectrum of operations, including engineering units, Soldiers, Sailors, Airmen, special operations units, and combined commands.

SAVING LIVES

To protect our Soldiers in the field, ERDC is developing a variety of tools and technologies to provide the best protection methodologies possible. Innovative low-weight logistical materials and ease of application are the guiding parameters for field materials. ERDC is conducting some of the nation's most advanced research on new super materials, such as carbon nanotubes, that could be the foundation for armor and protective gear for Soldiers of the future.

To meet the Army requirement for a mobile protective system that has low weight, high performance, and can be recovered and reused, ERDC developed the Modular Protective System. Untrained Soldiers can quickly put together this lightweight system without special tools. High-strength concrete panels developed for the system have the ballistic performance of ceramic armors. An eight-feet-high, 10-feet-long section can be assembled in about 15 minutes. Within a couple of hours, Soldiers can put up a protective system that covers a large area

Photo courtesy of the U.S. Army Corps of Engineers, Engineer Research and Development Center

Photo courtesy of the U.S. Army Corps of Engineers, Engineer Research and Development Center

with the capability to stop a variety of weapons, from mortars to rocket-propelled grenades.

Another development, which was a cooperative venture with the Berry Plastics Corporation, is the blast-resistant "wallpaper," X-FLEX™, that can be quickly applied to interior masonry or cinderblock walls to prevent wall failure and fragmentation. The revolutionary "peel and stick" product acts as a stretch-and-catch system, absorbing blast forces and safeguarding room occupants.

To help protect Soldiers at Joint Forward Operations Bases, ERDC developed the Survivability and Protective Construction Handbook. Based on both explosive field tests and computer modeling, the handbook provides information on access control, barriers and obstacles, entry-control structures, overhead cover, protective structures, and other aspects for Army, Marines, and Navy personnel at forward bases. More than 12,000 copies of the handbook have been distributed to deploying units.

ERDC research is also directly supporting combat operations. In conjunction with the Armament, Research, Development and Engineering Center, ERDC is developing improved methods to explosively breach walls in urban environments. This allows Soldiers quick access to a structure's interior where there are no openings or where doors or windows may be booby-trapped. Research efforts are also looking to allow wall breaching with "stand-off" munitions to provide another level of safety for Soldiers.

ONE CALL FOR HELP – UROC

Another ERDC innovation serving our warfighters is "reachback" engineering. Using modern, secure telecommunications technologies, deployed Soldiers can access government and/or civilian subject-matter experts in the U.S. for quick answers to problems with roads, force protection, or a host of other engineering issues. ERDC is home to the USACE Reachback Operations Center, or UROC, that makes this all possible.

The UROC gets about 4,000 requests annually for assistance. There are about 300 UROC communications kits, which are contained in two small boxes for deployment.

"ERDC military research is important to deployed Soldiers because they often have to 'do more with less.' Our research technologies help make possible what would otherwise be impossible for the warfighter," Pittman said.

The UROC communications kits are also seeing increased use in natural disasters and emergency operations exercises. They were used following hurricanes Gustav and Ike in 2009.

MILITARY INSTALLATIONS

ERDC environmental research capabilities also benefit its military customers. The military is a large environmental steward of the enormous amount of land on military installations used for training. ERDC technologies are addressing hazardous and toxic waste clean-up and remediation, including explosive residues from munitions and lead from small arms firing ranges; unexploded ordnance detection at former training sites; and better ways to manage training and land use.

Many installations are home to threatened and endangered wildlife species. The Defense Department must take these species into account when managing lands and training. Such wildlife issues have curtailed training operations at large installations such as Fort Bragg, N.C., and Fort Hood, Texas. ERDC experts work with installation managers concerning endangered birds, tortoises, frogs, snakes, and other wildlife. Many times biologists, ecologists and wildlife experts find that training activities are not impacting these protected species; it is some other factor, such as feral cats feeding on ground nesting birds. These scientific research results, coupled with environmental management plans and tools, help make more training areas available, allowing Soldiers to conduct more effective training. And it also protects the local endangered species populations – a winning situation for all.

LEVERAGING RESEARCH – INFRASTRUCTURE PROTECTION

ERDC researchers are constantly adapting and modifying existing technologies to address both military and civil works problems, by leveraging its research expertise to protect not only our Soldiers, but also our citizens, the environment, and even our nation's infrastructure.

In today's world, terrorist attacks on critical infrastructure such as bridges, tunnels, dams, levees, and navigation locks must be considered and the Department of Homeland Security (DHS) is funding a great deal of this research. Building off knowledge and expertise gained from decades of military blast-effects research, ERDC is advancing technologies to better protect our infrastructure and to mitigate possible damage. ERDC has conducted blast experiments to help develop, improve, and validate engineering models to predict blast-induced cratering impacts on earthen dams. ERDC is also developing tools, such as the Anti-Terrorist Planner for Dams (ATPlanner-Dams) for blast vulnerability assessments for dams. This research also provides additional resilience in the event of natural disasters and accidents.

DHS is also funding research to develop technologies to expediently repair levee breaches. Under this program, ERDC has developed and demonstrated a scale-model, levee plug to quickly seal levee breaches. ERDC researchers developed a water-filled, high-strength fabric bladder that could be filled on site and floated in to plug breaches in levees, dams, and similar structures. ERDC has demonstrated these expedient levee plugs at 1-to-5 scale in the only facility in the nation that currently can support such experiments. However, through additional funding from DHS, ERDC will have a full-scale research facility by the end of 2010 that will allow continued development, testing, and training on this new technology.

ERDC'S CRITICAL ASSET

"ERDC has been named the top Army research laboratory five of the last eight years and for the last three consecutive years. No other Army research organization has matched this feat, and it is a very enviable record," Holland said.

With all the world-class facilities, research labs, and powerful computers, you would expect such awards. But Holland is quick to point out the real power of ERDC.

"ERDC's greatest asset is its people. The passion our engineers and scientists have in solving complex problems is unreal. They know their work is saving Soldiers' lives, making the environment better, or enhancing our water resources projects. They know they are making a difference."

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Goal 4: A Workforce That Sustains the Nation

By Stacy A. Ouellette, USACE Headquarters Public Affairs Office

LEFT: During an office call July 27, Gen. William "Kip" Ward, commander, U.S. Africa Command, meets with engineering students who are working in the U.S. Army Corps of Engineers Europe District office in Stuttgart, Germany, for the summer as part of the Advancing Minorities' Interest in Engineering program. RIGHT: One of USACE's goals is to develop qualified personnel who can excel within the Corps; Mickie Simpson (left), a real estate writer with BisNow, interviews Sammi Lasley, a college student and USACE New York District summer hire, July 30, 2010. The summer hire program gives students the opportunity to learn about career options with USACE while giving the students hands-on experience.

U.S. Army Corps of Engineers photo, Marc Barnes

U.S. Army Corps of Engineers photo

The U.S. Army Corps of Engineers (USACE) is dedicated to accomplishing a vast, worldwide mission while remaining focused on the importance of professional development for all employees. By providing opportunities for growth, USACE is able to sustain a technical, proficient, and dedicated civilian workforce.

Sue Engelhardt, USACE's director of human resources, explained how USACE has worked to meet the goal – to build and cultivate a competent, disciplined, and resilient team equipped to deliver high-quality solutions – of USACE Commander Lt. Gen. Robert L. Van Antwerp's four-part Campaign Plan to transform, unify, and standardize USACE operations.

"We have developed strategies to recruit, develop, and retain top-notch employees. The time it takes to fill a position is decreasing. We are filling more seats in Civilian Education System courses. We are also reviewing our on-boarding practices for new employees since research indicates that the on-boarding experience can have a major impact on retention," Engelhardt said.

The Campaign Plan's Goal 4 is divided into four objectives. The first (4a) is to identify, develop, maintain, and strengthen technical competencies. This objective addresses USACE's desire to have a workforce that consistently delivers quality solutions to the nation's public engineering challenges today and is relied upon to provide innovative concepts for building strong into our future.

The second objective (4b) focuses on communicating strategically and transparently. USACE is responsible for providing an open, two-way strategic communication framework that is centrally managed, vertically synchronized, and locally executed.

"Being known, respected, and trusted leaders in the communication field and the communities in which we serve is key," James Dalton, chief of civil works and civil engineering, said. "If we have two-way communication that is centrally managed at the headquarters, synchronized with our division-level leaders and executed on the district level, we'll have success. Every employee has a responsibility in this effort," he added.

The third objective (4c) is to standardize business processes. By doing so, USACE will increase efficiency, effectiveness, and quality of product in executing USACE's mission. Uniform USACE processes that are transportable worldwide are used as the framework to deliver superior products and service by a ready bench.

The fourth objective (4d) is to establish tools and systems to get the right people into the right jobs. "It is more important to us to get the right person in the position than to just fill the position," Engelhardt said. "We want to be the employer of choice, which means that more quality candidates will apply for USACE positions and we will be able to retain our valued employees."

A Matter of Trust

The Corps' Tribal Relations Policy

By Eric Tegler

That the U.S. Army Corps of Engineers (USACE) and Native Americans have, until recent times, had an antagonistic and unfortunately one-sided relationship, is a matter of historical fact. But over the last 15 years, the two have begun to turn a new page. USACE and the tribes have recognized that what they can potentially achieve by working together is too powerful to ignore.

"We have ignored tribal governments for 150 to 200 years," USACE's Senior Tribal Liaison (TL) Georgeie Reynolds admitted. "There's a vast pool of knowledge out there. They know their land better than we do. They're perfect partners."

The two are partners by law in fact. USACE and all other federal agencies have responsibilities to federally recognized Native American tribes resulting from the federal trust doctrine. While the doctrine may be constitutional fact, building strong relations with Native American tribes is a matter of trust.

"Our history with the tribes in the 18th, 19th, and 20th centuries is not good," Reynolds acknowledged. "So we have a lot of baggage with Native Americans up to this day, which we are trying to overcome."

The drive to change the relationship began in the mid-1990s following a 1994 presidential memorandum that called on federal agencies to work more closely with Native American tribes. USACE held a series of consultation meetings seeking input from tribes in 1995-1996. Nearly 200 tribes participated in the meetings or offered written comments expressing concerns from shoreline protection to access to sacred sites. Reynolds remembers the meetings well.

"I organized the one in the Alaska District. Then, as now, the issue there was erosion. All that information was taken back to headquarters and a team was assembled to make recommendations. In 1998, they came out with six Tribal Policy Principles."

In addition to the consultations, the principles grew out of the federal trust doctrine, treaties, executive orders (EOs), statutes, and regulations regarding the relationship between the U.S. and tribal governments. They are:

- meet the trust responsibility;
- honor the government-to-government relationship;
- acknowledge the inherent sovereignty of tribes;
- engage in pre-decisional consultation;
- protect natural and cultural resources when possible; and
- find opportunities to use existing authorities to encourage economic capacity-building and growth.

USACE's Tribal Policy Principles were bolstered by EO 13175, signed on Nov. 6, 2000, by President Bill Clinton and more recently by a presidential memorandum strengthening EO 13175 signed by President Barack Obama on Nov. 5, 2009.

EO 13175 set out a specific set of requirements for all federal agencies regarding their responsibilities to consult and coordinate with tribes. The 2009 presidential memorandum on EO 13175 directs agencies to develop a plan of actions for providing regular and meaningful consultation and strengthening the government-to-government relationship with American Indian tribes. It also requires that each agency submit to the director of the Office of Management and Budget a detailed plan of actions the agency will take to implement EO 13175 within 270 days after the date of the memorandum. Annually thereafter, a progress report on the status of each action included in its Plan of Actions together with any proposed updates to its plan will be submitted.

The result of the various memoranda and executive orders has been a greatly expanded tribal relations program within USACE. In 1996, the Office of the Assistant Secretary of the Army for Civil Works hired its first tribal liaison to improve relations with Native American nations and help establish a tribal relations program throughout USACE. By 1998, a few district offices, largely those in districts near the Missouri River and Columbia River tribes, had TLs on staff. Today, there is a TL or point of contact in every USACE district and division office.

Reynolds was named the first full-time senior TL at USACE Headquarters in 2003, tasked with overseeing the national program and advising USACE in decisions affecting tribal issues. The senior TL sits on the Department of Defense (DoD) Native American Integrated Product Team, which facilitates communication on tribal issues within the department. She also is a sitting member of the Interagency Working Group on Indian Affairs, which reports to the administration on efforts to improve tribal consultation.

"Warriors Past and Present" sculpture, located in Albuquerque, N.M. The U.S. Army Corps of Engineers has improved its tribal relations by returning 310 acres of land used for flood control in New Mexico. The land, which was formerly part of the USACE Galisteo Dam Project located between Albuquerque and Santa Fe, was transferred to the Bureau of Indian Affairs to be held in trust for the Kewa Pueblo tribe in July 2010.

Photo courtesy of the U.S. Army Corps of Engineers

"Today, every district has a tribal liaison," Reynolds said. "Even if there are no tribes in say, the Savannah District now, there were. We, the federal government and the Army, removed many tribes from the East Coast to Oklahoma, Wisconsin, Michigan, Kansas, Nebraska, etc. And they have a long memory. So if the Savannah District is doing something in a particular valley, they have to let the appropriate tribe in Oklahoma know. Every Corps district has a point of contact, if not a full tribal liaison, because prior to 1492, all land was Indian country.

"The Corps does the right thing if it knows what that is. That's why the most important component of this program is education," said Reynolds. "A lot of people do not know about our trust responsibility, tribal sovereignty, and so on. When we partner with tribes, we can fulfill this responsibility to them as well as fulfill our Corps missions. And of all our major mission areas, environmental restoration seems to be the most popular in Indian country."

Indeed, the balance between human society and the land is ingrained in Native American culture. As a consequence, tribes have always valued the earth and hold it sacred. Among the many concrete and symbolic steps USACE has taken in improving its tribal relations is the recent return of 310 acres of land used for flood control in New Mexico. Formerly part of the USACE Galisteo Dam Project located between Albuquerque and Santa Fe, the land was transferred to the Bureau of Indian Affairs to be held in trust for the Kewa Pueblo tribe in July 2010. The transfer was the first of its kind for USACE in New Mexico, which followed a request from the Kewa several years ago.

At the transfer ceremony, Kewa Pueblo Gov. Tony Tortalita reflected the sentiments of his and other Native American tribes, saying, "This is the happiest day of my life. Mother Earth has heard our prayers and all these people have helped our land return to us."

Elsewhere in New Mexico, USACE is demonstrating that it can fulfill its mission, meet its trust obligations, and help build economic capacity within local tribes at the same time. Meeting its Tribal Policy Principles and executing the mission are complementary activities, Albuquerque District TL Ron Kneebone affirmed.

"The Corps' Civil Works projects are typically cost-share programs," Kneebone explained. "One of the things we promote

A team examines a Native American petroglyph found in a training area on Fort Carson, Colo. The Native American Graves Protection and Repatriation Act safeguards American Indian sacred lands.

with our Native American partners is for them to take an interest in the management of the project but to also take an active part in the engineering, design, and research that is required to execute it. We have their environmental people do the environmental studies and compliance. If they wish, they can have some of their companies participate in design.

"We have a couple of dams in New Mexico located on tribal lands. The Corps has special authorization to enter into a cooperative agreement with those tribes. We acquire the services of the tribes to support our operations' activities. We fund the tribe to carry out activities on behalf of the Corps – changes in the amount of water stored or special deviations from the usual water control manual. By funding these specifically targeted activities, the tribes build a capacity they would not otherwise have, for example, in contracting or compliance activities. That not only provides economic benefit to the local community, but it aids the tribe's capacity to govern itself. Self-determination is a goal of our Tribal Policy Principles."

Partnering with Native American tribes is useful for USACE in subtle ways as well. Tribes' ability to enter into exclusive agreements with the federal government uncomplicated by strictures from local state and municipal authorities can advance Corps projects more quickly and offer more options.

"It provides something for the government in that it gives us a different tool that we would not otherwise have," Kneebone said. "Tribes have a unique relationship with the federal government that states or other local governments don't have."

Contrary to the prevailing attitude of the past, the relationship can be a thoroughly complementary one. Reynolds likes to stress to USACE employees and leaders that interactions with American Indian tribes present abundant opportunities, not impediments to project execution as some believe.

"The chairwoman of the Wampanoag tribe in Massachusetts says that she looks to the Corps of Engineers as the most important federal agency. Why? Because we deal with water and water is life. So we have a lot in common when it comes to preserving water quality, infrastructure etc.

"Through history, tribes have impeded projects moving forward because that was their only channel of input," Kneebone said. "By seeking tribes as partners, and by bringing them in early on to develop the scope and goals of a project, it becomes theirs. They become advocates of the project. You can move the project forward with more alacrity. The compliance issues are simpler that way."

Funding Native American tribes and enterprises to work with USACE on various projects builds on the potential economic activity within tribal lands and the development of business, technical, and engineering talent within the tribes – some of it potentially available to the Corps itself. USACE is one of the major sponsors of the American Indian Science and Engineering Society (AISES).

Fort Carson photo

"We have a booth at the AISES convention every year in November," Reynolds added. "We hire Native American graduate students and recent college graduates from AISES' ranks and they become part of our workforce. The national representative to AISES is Kimberly Oldham, a Muskogee Creek/Yuchi Indian from Oklahoma. She manages portions of John Day Dam on the Columbia River. She won AISES' Professional Engineer of the Year last year and is a beacon to Native American people. They see what she's done and say, 'Well, we'll give the Corps a try.' When we have our booth at AISES, we'll typically have 10 or 20 people gathered there, all Native Americans from around the country.

"One of my favorite moments at an AISES conference was about four years ago. We had a panel of Native American Corps employees and one of them showed a slide of a dam and said, 'I run that dam,' to a crowd of students. It made a big impression on them."

Native Americans number among the group of district tribal liaisons as well. The Portland, Ore., District TL is a Saginaw Chippewa; the Seattle, Wash., assistant TL is an Oglala Sioux. In St. Louis, Mo., a Citizen Band Pottawatomie tribe member is the Corps' liaison, while the Omaha, Neb., TL is an Osage tribe member, and the Jacksonville, Fla., TL is a Muscogee Creek member. Tribal members are also TLs at the Engineer Research and Development Center and at the Sacramento District.

Tribal liaisons are sometimes confused with the large number of archaeologists employed by USACE as a result of its infrastructure management mission. But they come from a variety of professional backgrounds, from project managers and historians to biologists and engineers.

"People often ask me," Reynolds said, 'What does it take to be a tribal liaison? Do you have to be an archeologist or anthropologist?' The answer is no. It takes a certain personality, a certain willingness to work with people, a certain curiosity about different cultures.

"The Tribal Nations Community of Practice [CoP] comprises about 180 members and growing," Reynolds said. "We have annual CoP meetings. This year, our 7th, the meeting is in Tulsa, Okla., co-sponsored by the Tulsa District and the Cherokee Nation.

"I have talented people to turn to when I have a question," Reynolds said. "There are people like Ron Kneebone who have done this longer than I have and everyone brings their own gift and talent."

Though each TL may have his or her own specialty and spend much of their time exercising that specialty at the district level, each has tribal consultative responsibilities, often including issues surrounding sacred Native American artifacts and human remains. The treatment of these issues is central to the Tribal Nations CoP.

Human remains found on federal property come under the Native American Graves Protection and Repatriation Act (NAGPRA), passed in 1990, at the behest of American Indians distressed by decades of desecration of their burial and sacred sites on federal lands. This act dovetails with the Archaeological Resources Protection Act (ARPA), which also applies on Indian lands, and the overarching National Historic Preservation Act (NHPA), which applies to all lands, including private land. Sites are protected from plunder by strict legal and monetary penalties. As a result, when human remains or artifacts are discovered in the course of a USACE project, the local district TL must be informed and must begin consultation with the relevant tribes before the project can progress. The archeologist is, of course, also involved.

"We work very hard in our CoP to differentiate ourselves from the archeologists," Reynolds noted. "They're interested in NAGPRA, Sections 106 and 110 of the NHPA, and others, whereas tribal liaisons are also interested in clean air, clean water, environmental infrastructure, flooding, drought, and other environmental concerns. I may add that as a courtesy, if you're talking to a tribal member who has a concern that may not be under Corps jurisdiction, you don't say, 'That's not in my lane.' A tribal member once asked me about access to grave sites that were on property owned by a different agency. I found out who the tribal liaison was in that geographic area for that agency and asked on behalf of the tribal member for access to those graves. You go the extra distance."

Native American paintings under a rock ledge on Fort Carson, Colo., property are examined. USACE tribal liaisons, tribal consultants, and archeologists must confer upon finding Native Indian artifacts.

Fort Carson photo

A tribal liaison is a generalist, but even generalists need training. That's why USACE directs its TLs to training programs including DoD's free "American Indian Cultural Communications Course." Other programs include a free 2.5-day course, Consulting With Tribal Nations, held twice a year and taught by Reynolds and other USACE instructors. There is also a cultural immersion course, which gets USACE employees out from behind their desks and onto an American Indian reservation for a week.

"'Native American Perspectives on Corps Projects' immerses students in one of four different reservation settings [with the Osage near Tulsa, the Pueblo de Cochiti near Albuquerque, the Lac du Flambeau near Detroit, or the Umatilla near Pendleton, Ore.] and can be a transformative experience," said Reynolds. "This is Prospect Course 950 in the 'Purple Book.'"

Kneebone says of the Cochiti course: "It really is a mind-expanding experience because everyone is going toward 'green' today. Learning the Native American perspective on the earth, which is almost the same as the saying, 'The Earth is Sacred,' is really important. It influences your world view and how you're going to make decisions about Corps projects."

The Coxhiti course is a direct result of improved tribal relations and, for Kneebone, illustrates one of the main challenges faced by USACE personnel throughout the world – working within different cultures.

"One of the dams we built destroyed 50 percent of the land base of the Pueblo de Cochiti tribe. Needless to say, they weren't happy with the Corps of Engineers and for 60 years, we had a very difficult relationship. As a result of leadership developments within the Cochiti community and the Corps commander of the Albuquerque District, a process of rapprochement began. They

American Indian tribal representatives hold a prayer at Warm Springs in Camp Guernsey's (Wyo.) South Training Area during a 2008 tribal consultation meeting field trip. Native American consultation is a key component to the Corps before any project on or near tribal lands begins.

U.S. Air Force photo by Sue Sapp

basically recognized that after 50 years, the dam wasn't going any place, the tribe wasn't going any place, and theirs was a mutually destructive attitude. In 2000, they started building a partnership and that culminated with our class this past spring.

"The course discussed the impact of the dam on the tribe's way of life from their perspective. It was a good class and good for some of the military folks who attended not just in building relationships with Native Americans but in building relationships with people from another culture. We're a worldwide organization. We work with all sorts of different cultures and this is kind of a leadership class in that it takes us outside the comfort of a Corps office and puts us out in the real world where we have to deal with people who differ with us even at the basic level of interpreting problem definition."

Finding solutions to complex problems in a sustainable way is at the heart of what the USACE does. Sustainable solutions are likewise part of the continuum of Native American tradition. The two intersect in almost every USACE project, which explains why USACE has made as much progress with tribes as any federal agency, according to Reynolds and Kneebone.

"I believe our tribal program is ahead of most other agencies," Reynolds said. "It's because we do so much development, we work on private land, we build many, many things, we are a highly visible agency."

"All federal agencies are asked to coordinate with the Bureau of Indian Affairs so that there's not duplication of effort," Kneebone added. "But I agree with Georgeie in that the Corps is different from all other agencies in terms of how targeted its programs are. The Bureau of Land Management, the U.S. Forest Service, those types of land management agencies tend to focus their activities within particular venues. The Corps plays an active role in the day-to-day management of water resources, flood risk, and environmental restoration projects. Those things tend to make us more aggressive in terms of seeking out relationships and partnerships."

And the USACE will continue to build its relationship with Native American tribes in years to come. It's a matter of trust.

Backstage Business

Logistics Activity supports the entire cast of USACE players and operations.

By Jan Tegler

The work of many organizations can be likened to theatrical performance. Employees are given duties to carry out in the world of commerce and enterprise much as actors are given roles to perform on a stage. But away from the footlights there is a stage crew, a group whose sole purpose is to support the players. They provide and maintain the set upon which actors perform, supply, and manage the props that they utilize, and direct the entertainers from place to place onstage.

The U.S. Army Corps of Engineers (USACE) Logistics Activity (ULA) performs a very similar function for the Corps, providing logistics services that support the full spectrum of operations. Corps personnel at the headquarters, division, and district levels nationally and internationally are the performers. ULA is the stage crew, tasked with the management of leased- and Army-owned facilities, management of USACE fleet vehicles, transportation and travel requirements and shipments, supply management, property accountability and equipment maintenance, and deliberate and crisis-action planning and response.

Launched in 2006 to provide a standard, nationwide logistics program for the Corps, ULA became fully operational in 2008. The activity's core missions, administrative and financial functions, and safety and occupational health programs are guided by seven ULA departments: the Executive Office; Facilities Division; Logistics Planning and Operations Division; Resource Integration Division; Safety and Occupational Health; Supply and Maintenance Division; and Transportation Division.

Comprised of more than 400 logisticians, ULA is the operational arm of the Directorate of Logistics (provides policy, guidance, and strategic vision for logistics in the Corps), based in Millington, Tenn. Regional Logistics Liaisons (RLL) at each of the Corps' nine divisions supply logistics support to the division commanders. Subordinate to the RLLs are four-man logistics support teams at each of the Corps' 56 districts. The teams provide logistic supply, maintenance, transportation, and facilities management for district commanders in the field.

Each team is led by a multi-functional logistician who serves as a logistics team chief in supply, maintenance, and transportation (many also have facilities engineering experience). The team chiefs are aided by a supply technician trained in supply property-book accountability, procurement, and other supply-related logistics; a transportation specialist trained in travel, fleet management, and other transportation areas; and a facilities management person trained in facilities engineering, maintenance, and management.

And so ULA logisticians handle the backstage business that supports USACE operations across the board. Their efforts can be broken down into the core mission areas mentioned above but financing for logistics support comes from two accounts, one for Corps military programs funded by the Department of the Army (DA) and one for Corps Civil Works programs funded via Congress.

MANAGEMENT OF LEASED- AND ARMY-OWNED FACILITIES

"You find a facilities manager at each one of the districts," said ULA Director of Logistics Martin Jennings.

"They're tasked with scheduling of facilities repairs and normal maintenance. They schedule space utilization – how the facilities are designed, how offices and cubicles are formed. They schedule replacement of carpet or repainting of the facilities periodically and manage cleanliness and maintenance contracts. They oversee the operational maintenance of facilities."

It's a big job, primarily tied to the management of leased civilian facilities. "We're downtown predominantly," Jennings said. "We're in GSA-leased [U.S. General Services Administration] facilities with about $91 million in leases per year. We do have some Corps facilities that we own but we're part of very few military installations."

Facilities management services include: master planning services, facilities modification advice, assistance and design, space planning services, negotiation and maintenance of host-tenant agreements and occupancy agreements, liaison with GSA, facility management policy, procedure and regulatory guidance development/review, and refinement of all leased Corps and Army-owned spaces occupied by USACE.

MANAGEMENT OF USACE FLEET VEHICLES, TRANSPORTATION AND TRAVEL REQUIREMENTS AND SHIPMENTS

Executed by the Transportation Division, this mission is diverse, including the management of personal property freight and storage programs, the general freight program, the small-package service program, and fleet management program. The division also oversees official travel for Corps personnel and manages foreign travel clearance, visa/passport services, and permanent change of station/temporary change of status counseling and processing.

Jennings cited examples illustrative of the mission, from fleet management and travel to freight and personal property movement.

"We lease 7,400 vehicles from the GSA," he said. "We replenish those at a rate of about 33 percent per year so about one-third of the vehicle property is replaced yearly. We do about $36 million per year in GSA leases for fleet vehicles. That can range from sedans to vans and dually-trucks [trucks with four wheels on the rear axle alone] in order to execute our missions in the field.

"We do freight management as well, moving freight for the Corps but we also handle personnel travel and passport coordination. In addition, we move personal property. When a member of the Corps of Engineers is reassigned outside of his immediate area to an area over 50 miles away, he or she may be authorized to move household goods. We pack them up and coordinate with transportation elements to transport household goods to the next location and the Corps member's new home."

The U.S. Army Corps of Engineers' Robert Murphy, a stock record account officer, loads a pallet of hydraulic oil for shipment to one of the locks managed and maintained by the Corps' Pittsburgh District Office. The U.S. Army Corps of Engineers Logistics Activity coordinates the shipping and delivery of hydraulic oil and the many other supplies needed to keep USACE running.

SUPPLY MANAGEMENT, PROPERTY ACCOUNTABILITY, AND EQUIPMENT MAINTENANCE

Managing, maintaining, and keeping track of supplies and property is a $1.9 billion operation according to Jennings. Administered under the Supply and Maintenance Division, responsibilities include property maintenance and supply program execution, oversight, and policy execution.

"We have 10 property book officers, one at each division and one at Millington, Tenn., to do oversight," Jennings explained. "And we have a supply-maintenance division chief who maintains property-book oversight under ULA. The preponderance of the mission in the supply arena is property book accountability, making sure we have good hand-receipts and good control of our property both on our military DA-funded programs side and on the Civil Works side of the house. We have a table of distributional allowances for what property we're authorized to have on the military side and a similar document for Civil Works-funded property."

Jennings said that it's critical for the Corps to have good asset management. ULA uses extensive databases to manage USACE's overall property books but there are actually hand receipts at the district level and hand receipt holders in each of the districts.

"We use hand receipts for property almost down to the user level to maintain proper accountability," he added.

Moreover, the range of equipment ULA oversees is staggering.

"The Corps has 700 boats for example," said Jennings. "I'm talking about dredges, tug boats, and small boats, different types of equipment we use to manage water resources. We also have an Army battalion, the 229th Engineer Battalion, which employs a large amount of power-generation equipment including gigantic generators large enough to power-up portions of cities in the event of emergencies. We go from Army-centric equipment – Humvees, trucks, and boats – to office equipment."

CRISIS-ACTION PLANNING AND RESPONSE

In addition to its routine logistics services, ULA provides a crisis-action logistics planning function, serving as a coordinating and executing body in civil and/or military contingency/emergency response actions.

Executed under the Logistics Planning and Operations Division, the crisis-action planning and response mission endows ULA with the capability to logistically support the full spectrum of USACE's contingency, combat, stability, and disaster operations through forward deployed and reach-back planning capabilities.

"Our responsibility is to Corps personnel who are going to respond to natural disasters," Jennings said. "At D-plus one [day of disaster plus one], we send out an emergency response team made up of ULA volunteers to the location of a natural disaster to be able to receive USACE personnel. We do staging of equipment and then move it and our personnel out to affected sites. Then we integrate our people and equipment. We're responsible for marrying our people with hotel accommodations in the affected areas. We might also be coordinating for rations or additional vehicles. We establish what we call 'hubs,' staging areas to receive supplies [truckloads of ice, sandbags, etc.] and track the movement of that freight, orchestrating the flow of that material to disaster sites."

AN EVOLVING COMMAND

Jennings stated that ULA is still evolving as it progresses through its third year of operations. Priorities for the next year and into the future include hiring and credentialing more qualified logisticians, expanding enterprise-wide logistics business processes, and incorporating best business practices from industry and academia.

"We're still maturing as we certify and train our people," Jennings admitted. "Our emergency planning and operations are evolving. We're making sure we have the right people with the right skill-set to support the Corps in disaster areas. We have challenges ahead of us in ensuring we have enough people to meet those requirements. We've also coordinated with the Department of the Army to become part of the Army Materiel Command [AMC] contract or LOGCAP [Logistics Civil Augmentation Program], so that once we are maxed out during a crisis action, we can reach out to AMC for support. That way I can put my people back to work doing contractive support with the response plan during a national emergency."

Photo courtesy of the U.S. Army Corps of Engineers

USACE Directory

The U.S. Army Corps of Engineers is a dynamic organization with approximately 37,000 civilian employees and 650 military members. This diverse workforce provides vital public engineering services in peace and war to strengthen our nation's security, energize the economy, and reduce risks from disasters. To successfully meet its broad mission areas, the Corps of Engineers comprises a headquarters office, division and district offices, several centers, as well as one active component and two reserve component commands. These offices are located throughout the United States, Asia, the Middle East, and Europe. The Corps of Engineers includes nine division offices and 46 district offices; six main engineering, research and development, finance, and technical centers; the 249th Engineer Battalion (Prime Power); and the 412th and 416th Theater Engineer Commands. In fall 2009, the Gulf Region Division in Iraq was inactivated, and a new division, the Transatlantic Division, stood up to manage all Overseas Contingency Operations. Two districts are now up and running in Afghanistan to support reconstruction efforts there. The missions of these offices and centers are often as varied as the locations and customers they serve. Brief summaries of each are provided here.

DIVISIONS AND DISTRICTS

GREAT LAKES AND OHIO RIVER DIVISION

550 MAIN STREET • CINCINNATI, OH 45202
TEL: (513) 684-3010

The history of the U.S. Army Corps of Engineers can be traced to June 1775, when the Continental Congress organized an army and appointed Colonel Richard Gridley as Gen. George Washington's first Chief Engineer. Army engineers were instrumental in some of the major battles of the Revolutionary War. In 1794, Congress organized a Corps of Artillerists and Engineers but it was not until 1802 that it reestablished a separate Corps of Engineers. In that same year, Congress established a military academy at West Point, N.Y.

Its first superintendent, Jonathan Williams, was also the Chief Engineer of the Corps. From its inception, many politicians wanted the Corps to contribute to both military construction and works "of a civil nature." Throughout the 19th century, the Corps supervised the construction of coastal fortifications and mapped much of the American West, constructed lighthouses, helped develop jetties and piers for harbors, and surveyed and mapped the channels of many rivers for navigation improvements.

With the organizational evolution of the Corps, district offices began forming in the 1870s. Division offices were created by general orders in 1888. In 1901, the Central Division office, at Cincinnati, Ohio, was established to manage the civil works program. In 1933, it was renamed the Ohio River Division, responsible for Corps civil works and defense missions in the basin.

In 1997, the Corps began restructuring several of its divisions, which led to combining the Ohio River and North Central divisions to form the Great Lakes and Ohio River Division (LRD).

LRD consists of the Great Lakes (which include the U.S. portion of the St. Lawrence River) and the Ohio River watersheds. It encompasses 335,300 square miles – all or portions of 17 states – that contain a population of more than 58 million people.

Stretching from the Great Lakes south to Alabama, from the Mississippi River east to Virginia's Old Dominion, the division and its seven districts carry out rich and diverse missions. Huntington, Louisville, Nashville, and Pittsburgh districts work in the Ohio River's watershed while Buffalo, Chicago, and Detroit districts carry out missions along the Great Lakes. The Louisville District also executes military missions that support 20 Department of Defense organizations in its five-state area – Michigan, Ohio, Illinois, Indiana, and Kentucky.

The division has a robust navigation mission. Assigned the responsibility of keeping the Ohio River system navigable, the division performs work along the Ohio River and its seven tributaries. The basin's 2,582 miles of waterways carry 35 percent of the country's waterborne commerce.

In the division's northern area, the Great Lakes transport vital commodities to and from the nation's heartland. Total annual commerce on the Great Lakes averages 175 million tons.

The division office supports even more than the 58 million people within its boundaries. As a representative to the International Joint Commission on the Great Lakes, it works hand-in-hand with the

Harbor of Cleveland
Buffalo District

Canadian government and industry on matters of international shipping and protection of the Great Lakes ecosystem.

More than 300 division employees have deployed to Iraq or Afghanistan since 2001 in support of the Corps' Overseas Contingency Operations mission.

The Great Lakes and Ohio River Division enhances and protects the region's waterways and its citizens, facilitates national and international commerce, supports the Army and Air Force with quality facility construction, and helps defend our nation and its allies. It performs vital public engineering services and is committed to all of its customers.

BUFFALO DISTRICT
1776 NIAGARA STREET
BUFFALO, NY 14207-3199
TEL: (716) 879-4410

The Buffalo District traces its roots to Corps of Engineers officer Capt. Theodore Maurice, first assigned to the territory in 1824 to supervise federal engineer operations on Lake Erie. The first permanent Corps office opened in Buffalo in 1857. Today, the Buffalo District covers 38,000 square miles from Massena, N.Y., to Toledo, Ohio. It encompasses the U.S. drainage basins for both lower Great Lakes and the St. Lawrence River, and a significant portion of the nation's industrial heartland. There are approximately 280 employees in the district, which includes six field offices.

The district program is approximately $80 to $100 million annually, with a major share allocated to environmental restoration programs. A significant portion of the district's budget is also used for maintenance of Great Lakes harbors, including 100 miles of federal navigation channels; and 38 miles of breakwaters, piers, and jetties. District employees plan, design, construct, and operate water resource projects to maintain navigation, flood and storm damage reduction, streambank and shoreline protection, and ecosystem restoration. The district's substantial expertise in water resource management supports ongoing programs related to wetland planning and management, water quality, and water supply. The Buffalo District also has regulatory authority over work affecting navigable waters and discharge of fill material into waters of the United States, including wetlands, and ranks first in the Great Lakes and Ohio River Division in employee deployments to Overseas Contingency Operations.

CHICAGO DISTRICT
111 N. CANAL, SUITE 600 • CHICAGO, IL 60606
TEL: (312) 846-5303

The Chicago District has been responsible for water resources development in the Chicago metropolitan area, an area of about 5,000 square miles with a population of about eight million, since 1833. The district is involved in providing engineering services and solutions to a variety of projects stemming from its primary mission areas of flood risk management, shoreline protection, navigation, ecological restoration, and emergency management. The district is currently working on a variety of projects ranging from storm damage reduction along the Chicago shoreline, flood risk management along the Little Calumet and Des Plaines rivers, the operation of the Electric Dispersal Barrier in the Chicago Sanitary and Ship Canal to reduce the risk of inter-basin transfer of fish between the Mississippi River basins and the Great Lakes, as well as a feasibility study (GLMRIS or the Great Lakes Mississippi River Interbasin Study) that analyzes the control technologies available to prevent or reduce the risk of aquatic nuisance species (ANS) transfer via aquatic pathways. The district also maintains seven Great Lakes harbors in Illinois and Indiana.

USACE photo by Ken Winters

DETROIT DISTRICT
P.O. BOX 1027 • DETROIT, MI 48231-1027
TEL: (888) 694-8313
The Detroit District, established in 1841, covers 82,000 square miles of land inhabited by about 14 million people and has 4,000 miles of Great Lakes shoreline. The Detroit District's major mission is to investigate, plan, design, construct, operate, and maintain congressionally authorized water-resource projects related to navigation, flood control, beach erosion, and other activities.

HUNTINGTON DISTRICT
502 EIGHTH STREET • HUNTINGTON, WV 25701-2070
TEL: (304) 399-5353
The Huntington District is responsible for a geographic area in the Appalachian hills and mountains of southern and central West Virginia, eastern Kentucky, western Virginia, northwestern North Carolina, and the rolling plains of southeastern and central Ohio. Within this 45,000-square-mile area, more flood control dams, levees, and floodwalls have been designed and constructed than in any other Corps district in the country. The district's work has more than $11 billion dollars in flood damages, restored ecosystems, and aided regional development through the transport of bulk commodities on the nation's inland waterways. The Huntington District includes the nation's largest inland waterway port – the seventh-largest port nationally. Huntington proudly supports the Overseas Contingency Operation by deploying civilians and military reservists to help rebuild Iraq and Afghanistan.

LOUISVILLE DISTRICT
P.O. BOX 59 • LOUISVILLE, KY 40201-0059
600 DR. MARTIN LUTHER KING, JR. PLACE • LOUISVILLE, KY 40202 • TEL: (502) 315-6766
http://twitter.com/louisvilleusace
http://www.facebook.com/LouisvilleUSACE
http://www.flickr.com/photos/louisvilleusace
The Louisville District's geographic area covers Illinois, Indiana, Kentucky, Michigan, and Ohio. Louisville, one of the Corps' more diverse districts, has both a civil works and military construction mission. In addition to the district having the military construction mission for the entire division, Louisville District manages the Army and Air Force Reserve program nationally. The civil works boundary encompasses nearly 76,000 square miles of the Lower Ohio River Basin. Primary civil works services include: flood control, navigation, regulatory activities, water supply, water quality, hydropower, environmental conservation and enhancement, recreation, and emergency response. To date, Louisville District projects have prevented more than $6.1 billion in flood damages. Its support to the nation's Overseas Contingency Operations includes deploying its own members to serve alongside the uniformed services. There are currently 12 district employees serving in Iraq and 10 in Afghanistan.

NASHVILLE DISTRICT
P.O. BOX 1070 • NASHVILLE, TN 37202-1070
TEL: (615) 736-7161
The Nashville District encompasses more than 59,000 square miles and includes parts of seven states. It has regulatory, flood control, navigation, hydropower, and recreational responsibility for the Cumberland River watershed. It also has regulatory and navigation responsibility for most of the Tennessee River watershed.

With programs that lead the Corps of Engineers in recreation, hydropower, and navigation and a diverse workforce ready to meet any challenge, the Nashville District is positioned to respond to the nation's needs in peace, war, and natural disaster. The district's recreation program leads the nation in number of visitors, with over 35 million last year to 10 lakes in the Cumberland River Basin. In hydropower, the unit availability rate of 97.5 percent leads the nation and far exceeds industry standards. With 1,175 miles of navigable waterways, which is nearly 10 percent of the U.S. Inland Waterway System, the Nashville District leads the nation in managing and maintaining navigation. Last year, the Nashville District prevented in excess of $255 million in flood damages and deployed 17 employees to Iraq to help rebuild that country.

PITTSBURGH DISTRICT
1000 LIBERTY AVENUE
PITTSBURGH, PA 15222-4186
TEL: (412) 395-7500
The Pittsburgh District's 26,000 square miles include portions of western Pennsylvania, northern West Virginia, eastern Ohio, western Maryland, and southwestern New York with more than 328 miles of navigable waterways. The district maintains and operates 23 navigation locks and dams on the Allegheny, Monongahela, and Ohio Rivers and 16 multipurpose flood control reservoirs. Additionally, 41 local flood reduction projects protect communities along nearby rivers and tributaries. All told, Pittsburgh District's flood damage reduction facilities have paid off handsomely – preventing over $11 billion in flood damages. Fueled by the expertise and dedication of its employees, Pittsburgh – the Headwaters District – enhances the lives of the area's 5 million residents. With 140 years of experience, it has developed expertise to accomplish its varied missions, which include flood damage reduction, navigation, regulatory activities, recreation, fish and wildlife management, environmental protection and restoration, water supply and quality, construction management, low flow augmentation, and emergency response. The district's two major construction projects – the Lower Monongahela River Project and the Emsworth Dam Rehabilitation Project – will keep its waterways viable, year-round transportation corridors.

MISSISSIPPI VALLEY DIVISION
P.O. BOX 80 • VICKSBURG, MS 39181
TEL: (601) 634-7729
The Mississippi Valley Division encompasses 370,000 square miles, 28 million people, and portions of 12 states (from Canada to the Gulf of Mexico) bordering the 2,348-mile-long Mississippi River. The division comprises six interdependent districts with headquarters in Vicksburg and district offices in St. Paul, Minn.; Rock Island, Ill.; St. Louis, Mo.; Memphis, Tenn.; Vicksburg, Miss.; and New Orleans, La.

The "Mighty Mississippi" serves as a continental funnel that collects river flows from 41 percent of the nation's interior. As North America's most important waterway, the division's civil works along the Mississippi River represent critical investments in our nation's future. The division's effectiveness in orchestrating the river's immense power greatly profits America's economy, environment, and defense.

The division also serves as headquarters for the Mississippi River Commission. The commission was established by an act of Congress in 1879 to give the civilian engineering community a greater voice in developing a flood control and navigation plan

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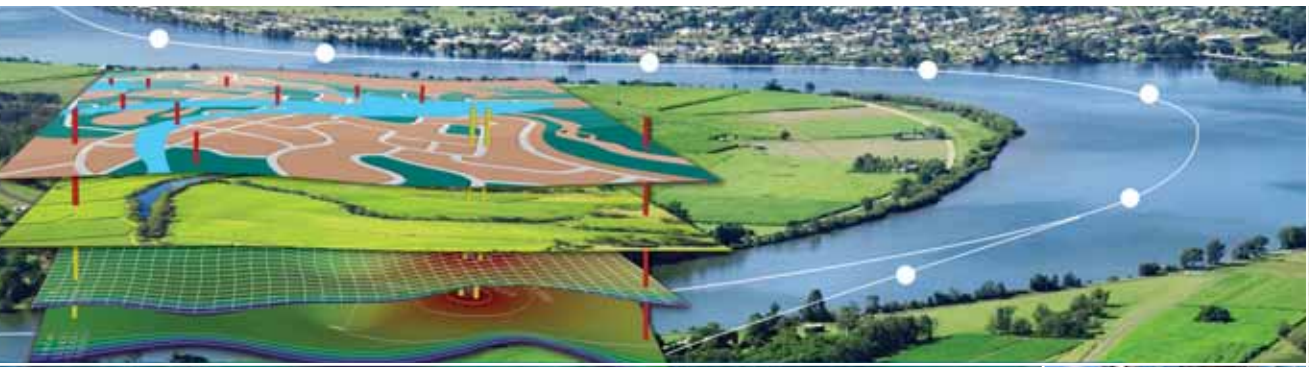
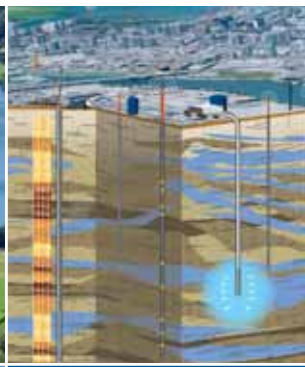

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Barges and the St. Paul District dredging fleet
St. Paul District

for the Mississippi River. The commission consists of seven members – three officers of the Corps (one as its president), one from the National Oceanic and Atmospheric Administration, and three civilians (two of whom must be civil engineers). All members are nominated by the president of the United States, subject to confirmation by the Senate, and serve as advisors to the secretary of the Army and the chief of engineers.

MEMPHIS DISTRICT
167 N. MAIN STREET, ROOM B-202
MEMPHIS, TN 38103-1894
TEL: (901) 544-3005

Established in 1876, the Memphis District encompasses 25,000 square miles of America's Mid-South, including portions of six states. The district is responsible for keeping 355 miles of the Lower Mississippi River and 245 miles of the White River in Arkansas open for commercial navigation. A comprehensive system of stone dikes, concrete revetments, and state-of-the-art dredges aids commerce on the rivers. Since passage of the Flood Control Act of 1928, the Memphis District has worked – under the Mississippi River and Tributaries (MR&T) Project – to reduce and control flooding in the valley. Thanks to the work done under the MR&T Project, the Memphis District prevented more than $12 billion in flood damages between 1993 and 2005. Environmental stewardship, emergency operations, and other authorized civil works round out the Memphis District's mission areas as it strives to benefit its region and the nation.

NEW ORLEANS DISTRICT
P.O. BOX 60267 • NEW ORLEANS, LA 70160-0267
TEL: (504) 862-2201

The New Orleans District provides comprehensive water resources management, including navigation, flood, hurricane, and storm damage risk reduction, and environmental stewardship for south Louisiana to ensure public safety and benefit the nation. Responsible for one of the largest civil works programs, over $350 million annually, the New Orleans District covers more than 30,000 square miles of south Louisiana, from Alexandria to the Gulf of Mexico. The New Orleans District includes 2,800 miles of navigable waterways – including five of the top 15 ports in the nation, 1,300 miles of levees and floodwalls, 11 navigation locks, six major flood control structures, and other projects designed to create and protect coastal wetlands.

ROCK ISLAND DISTRICT
CLOCK TOWER BUILDING • P.O. BOX 2004
ROCK ISLAND, IL 61204-2004
TEL: (800) 799-8302 OR (309) 794-5279

The Rock Island District oversees 314 miles of the Mississippi River from Guttenberg, Iowa, to Saverton, Mo., and 268 miles of the Illinois Waterway from Lake Street in downtown Chicago, Ill., to the LaGrange Lock and Dam, southwest of Beardstown, Ill. The district maintains 22 locks and 18 dams, three flood control reservoirs in Iowa, two flood retarding reservoirs in Illinois, numerous flood protection projects, and 54 recreation and visitor sites within its 78,000-square-mile area of responsibility.

The district is the national supplier of Innovative Flood Fight Products for the Corps of Engineers and the Regional Flood Fight Product Distribution Center for local and state governments during natural disaster response. It operates the Regional Structural Repair Center for maintaining river structures on the Upper Mississippi River. Rock Island District is primarily a civil works district, administering federal water resource development programs in large portions of Iowa and Illinois and smaller portions of Wisconsin, Minnesota, and Missouri. It maintains the capability to support the military construction program when necessary. District missions include navigation, environmental restoration, flood damage reduction, regulatory functions, recreation, federal real estate management, mobilization for both federal disaster response and national defense, and emergency operations.

The district has a diverse staff that includes both advisory and administrative personnel who manage district operations, and a technical staff of specialists and technicians representing a variety of scientific and professional fields. About half of the district staff work at its headquarters on Arsenal Island, Ill., while the other half work at construction field offices, lock and dam sites, and flood control reservoirs.

ST. LOUIS DISTRICT
1222 SPRUCE STREET
ST. LOUIS, MO 63103-2833
TEL: (314) 331-8002

The St. Louis District is an engineering and water-resource agency dedicated to maintaining a proper and healthy balance of the multiple uses of the heartland's waterways. The district supports the needs of the community and the environment through many civil works missions. Missions include navigation, flood risk management, environmental restoration, environmental river engineering, environmental stewardship, water supply, emergency operations and disaster response, hydropower, recreation, regulatory oversight,

USACE photo by Peter Verstegen

and cleanup of hazardous and toxic waste material connected to nuclear weapons production in the 1940s.

The district's area of responsibility encompasses approximately 28,000 square miles, divided almost equally between Missouri and Illinois. The St. Louis District maintains 300 miles of navigable waterway on the Mississippi River from Saverton, Mo., to Cairo, Ill., as well as 80 miles of the lower Illinois River and 36 miles of the Kaskaskia River. The district operates and maintains six lock chambers at four dams on the Upper Mississippi River and one lock and dam on the Kaskaskia River. The district also oversees maintenance and operation of 90 flood protection levee systems and exercises regulatory control over some 42,000 miles of waterways. On average, the district hosts 15 million visitors a year at its five lakes and rivers projects. Visitors have access to 32 camping areas, offering over 2,000 campsites, 20 marinas, 112 boat ramps, day-use areas, and swimming beaches.

ST. PAUL DISTRICT

ARMY CORPS OF ENGINEERS, SIBLEY SQUARE AT MEARS PARK • 190 FIFTH STREET EAST,
STE. 401 • ST. PAUL, MN 55101-1638
TEL: (651) 290-5807

The St. Paul District is where the "Mighty Mississippi River" starts its long journey through the middle of the United States to the Gulf of Mexico. The district covers an area of approximately 139,000 square miles, and its borders follow the edges of four river basins – the Mississippi River, the Red River of the North, the Souris River, and the Rainy River. This area includes most of Minnesota, the western half of Wisconsin, the northeastern section of North Dakota, and small portions of South Dakota and northeastern Iowa.

Today, the St. Paul District is responsible for supporting inland navigation by operating 13 locks and dams on the Upper Mississippi River and by maintaining the 9-foot navigation channel; helping local communities reduce damages caused by flooding; issuing permits for work in wetlands and navigable rivers in the states of Minnesota and Wisconsin; operating 16 reservoirs for flood damage reduction, recreation, fish and wildlife habitat, and water supply; constructing environmental restoration programs to improve fish and wildlife habitat; providing emergency response operations following natural disasters; and providing recreation activities at Corps facilities, including campgrounds, day-use areas, boat ramps, swimming beaches, and more.

The employees of the St. Paul District help people in the United States and around the world with high-level engineering and technical assistance. Since Overseas Contingency Operations started, 65 district employee volunteers and four military officers have served in Iraq and Afghanistan a total of 83 times. Nearly 300 St. Paul District volunteers helped with Hurricane Katrina recovery and reconstruction efforts in Louisiana and Mississippi in 2005-2008. District employees have continued to assist in Louisiana to this day.

VICKSBURG DISTRICT

4155 CLAY STREET • VICKSBURG, MS 39183-3435
TEL: 601-631-5972

The Vicksburg District encompasses 68,000 square miles in three states with a $250 million annual water-resources program. It is charged with several key projects that are critical to the economic and military security of our nation and that keep the district at the forefront of international engineering. These include:

- Developing and maintaining a 9-foot navigation channel on 278 miles of the Mississippi River.
- Constructing and operating an expansive flood-control system that to date has prevented $50 billion in flood damages.
- Key environmental projects such as restoring the water quality in Arkansas' largest natural lake, Lake Chicot, and the restoration of thousands of acres of bottomland hardwoods in the Mississippi Delta.
- A recreation program that attracts nearly 10 million visitors annually to nine lakes and provides $200 million in benefits to local economies.

NORTH ATLANTIC DIVISION

302 GENERAL LEE AVENUE • BROOKLYN, NY
11252-6700 • TEL: 347-370-4518

The North Atlantic Division's proud history dates to colonial times, when Col. Richard Gridley built defenses for the colonists in what would become known as Bunker Hill. Once freedom was secured, NAD's predecessors built coastal defenses to protect the new nation, like Fort McHenry in Baltimore (where Francis Scott Key wrote "The Star-Spangled Banner") and Fort Wood in New

York (now the site of the Statue of Liberty). NAD built some of the Corps' first civil works projects, including lighthouses and navigation channels. In the continental United States, it services the Atlantic Coast states from Maine to Virginia and the District of Columbia, with a population of 62 million. It provides vital public engineering services in peace and war to strengthen our

nation's security, energize the economy, and reduce risks from disasters.

Overseas, the division serves the U.S. European Command (EUCOM) and the U.S. Africa Command (AFRICOM) through the Europe District. In Europe, NAD provides military construction services on U.S. installations in the EUCOM footprint and supports various U.S. government agencies and NATO to help build strategic partnerships with eastern European allies and former Soviet bloc states. In Africa, NAD promotes a stable and secure African environment in support of U.S. foreign policy through AFRICOM by executing humanitarian assistance, exercise-related construction, and infrastructure development programs.

NAD has district offices in Concord, Mass., New York City, Philadelphia, Baltimore, Norfolk, and Wiesbaden, Germany. All districts in the continental United States plan, design, build, operate, and maintain projects to address the environmental, infrastructure, and water resource challenges within the region. They work to support the military, protect America's water resources, and restore and enhance the environment. They also handle a variety of engineering and construction for international, federal, state, and local governments and agencies.

NAD designs, builds, and maintains facilities to improve living conditions and readiness for the Army and Air Force in the northeastern United States, Europe, Israel, Africa, and Greenland. This includes the U.S. Military Academy at West Point, N.Y. as well as roughly 36 percent of all U.S. military installations worldwide. NAD is a contingency division and can move with the Army on short notice to support any operation anywhere in the world. NAD is a Center of Expertise for the Army's Residential Communities Initiative, a program to revitalize base housing, and serves as the real estate agent for the U.S. Armed Forces

Kazbegi border crossing station
Europe District

Recruiting Facilities Program. NAD is one of the largest divisions and is responsible for acquiring and managing almost 800 recruiting offices across the North Atlantic region.

NAD is also executing more than $7 billion in military construction projects for the 2005 Base Realignment and Closure program as it helps the Department of Defense prepare for future national security needs. The majority of these projects are at Fort Belvoir, Va., including work for the National Geospatial Intelligence Agency, the Washington Headquarters Service, the Missile Defense Agency, the National Museum of the U.S. Army, TRICARE Management Agency, and others.

NAD's civil works mission includes navigation, flood risk management, hurricane and storm-damage reduction, emergency and disaster response, recreational opportunities, environmental restoration and protection, and water supply. Its districts maintain

and improve navigation channels in Boston, New York, Philadelphia, Baltimore, and Norfolk harbors, and in hundreds of smaller ports in the Connecticut, Hudson, Delaware, Susquehanna, Potomac, James, and other rivers, waterways, and river basins. They provide regulatory oversight and supply drinking water to the District of Columbia, Arlington County, Va., the city of Falls Church, Va., and its service area. The division's boundaries include the Delaware and Chesapeake Bays and the Atlantic Intracoastal Waterway, five major canals (including the Cape Cod, the world's widest sea level canal, and the Chesapeake and Delaware), four navigation locks, and 11 high-level highway bridges. NAD is also a National Planning Center of Expertise for

Coastal Storm Damage Reduction services.

NAD has an environmental protection and restoration program of more than $300 million. Its districts work through the EPA Superfund program, the Defense Environmental Restoration Program, the Base Realignment and Closure Program (Environmental Restoration), the Formerly Utilized Sites Remedial Action Program, and others. It has the largest Superfund program in the Corps, with over 62 percent of all Corps program funding.

BALTIMORE DISTRICT

P.O. BOX 1715 • BALTIMORE, MD 21203-1715
TEL: (410) 962-2809

Since our nation's fight for independence, the U.S. Army Corps of Engineers has played a vital role in the development of our country. The first known Corps project in the Baltimore region was the building of Fort McHenry, built in 1799 on a small island in the Baltimore harbor and named for Secretary of War James McHenry.

As the threat of coastal attack diminished during the 1820s, the nation turned its attention to developing roadways, railways, railroads, canals, and communications networks. The assistance provided by Army engineers marked the beginning of Baltimore's civil works mission.

Today, the Baltimore District team of roughly 1,400 employees manages a large and diverse workload. Through the execution of military, civil works, and international and interagency programs, Baltimore District provides design, engineering, construction, environmental, and real estate expertise to a variety of important projects and customers. This support spans across Maryland, northern Virginia, Washington, D.C., West Virginia, Pennsylvania, Delaware, lower central New York, overseas, and across the Susquehanna, Potomac, and Chesapeake Bay watersheds.

Within the North Atlantic Region, the district supports the construction of state-of-the-art Army medical and technological research facilities; the design and cleanup of formerly used defense sites and civilian sites; performs the unique mission of providing drinking water to the District of Columbia and Arlington County and Falls Church, Va.

Baltimore District is a diverse organization, ready to meet future challenges, whatever and wherever they might be.

USACE photo by Carol Davis

EUROPE DISTRICT
CMR 410, BOX 1 • APO AE 09049
TEL: (011) 49-611-9744-2720

The Europe District – previously the European Division – of the U.S. Army Corps of Engineers has been helping its customers solve their toughest engineering challenges in over 50 countries for over 50 years. The district provides support to various U.S., international, and host-nation customers in Europe, Africa, and parts of the Middle East.

Headquartered in Wiesbaden, Germany, the district provides planning, design, construction, environmental services, and project management to meet customer infrastructure requirements; engineering services supporting the Theater Security Cooperation Plan; and Field Force Engineering supporting contingency operations and civil emergencies in the EUCOM and AFRICOM areas of responsibility.

In 2008, Europe District's overall program exceeded all previous records, turning over more than $1.2 billion in projects, including $730 million in military construction.

Work is currently being executed from offices located in Belgium, Georgia, Germany, Israel, Italy, Kosovo, Romania, Spain, and Turkey. Future offices are being set up in Bulgaria, the Czech Republic, and Poland.

The district supplements installation engineers with the total resources, experience, and expertise of the Corps of Engineers in their efforts to resolve operations and maintenance, host-nation engineering, and construction issues.

NEW ENGLAND DISTRICT
696 VIRGINIA ROAD • CONCORD, MA 01742-2751
TEL: (978) 318-8657

The U.S. Army Corps of Engineers traces its beginnings to the opening days of the Revolutionary War when Boston native Col. Richard Gridley was named chief engineer of the Massachusetts Volunteers, and shortly thereafter chief engineer of the newly formed Continental Army by Commander-in-Chief Gen. George Washington. The first Army Engineer action occurred on the night of June 16, 1775, when Gridley designed and supervised the construction of an earthwork on Breed's Hill overlooking Boston Harbor that would prove impregnable against British bombardment during a fierce battle the following day. Although the patriots lost the position after running out of ammunition, the Battle of Bunker Hill (as it was later called) marked the beginning of the long tradition of service to New England that the Corps continues today.

The New England District manages the Corps' civil works responsibilities in a 66,000-square-mile region encompassing the six New England states east of the Lake Champlain drainage basin. The region has 6,100 miles of coastline, 11 deepwater ports, 102 recreational and small commercial harbors with Corps improvements, 13 major river basins, and thousands of rivers and streams. Within this area of operations, the Corps operates, maintains, or has constructed 36 flood control dams, 100 local protection projects, and five hurricane barriers.

The missions of the Corps in New England include engineering environmental remediation; support to Army and Air Force installations and missions; flood control; natural resource management; streambank and shoreline protection; navigation improvements and maintenance; disaster and emergency assistance; regulatory administration (about 6,000 permit applications annually); and engineering and construction management support to other agencies. The New England District is a Hazardous, Toxic, and Radioactive Waste (HTRW) Center of Expertise. It has also pioneered the use of nonstructural flood control with the Charles River Natural Valley Storage Project outside Boston and Belmont Park in Warwick, R.I. The Corps bought the Cape Cod Canal in 1928. Today, it is the world's widest sea-level canal and is still maintained by the Corps in New England.

NEW YORK DISTRICT
26 FEDERAL PLAZA • NEW YORK, NY 10278-0090
TEL: (917) 790-8007

New York District's history began when Gen. George Washington named Col. Rufus Putnam as chief engineer for the defenses of New York. Today, New York District is a full-service district working vital civil, military, and environmental projects in the most densely populated geography of any Corps district.

The district is responsible for overall military design and construction management in northern New Jersey, New York, and Thule, Greenland. The most high-visibility projects include work at the U.S. Military Academy at West Point, Fort Drum, N.Y., and the Washington Headquarters Services building at Fort Belvoir, Va. New York District's civil works responsibilities include northern New Jersey, eastern New York, and portions of Vermont, Massachusetts, and Connecticut. Premier among the district's civil works efforts is the deepening to 50 feet of key shipping channels in the Port of New York and New Jersey, a $1.8 billion project to enhance safety and the environment while ensuring the future success of a vital economic engine serving 35 percent of the American population.

New York District's Drift Collection and Floatables Program operates year-round to locate and remove obstructions and debris that could be a hazard to navigation from harbor waters. The program is a cooperative effort with the U.S. Environmental Protection Agency, the states of New York and New Jersey, and the City of New York.

The district is also a center of expertise for coastal design, construction, and maintenance. New York District is a key player in environmental-restoration efforts, including supporting the U.S. Environmental Protection Agency at various Superfund sites. And district personnel stand ready to deploy in support of the Overseas Contingency Operation or crises here at home.

NORFOLK DISTRICT
803 FRONT STREET • NORFOLK, VA 23510
TEL: (757) 201-7606

The Norfolk District, established in 1879, is comprised of some 400 Department of the Army civilians and a small staff of Army officers who work together at the Waterfield Building headquarters and at numerous field offices throughout the Commonwealth of Virginia.

Norfolk District is a full-spectrum, network-centric engineer district focused on eight lines of operations. They include: Overseas Contingency Operation support, emergency support and response, military construction, Centers of Standardization for seven Army-wide design and construction programs, civil works, real estate, regulatory mission (which includes Vital Habitat Protection and Restoration), and operations and maintenance.

The district's military construction mission encompasses the entire Commonwealth of Virginia and includes the multibillion-dollar 2005 Base Realignment and Closure (BRAC)

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Conceptual renderings as of August 2009

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authorizations through fiscal year 2011. Its civil works program includes navigation, flood damage reduction, and environmental restoration. The district has responsibility for the Rappahannock, York, James, and Chowan Rivers and the Chesapeake Bay coastal basins. It is also responsible for the Port of Hampton Roads, the world's largest coal export port and the sixth largest port in the United States. The district operates and maintains the Atlantic Intracoastal Waterway, the Dismal Swamp Canal, and Albemarle and Chesapeake Canal. This includes three highway drawbridges, three navigation locks, and 38 miles of canals. Norfolk District operates and maintains Gathright Dam, a flood control project located in Covington, Va. The district's beach erosion and flood damage reduction projects have prevented hundreds of millions of dollars in damages throughout the state since 1968. Along the James River, flood damage reduction projects at Buena Vista, Scottsville, and Richmond have all paid for themselves several times over.

The district's cadre of real estate specialists and appraisers plans, appraises, acquires, leases, and manages real estate for both civil works and military construction projects and disposes of excess property. A major program is the planning, leasing, and management of the U.S. Armed Forces Recruiting Centers throughout the Commonwealth of Virginia. The Norfolk District Real Estate Office manages timber disposal for Army installations throughout the North Atlantic Division. Norfolk District also provides real estate support to the Army Residential Communities Initiative (RCI), a multibillion-dollar real estate privatization program for family housing throughout the continental United States. Currently, the Norfolk District Real Estate Office has transferred 89,537 housing units on 35 Army installations. The Norfolk District RCI team began the Unaccompanied Personnel Housing program by privatizing 538 apartment units for Soldiers, staff sergeant and above. The RCI team also supported the Privatizing of Army Lodging, an initiative that will include more than 4,400 new and renovated rooms at 11 installations in its first phase, set to close in 2009.

PHILADELPHIA DISTRICT
WANAMAKER BUILDING • 100 PENN SQUARE EAST •
PHILADELPHIA, PA 19107-3390
TEL: (215) 656-6515

The Philadelphia District manages the water resources of the Delaware River Basin and of Delaware's and most of New Jersey's Atlantic Coasts; executes military construction projects at Dover Air Force Base, Del., Fort Dix, N.J., and Aberdeen Proving Ground, Md.; and provides technical and project management services for the EPA and other government agencies on a reimbursable basis.

Within its 15,000-square-mile, five-state geographic area, it maintains more than 550 miles of navigable waterways, most notably the 40-foot Delaware River, Philadelphia to the Sea, federal channel, and the sea-level Chesapeake and Delaware Canal serving the Port of Baltimore. (A project to deepen the above 40-foot channel to 45 feet has begun.) Other navigation projects include the Delaware River from Philadelphia to Trenton, the Schuylkill River, Wilmington Harbor, sections of the Atlantic Intracoastal Waterway, and numerous shallow-draft coastal inlets. It also operates the *McFarland*, one of only four Corps-owned oceangoing hopper dredges that serves the nation's Ready Reserve status.

The district operates five dams within the Delaware River Basin with a long history of reducing flood damages in eastern Pennsylvania while providing water supply, water quality, and recreation. Best known are Blue Marsh Lake near Reading, which annually hosts around 1.5 million recreational day users, and Francis E. Walter Dam in the Pocono Mountains, whose flow management program benefits both the rafting and fishing communities. We are especially noted for our key role in coastal storm damage reduction along the New Jersey and Delaware coastlines, with 11 beachfill-and-dune systems already established – several of which are now undergoing renourishment.

An increasing share of the district's workload in recent years has been devoted to ecosystem restoration. At New Jersey's Lower Cape May Meadows, it installed a protective beachfill-and-dune system, eradicated marsh reeds, and reseeded native vegetation to help preserve freshwater migratory bird habitat. Other smaller projects have ranged from building fish ladders to removing an obsolete dam to revitalizing a silted-in pond.

At Aberdeen Proving Ground, the district is managing a nearly billion-dollar program to build a new, state-of-the-art, 1.5 million-square-foot electronics research and development campus for the Army's Team C4ISR (Command and Control, Communications, Computers, Intelligence, Sensors and Reconnaissance), being relocated from Fort Monmouth, N.J. under BRAC 2005.

The Philadelphia District supports the EPA with remediation of numerous Superfund sites in New Jersey, including current efforts at its Vineland and Welsbach sites. Other interagency customers are FEMA, the Coast Guard, the Navy, the Department of Veterans Affairs, and the National Park Service.

NORTHWESTERN DIVISION
P.O. BOX 2870 • PORTLAND, OR 97208-2870
TEL: (503) 808-3733

The Northwestern Division covers all or parts of 14 states and nearly 1 million square miles. The division owns or manages 1.8 million acres of military property, including 18 Army and 21 Air Force installations. The Northwestern Division has 992 miles of navigable waters in the Columbia River Basin and 735 miles in the Missouri River Basin. It maintains 22 deep-draft and 20 shallow-draft harbors. The division oversees 82 flood damage reduction projects containing 115 million acre-feet of flood storage, or about 35 percent of the total Corps water-storage capacity. There are 1,440 miles of levees in the division. Northwestern Division power plants on the Columbia, Snake, and Missouri rivers generate 75 billion kilowatts of power per year, or about 75 percent of the total Corps hydroelectric capacity. Northwestern Division oversees an annual program of about $3.5 billion in military, civil works, and environmental restoration activities, executed through its five district offices.

KANSAS CITY DISTRICT
601 EAST 12TH STREET
KANSAS CITY, MO 64106-2896
TEL: (816) 389-3486

With more than 165,000 square miles of district operations and a century of vision, achievement, and service as the Heartland's Engineers, the Kansas City District provides comprehensive engineering, management, and technical support to help defend America's security – militarily, economically, and environmentally. The district's civil works boundaries span the states of Kansas and Missouri and parts of Colorado, Iowa, and Nebraska. The district maintains 500 miles of the Missouri River from Rulo, Neb., to St. Louis and operates 18 multipurpose reservoirs in Kansas, Missouri,

Debris clearing
Seattle District

southern Iowa, and southern Nebraska that welcome more than 15 million annual visitors. Additionally, the district manages 43 local flood damage reduction projects that reduce risk to communities along the heartland's rivers and tributaries. All told, these facilities have paid off tremendously, preventing well over $25 billion in flood damages. Whether supporting engineering projects in the Midwest, serving volunteer tours overseas in Iraq and Afghanistan as part of Overseas Contingency Operations or joining the effort to recover from hurricanes or floods, the members of the Kansas City District continue to answer the call of our nation, as they have since 1907.

OMAHA DISTRICT
1616 CAPITOL AVENUE, SUITE 9000
OMAHA, NE 68102-1618
TEL: (402) 995-2417

The Omaha District is the Corps' largest district, and one of its busiest. Its boundaries encompass all or parts of 10 states, covering nearly 700,000 square miles – more than a fourth of the contiguous United States. With incredible geographic diversity, including the Rocky Mountains of Colorado, Badlands of the Dakotas, lakes of Minnesota, and Great Plains of the Midwest, the district is home to more than two dozen Native American tribes and reservations. The district's various missions are equally vast and diverse. Omaha is home to the entire spectrum of Corps operations, including civil works, military construction, and environmental restoration. Today, the combined engineering programs of the Omaha District exceed $1 billion. From Helena, Mont., to Rulo, Neb., to New Orleans, and as far away as Baghdad, Iraq, some 1,200 district employees respond to engineering challenges worldwide as a part of the overall "one door to the Corps" team.

PORTLAND DISTRICT
P.O. BOX 2946 • PORTLAND, OR 97208-2946
TEL: (503) 808-4510

Serving the needs of the Pacific Northwest since 1871, today the Portland District provides products and services in civil works areas such as flood damage reduction, navigation, hydroelectric power production, ecosystem restoration, fish and wildlife enhancement, emergency preparedness and response, irrigation, water quality, recreation, and regulatory duties. The district's boundaries cover 79,405 square miles in western and central Oregon and 8,740 square miles in southwestern Washington. The district has a strong environmental mission looking at ways to protect, preserve, and restore our fragile environment. Throughout the organization, people are working to identify ways to minimize the impact the dams and their operations have on migrating salmon. Clean, inexpensive hydroelectric power is the chief output of the dams' operations. Each year, the district produces about 25 million megawatt hours of electricity (worth $1.36 billion) – the most of any district within the Corps.

USACE photo

SEATTLE DISTRICT
P.O. BOX 3755 • SEATTLE, WA 98124-3755
TEL: (206) 764-3750

The services Seattle District provides and the customers it serves are extremely diverse. The district provides a full range of civil and military services. Facilities design and construction for military installations represent the majority of the district's military program, from major Army hospitals such as Madigan at Fort Lewis, to reserve centers, to Air Force hangars and quality-of-life facilities. The district's hazardous, toxic, and radiological waste remediation program includes support to active and former military installations and other federal agencies such as the EPA. The district's civil works services concentrate around hydropower, flood damage reduction, navigation, regulatory, and disaster response programs, as well as environmental protection and improvement – from protecting wetlands to ecological restoration. The district is a center of expertise nationally for historic preservation, the Army's program manager for constructing Morale, Welfare and Recreation Facilities, and a leader in emergency preparation and response. Seattle District employees are deployed in Afghanistan and Iraq in support of Overseas Contingency Operations, and travel around the region and nation responding to natural and man-made disasters.

WALLA WALLA DISTRICT
201 NORTH 3RD AVENUE
WALLA WALLA, WA 99362-1876
TEL: (509) 527-7020

The Walla Walla District was established in 1948 to build McNary Dam on the Columbia River near Umatilla, Ore., slightly downriver from the Hanford Nuclear Reservation near the Tri-Cities area in Washington. The district's civil works boundaries generally follow the Snake River drainage and include approximately 107,000 square miles in six states: Washington, Oregon, Idaho, Wyoming, and small parts of Nevada and Utah. The Walla Walla District provides engineering, environmental, and planning services to the region under the continuing authorities program and has established an office in Boise to assist local and state governments in Idaho with using these services. The Walla Walla District is the Corps' second-largest hydropower producer, providing a total generating capacity of 4,413 megawatts to the federal Columbia River Power System. The district operates and maintains the federal navigation channel from McNary Dam on the Columbia River through four lower Snake River projects, providing a navigable waterway 465 miles inland from the Pacific Ocean to Lewiston, Idaho.

PACIFIC OCEAN DIVISION
BUILDING 525 • FORT SHAFTER, HI 96858-5440
TEL: (808) 438-8319

The Pacific Ocean Division (POD) stretches from Alaska and the Arctic Circle in the north to American Samoa below the equator in the south. It encompasses Hawaii, then moves across the international dateline and across Polynesia to the Republic of the Marshall Islands, Federated States of Micronesia, Guam, Commonwealth of the Northern Mariana Islands, and the Republic of Palau. From there, the POD's boundaries extend out of Micronesia and into South East and Far East Asia.

Within its area of responsibility, the POD is the Department of Defense engineering, design, and construction agent for the Army and the Air Force in Alaska and Hawaii. Also, POD designs and builds for all the services – the Army, Air Force, Navy, and Marines – in Japan, Korea, and Kwajalein Atoll. Most notably the POD contributes significantly to the peace and security in the Pacific region through the execution of multi-billion dollar construction programs for U.S. Forces in Japan and the Republic of Korea.

Its 1,800-strong workforce produces every type of construction imaginable in support of Service members and their families throughout the region, from barracks to high-rise family housing, from fitness centers to child-care centers, and from ship berths

to aircraft runways and hangars. It is the only Corps division whose division and district headquarters are all located on military installations (three Army, one Air Force). Additionally, the POD has a civil works mission in Alaska and Hawaii. It is responsible for executing the federal water resources development program there and also in U.S.-controlled land in the Pacific. Thus,

The POD also has civil works projects ongoing in the U.S. territories of Guam and American Samoa, and the Commonwealth of the Northern Mariana Islands. Most of its civil works activities and capabilities are focused in the areas of navigation, flood and coastal storm damage reduction, and ecosystem restoration. Typical projects include deep and shallow draft harbors, riverine and coastal structures, and wetland restoration. In addition to its planning, design, construction and operations and maintenance responsibilities for water resources development, it has a responsibility to regulate or oversee certain activities in the Nation's water to protect its quality and availability through its Regulatory Program.

Ancillary to these duties are environmental services that include studies and hazardous and toxic waste cleanup. On a reimbursable basis, the division also performs work for other military commands, federal and state agencies, and sovereign

island nations in the Pacific. The former United Nations Trust Territories of Palau, Republic of the Marshall Islands, and Federated States of Micronesia are prime examples where the Pacific Ocean Division continues to provide important environmental and engineering design and construction services on a reimbursable basis. The annual program of the division amounts to more than $2 billion.

ALASKA DISTRICT
P.O. BOX 6898 • ANCHORAGE, AK 99506-0898
TEL: (907) 753-2520

The Alaska District boundaries are those of the state of Alaska, encompassing 23 percent of the landmass within the United States and 34 percent of the nation's total coastline. It is a full-service district with major programs in military construction and civil works development, as well as environmental cleanup and restoration. The organization also provides contracting, real estate, and regulatory services, along with operations and maintenance activities. The district's civil works program helps build and maintain small boat harbors, which supports an industry that supplies 50 percent of the fish harvest in the United States and enhances the transportation capabilities of a state with few roads. The Alaska District's military program remains committed to constructing world-class facilities for America's warriors on time and within budget, while helping to provide economic stability on the Last Frontier. With the recent

growth of the armed forces in the state, the district is focused on providing the facilities necessary to support increased numbers of troops, family members, and equipment. The buildup is fueled by a renewed focus on Alaska as a strategic military location, and its large expanses of air and ground space available for training. Upcoming projects will support the continued transformation of the Army, enhance military readiness and training, and provide quality-of-life facilities to support a nation at war. Units scheduled to benefit from this work are the 1st Stryker Brigade Combat Team at Fort Wainwright and the 90th Fighter Squadron at Elmendorf Air Force Base. Meanwhile, the Formerly Used Defense Sites Program in Alaska remains steady at $25 million per year with work expected to continue beyond 2020. The district's regulatory program is one of the largest in the nation and processes more than 2,000 permit actions a year. The Emergency Management Office has deployed more than 300 district personnel in support of overseas contingency operations and civil emergencies.

FAR EAST DISTRICT
UNIT 15546 • APO AP 96205-5546
TEL: (011-82) 2270-7501

Headquartered in Seoul, South Korea, the Corps' Far East District provides high-quality planning, engineering, design, contracting, and construction management services across the full spectrum of military facilities in support of U.S. Forces Korea (USFK). In fiscal 2009, the district had more than $1.6 billion worth of projects under construction. From the Demilitarized Zone to the southern coast of the Korean peninsula, the Far East District team focuses on delivering quality facilities to enhance military readiness and improve the quality of life for Soldiers, sailors, airmen, Marines, civilians, and family members of USFK through military construction, host- nation-funded construction, non-appropriated funds, and sustainment, restoration, and modernization projects. Far East District plays a pivotal role in executing two major initiatives simultaneously: the Yongsan Relocation Plan (YRP) and Land Partnership Plan (LPP) programs. These multiyear initiatives will relocate U.S. forces from the Seoul metropolitan area and the 2d Infantry Division, currently located north of Seoul, to U.S. Army Garrison Humphreys, approximately 40 miles southwest of Seoul. The YRP and LPP programs are estimated to cost about $10 billion, will triple the size of USAG Humphreys, and support about 44,000 people. The Far East District is actively recruiting energetic and adventurous engineers, architects, project managers, construction managers, and program analysts to join the team for a once-in-a-lifetime opportunity to take part in the execution of these two mega-programs.

HONOLULU DISTRICT
BUILDING 230 • FORT SHAFTER, HI 96858-5440
TEL: (808) 438-9862

The Honolulu District's area of operations stretches across five time zones, the equator, and the International Dateline. It covers an estimated 12 million square miles from the Hawaiian Islands to American Samoa, through Micronesia to Guam and the Commonwealth of the Northern Mariana Islands. The district accomplishes military missions, including military construction, real estate, and environmental services for the Army and Air Force in Hawaii, for all Department of Defense agencies in Kwajalein Atoll, and for other defense agencies in its area of operations as assigned. Honolulu District also has a civil works mission: federal water resource management and development, focusing on navigation, flood control, and shore protection in Hawaii, the United States territories of Guam and American Samoa, and the Marianas. The district also has regulatory jurisdiction governing work in waters and wetlands of the United States within its area of operations.

JAPAN ENGINEER DISTRICT
APO AP 96338-5010 • TEL: (011-81) 311-763-3575

The Japan Engineer District services 88 U.S. Forces Japan installations supporting 48,000 service members, Department of Defense civilians, and their families as the designated construction agent for U.S. MILCON and host-nation-funded construction programs in Japan. The district provides support to all U.S. installations in planning, design, and construction of operations and maintenance reimbursable projects. Host-nation-funded work includes projects funded by the Japan Facilities Improvement Program, Special Action Committee on Okinawa program, and the Defense Policy Review Initiative (DPRI) program. From its inception in fiscal 1979 through fiscal 2008, the host-nation-funded construction programs have benefited U.S. forces with $23 billion in construction projects. Total annual construction placement for the district exceeds $700 million. The district supports U.S. forces, installations, and agencies with planning, engineering, construction, environmental, and other related services. The district provides construction surveillance through the Okinawa Area Office and six resident offices based throughout mainland Japan.

SOUTH ATLANTIC DIVISION
ROOM 9M15, 60 FORSYTH STREET SW
ATLANTA, GA 30303-8801
TEL: (404) 562-5011

The Corps of Engineers' South Atlantic Division is one of eight regional offices of the Corps overseeing military and water-resources design, construction, and operation in the eight states in the Southeast, the Caribbean, and Central and South America. The division has five districts located in Wilmington, N.C.; Charleston, S.C.; Savannah, Ga.; Jacksonville, Fla.; and Mobile, Ala.

The South Atlantic Division designs and builds major military facilities for the Army and Air Force in the Southeast. Serving 11 major Army posts and 13 Air Force bases, the division builds barracks, hospitals, office buildings, commissaries, and other facilities to meet the needs of the American military. Within the division boundaries, 32 percent of the stateside Army and 18 percent of the Air Force find their home, and four major commands have their headquarters. The Mobile and Savannah Districts handle military programs for the division.

Thirty-three multipurpose projects in the Southeast provide citizens with flood damage reduction, hydroelectric power, water supply, recreation, navigation, and wildlife enhancement. The South Atlantic Division operates and maintains more than 6,000 miles of federal navigable channel and 29 major harbors in the region. The division also has a growing environmental-restoration workload, including the largest single environmental-restoration project in the world, the Everglades restoration in South Florida.

The U.S. Army Corps of Engineers works in concert with the private sector in accomplishing its military and water resources programs. By contracting with architect-engineer, construction, and many other types of companies, the South Atlantic Division designs, builds, and operates dams, waterways, buildings, recreational, and other facilities throughout the region.

CHARLESTON DISTRICT
69A HAGOOD AVENUE
CHARLESTON, SC 29403-5107
TEL: (843) 329-8123

Though known as one of the smallest districts in the Corps of Engineers, the Charleston District has a wide and varied program that grows larger every year. The Civil Works, Military, and International and Interagency Support (IIS) Programs serve a diverse group of customers that span not only within South Carolina, but the Nation and the globe which keeps the staff of almost 200 quite busy. In 2008, the Military Programs mission for Fort Jackson returned to Charleston District after being assigned elsewhere for several decades. The District now provides MILCON and other construction and renovation support to Fort Jackson, which trains 50% of all soldiers entering the Army each year. Through our robust IIS Program, the district provides contracting support, facility management, emergency management and project management for customers such as the Army Support Logistics Activity Charleston (ASLAC), the Marine Force Reserves and the Veterans Administration. The District serves as the "One Door to the Corps" for our worldwide customer Defense Logistics Agency – Installation Support for Distribution that have 22 warehouse facilities CONUS and five warehouse facilities OCONUS. The District's Civil Works program includes the operation and maintenance of several navigation projects, including Charleston Harbor, one of the Nation's 16 strategic ports, and 210 miles of the Atlantic Intracoastal Waterway. Our Cooper River Rediversion Project and St. Stephen Powerhouse not only reduces shoaling in Charleston Harbor by rediverting water back to the Santee River, it also provides power to 40,000 homes in the St. Stephen area of the state. The District has completed several beach nourishment projects as part of our storm damage reduction mission and continues to look for ways to reduce future damages along the coast. Charleston District has an active Regulatory program that works hard to balance development needs and the needs of the environment as they provide sound permit decisions through enforcing the Clean Water Act. When disasters strike, the district supports FEMA in responding to the needs of the nation by supplying ice to those areas affected by storms, earthquakes or other disasters. The District also proudly supports Oversees

Okinawa family housing construction
Japan Engineer District

USACE photo by Grant Sattler

Contingency Operations through the voluntary deployment of several employees each year.

JACKSONVILLE DISTRICT

701 SAN MARCO BLVD. • JACKSONVILLE, FL 32207
P.O. BOX 4970 • JACKSONVILLE, FL 32232-0019
TEL: (904) 232-2568

Boasting a diverse culture and geography, the Jacksonville District continues to be a Corps pioneer with the largest coordinated ecosystem restoration ever undertaken – the restoration of America's Everglades. This program involves the restoration and preservation of natural habitats; improvement to water storage and movement for more natural flows; development of controls for invasive exotic plants and animals; field and laboratory research; and improvement of water quality. The district represents the nation's technical center of expertise for shoreline protection, maintaining 1,500 miles of Florida's coastal shoreline and 900 miles of inland waterways. Nine of Florida's ports are in the top 100 in the United States in terms of annual tonnage. The district is an innovator in flood damage reduction and water management, and has the largest regulatory program in the Corps. Herbert Hoover Dike, which surrounds Lake Okeechobee, the second-largest freshwater lake within U.S. boundaries, is undergoing an $856 million rehabilitation to provide continued protection for South Florida communities. Jacksonville District's area of responsibility includes the U.S. Virgin Islands and Puerto Rico, home of the first single-centered, roller-compacted concrete thick-arch dam built by the Corps of Engineers in United States territory.

MOBILE DISTRICT

109 SAINT JOSEPH STREET • MOBILE, AL 36602-3630
TEL: (251) 690-2511 • FAX: (251) 690-2525

The Mobile District has both civil works and military missions throughout the southeastern United States and in Central and South America. The district's military mission is in support of U.S. Army, U.S. Air Force, and U.S. Navy installations located in Alabama, Florida, Mississippi, and Tennessee. This work includes design and construction management for a multitude of different types of facilities such as medical centers, dormitories, aircraft facilities, sewage-treatment plants, gymnasiums, and family housing. The district also provides engineering studies and other technical assistance such as master planning, environmental management, and real estate support.

Established in 1815, the Mobile District's civil works mission now covers more than 96,000 square miles in Alabama, Florida, Georgia, and Mississippi. It includes all river, harbor, and flood damage reduction works within the drainage basins of six major river systems. The district's civil works mission includes navigation within five major inland waterways with over 2,200 miles of inland navigation, seven deep-water harbors, and 21 shallow-draft ports; flood damage reduction with more than 67 projects, which have prevented in excess of $200 million in flood damages over the last 10 years; eight hydropower facilities generating 2 billion kilowatts of electricity and returning $23 million to the U.S. Treasury; one of the largest recreation programs in the federal government, with 27 lakes and 464 recreation and nature areas averaging over 28 million visits a year; and water supply for municipalities, industry, and irrigation.

SAVANNAH DISTRICT

P.O. BOX 889 • SAVANNAH, GA 31402-0889
TEL: (912) 652-5944

Headquartered in beautiful, historic Savannah, with 26 field offices in three states, the 1,000 team members of the Savannah District can trace the district's roots in the Savannah area to 1829, when Robert E. Lee, a young Army engineer officer assigned to the Corps' Savannah Station, was involved in the construction of Fort Pulaski and surveys of the Savannah River.

Today, Savannah provides military facilities design and construction; water-resources development, management, and conservation; environmental preservation and restoration; emergency management; and real estate services for its customers. The district manages one of the largest military design and construction programs in the Corps today, with up to a half-billion dollars in new projects each year, providing installation and base engineering support to 14 major Army installations and Air Force bases in Georgia, South Carolina, and North Carolina.

The district has played a major role in developing water resources in Georgia, particularly in the Savannah River Basin and in coastal Georgia. The Savannah District operates three major multipurpose projects serving the needs of the public with flood damage reduction, hydropower, recreation, water supply, water quality, and water management along the Savannah River. The three projects encompass 2,700 miles of shoreline and 152,000 surface acres of water, and have prevented more than $50 million in flood damages. They also enhance water supply for municipalities and industry, provide extensive recreational opportunities for the public, and produce 1.6 million megawatt hours of energy each year.

WILMINGTON DISTRICT

P.O. BOX 1890 • WILMINGTON, NC 23402-1890
TEL: (910) 251-4626

The Wilmington District maintains federal waterways and provides a host of other services to the nation in North Carolina and south-central Virginia. The district includes six river basins and more than 300 miles of the Atlantic shoreline. The district's mission is to provide North Carolina and the Virginia Roanoke River Basin with water resources and navigation project development, management, and integration. This includes environmental remediation and restoration, as well as regulatory permitting, enforcement, and emergency response, recovery, and mitigation. The Corps has aided navigation and trade in North Carolina since the early days of the republic, establishing a district office at Wilmington in 1884. More recently, the district's missions have expanded into coastal engineering, wetlands regulation, navigation, and emergency operations. The district's biggest endeavor is the Wilmington Harbor Project, deepening the Cape Fear River channel from 38 to 42 feet, and enabling larger ships to call at the Port of Wilmington. It's the largest infrastructure project ever undertaken in North Carolina and also included beneficial-use placement of dredged, beach-quality material on area shorelines.

SOUTH PACIFIC DIVISION

1455 MARKET STREET • SAN FRANCISCO, CA 94103-1398
TEL: (415) 503-6517

Fort McPherson
Savannah District

USACE photo by Jonas N. Jordan

Established in 1888, the South Pacific Division is engaged in missions ranging from strengthening national defense and homeland security to navigation and flood risk reduction in one of the fastest growing regions of our nation. California, Arizona, Nevada, Utah, and New Mexico are all served by SPD, as are parts of Colorado, Oregon, Idaho, Wyoming, and Texas.

The South Pacific Division supports 11 Army and 14 Air Force installations through its military construction program and manages cleanup of munitions at more than 1,700 Formerly Used Defense Sites.

Fifteen of the 25 fastest growing metropolitan areas in the United States are in this diverse region, where water resources are a key limiting factor. Much of the region gets less than 20 inches of precipitation a year; however when it rains, it pours. Major floods are a threat to life and property, especially in California. Water resources are vital to agriculture, urban development, natural ecosystems, tribal interests, and more than 300 threatened and endangered species in the region. The Corps uses a watershed and systems approach to flood damage reduction that takes into account other public concerns including water supply and ecosystem restoration.

Major river basins include the Sacramento, San Joaquin, Santa Ana, Colorado, and Rio Grande, which are governed by complex water rights. The Corps also maintains and deepens federal channels for California ports and harbors – the gateways for more than 250 million tons of foreign and domestic cargo annually. These ports include the two largest container port facilities in the nation at Los Angeles and Long Beach. Together they contribute more than 1,162,000 jobs and $40 billion per year to the economy.

The South Pacific Division works in partnership with other federal agencies, state governments, and local communities on collaborative solutions to complex water resource, military construction, and environmental restoration issues.

ALBUQUERQUE DISTRICT

4101 JEFFERSON PLAZA, NE • ALBUQUERQUE, NM 87109
TEL: (505) 342-3171

The Albuquerque District covers all of New Mexico, about a third of Colorado, and a fifth of Texas. The district recently celebrated 75 years of civil works and other support to its regional customers.

The civil works design team has developed water distribution systems, storm drain systems, flood damage reduction structures, and acequias. With demonstrated experience in performing flood risk management studies, Albuquerque has a variety of floodplain management services available. They also perform a variety of studies, including facility evaluation, seismic studies, space planning, utilities distribution, dam safety inspections, and conduct routine data monitoring and analysis.

Albuquerque performs design, construction, and operations and maintenance services to three New Mexico Air Force bases and design services to two Arizona Air Force bases. The district has extensive experience in the design and construction of family housing, dormitories, bridges, hangars, research facilities, and airfields, and remodeling existing structures.

Albuquerque District's environmental program includes endangered species surveys, environmental assessments and impact statements, and cultural resource mitigation.

Currently under way is the Central New Mexico Project, through

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Black Butte Lake
Sacramento District

which the Corps of Engineers provides design and construction for water-related environmental infrastructure, including projects for wastewater-treatment facilities, water supply, conservation, and related facilities, storm water retention and remediation, environmental restoration, and surface water resource protection and development.

The district is also one of 20 partners supporting the Middle Rio Grande Endangered Species Act Collaborative Program, aimed at protecting and improving the status of endangered species in the valley while simultaneously protecting existing water uses.

LOS ANGELES DISTRICT
P.O. BOX 532711 • LOS ANGELES, CA 90053-2325
TEL: (213) 452-3920

The Los Angeles District provides civil works and military engineering support to Southern California, Nevada, Arizona, and parts of Utah. The scope of missions in the district vary from supporting Orange County's efforts to operate the largest ground water recharge system in the world to solving the puzzle of how to fill tunnels used by smugglers on the border.

Navigation channels maintained by the Corps for the ports of Los Angeles and Long Beach account for a majority of West Coast trade and shipping.

Major flood risk management projects include improvements to Prado Dam in Southern California and Tropicana-Flamingo detention basin construction in Nevada. The district is responsible for the operation and maintenance of 16 dams, 14 navigation projects, 13 miles of breakwaters, and 54 miles of flood control channels. The dams and recreation areas host more than 7 million visitors a year. Military missions at nine installations include family housing at Fort Irwin, barracks at Fort Huachuca, and Predator UAV facilities at Creech Air Force Base. Ecosystem restoration projects form a major part of the district's workload. These include removal of Matilija Dam in Ventura County, one of the nation's largest dam-removal projects, and the Tres Rios riverbed and habitat restoration in the heart of Phoenix.

SACRAMENTO DISTRICT
1325 J STREET • SACRAMENTO, CA 95814
TEL: (916) 557-5100

The Sacramento District operates in parts of eight western states. The district's work on the Sacramento and San Joaquin River Basins with the state of California and dozens of local stakeholders exemplifies the Corps' collaborative approach to problem-solving for multiple objectives throughout watershed systems. The district is also working collaboratively with the U.S. Bureau of Reclamation, California Department of Water Resources, and the Sacramento Area Flood Control Agency to dramatically reduce the area's flood risk with a massive, joint federal project at Folsom Dam.

The 43,000-square-mile Central Valley watershed, where the Sacramento and San Joaquin River Basins flow together to form a diverse delta, is a complex system of reservoirs, aging levees, weirs, and floodwater bypasses operated for water supply, floodplain management, land use, and ecosystem viability. This flood-prone area is home to 4.4 million people, provides habitat for

USACE photo by Chris Gray

Port of Galveston
Galveston District

dozens of species, and is one of the nation's great agricultural breadbaskets, accounting for 8 percent of U.S. agricultural production. The Sacramento District is also a Corps center of expertise for cleanup of hazardous, toxic, and radioactive waste, as well as one of only three Corps districts charged with administering the Department of Defense's Homeowners Assistance Program (HAP).

SAN FRANCISCO DISTRICT

1455 MARKET STREET • SAN FRANCISCO, CA 94103-1398 • TEL: (415) 503-6800

Established in 1866, the San Francisco District oversees civil works missions in construction covering approximately 40,000 square miles, mostly along the northern California coastline from the Oregon border to just south of Monterey. The district's programs and projects contribute more than $100 million to the regional economy. The district's operation and maintenance program includes dredging more than 4.5 million cubic yards annually, including 1.5 million cubic yards in San Francisco Bay keeping navigation channels, harbors, and ports open for more than 100 million tons of cargo shipped to the area's deep-water ports.

The district helps build the nation's long-term economic strength in an environmentally sustainable way through water-supply management and flood-damage reduction, shore and coastal protection, ecosystem restoration, and wildlife protection. Currently, the district is creating hundreds of acres of San Francisco Bay wetlands habitat through the beneficial reuse of dredged material. Dredge material is also being used to replenish Ocean Beach to mitigate years of erosion. Debris collection in San Francisco Bay, which averages 90 tons per month, is another high-visibility mission. The Corps started this work in 1942 after a tragic accident involving a seaplane carrying Navy Adm. Chester Nimitz.

The district's Bay Model in Sausalito is a major visitor center with education programs focusing on the environmental, historical, and cultural elements of the region. The Bay Model in Sausalito originally served as a scientific tool used by engineers, scientists, and planners to analyze, in a laboratory setting, the effects of change on the physical tidal forces of the bay and delta region.

SOUTHWESTERN DIVISION

1100 COMMERCE STREET, SUITE 831 • DALLAS, TX 75242-1317 • TEL: (469) 487-7007

The U.S. Army Corps of Engineers and its Southwestern Division regional team of professionals are dedicated to providing engineering excellence with integrity and credibility to our nation, our armed forces, and the communities we serve.

The Southwestern Division, headquartered in Dallas, Texas, has served the region since 1937, overseeing hundreds of water resources development and military design and

USACE photo by Brooks O. Hubbard IV

construction projects. Since that early beginning, the division has continued to grow in expertise and missions, seeking innovative solutions for future challenges.

The division's regional team, which includes four district offices in Little Rock, Ark., Tulsa, Okla., and Galveston and Fort Worth, Texas, provides diverse engineering and construction expertise and other services in all or part of seven states. The division's area of responsibility covers some 2.3 million acres of public land and water, with an annual program totaling nearly $3 billion.

The division's 90 lakes have prevented some $1.3 billion in average annual flood damage while providing 7.7 million acre-feet of water supply storage. The division's recreation areas are the most visited in the Corps, with the division managing more than 11,400 miles of shoreline and 1,172 recreation sites.

More than a half-billion tons of commerce are shipped annually over the division's 1,458 miles of channels, including some 22 shallow-draft ports, 12 deep-draft ports, and 22 lock chambers, ranking it second in the Corps for navigation. The division's 18 hydropower plants provide enough electricity to power more than three-quarters of a million homes.

Nearly one-fifth of our nation's military activities, covering an area of some 443,700 square miles, are located within the division's boundaries. The division provides new facilities, rehabilitates older ones, and provides other services at 11 Air Force and 10 Army installations. The division also provides mission-critical facilities in support of U.S. Army Transformation under the Army Modular Force, Integrated Global Positioning and Basing Strategy, and Base Realignment and Closure initiatives.

In addition to the valuable contributions it provides each day to the communities it serves, the division supports emergency response and recovery efforts when hurricanes or other natural disasters occur, whether within or beyond its area of responsibility.

The Southwestern Division has supported our nation's Overseas Contingency Operations since 2001, and its Engineering and Construction Support Office is executing important national security projects for the U.S. Department of Homeland Security.

FORT WORTH DISTRICT

819 TAYLOR STREET, ROOM 3A24 • P.O. BOX 17300 • FORT WORTH, TX 76102-0300

TEL: (817) 886-1312

The Fort Worth District, established in 1950 after disastrous floods in the area, is responsible for water resources development in two-thirds of Texas, and military design and construction in Texas and parts of Louisiana and New Mexico. It covers a geographical area of approximately 410,000 square miles and employs just over 975 team members. The district's operations and maintenance program includes 25 multipurpose projects, three hydropower plants, and 197 parks serving over 25 million visitors annually. These reservoirs have prevented billions of dollars in flood damages since their construction, a benefit-to-cost ratio of 8.2 to 1. The district has numerous ongoing studies and construction projects that will result in additional flood damage reduction and environmental restoration for the citizens of the Lone Star State. Fort Worth District also manages one of the largest military construction programs in the Corps, supporting the Army, Air Force, Department of Defense, and interagency and international service customers. The district currently manages approximately $3.3 billion worth of projects under construction and approximately $6.7 billion under design, including ranges and other training facilities, barracks, dining halls, hospitals, reimbursable and Soldier/family readiness centers. In addition, the district provides real estate support for recruiting commands, housing assistance for Soldiers, and leasing in support of emergency operations and military facility reuse. The district is also responsible for one of the largest formerly used defense programs with almost 900 sites identified. Other significant support provided to the nation includes a multibillion-dollar program to support the Department of Homeland Security in the protection and management of our borders.

GALVESTON DISTRICT

P.O. BOX 1229 • GALVESTON, TX 77553-1229

TEL: (409) 766-3004

The Galveston District, known as the "Custodians of the Coast," was established in 1880, primarily because of the need for deep-water ports along the Texas Gulf Coast. Today the Galveston District covers the entire Texas coastline as well as two parishes in Louisiana, from the Rio Grande River to the Sabine River in Louisiana. That encompasses 50,000 square miles, and 700 miles of coastline, 150 miles deep into Texas and Louisiana. It has more than 300 employees and a budget in excess of $287 million, and a mission still intertwined with navigation and ports. The district contains more than 1,000 miles of channels (750 deep-draft and 271 shallow-draft) serving 28 ports, and dredges 30-40 million cubic yards annually. The Houston Ship Channel's deepening and widening project is complete, bringing the channel to 45 feet in depth. Plans are under way for enlargement of the Sabine-Neches Waterway, the Corpus Christi Ship Channel, and others. The district is also involved heavily in flood damage reduction projects, such as the Clear Creek project and the Sims Bayou project. The district's regulatory staff is among the most active in the Corps, issuing more than 1,000 permits each year, due to rapid industrial, real estate, and recreational development of the Texas coast.

LITTLE ROCK DISTRICT

P.O. BOX 867 • LITTLE ROCK, AR 72203-0867

TEL: (501) 324-5551

The Little Rock District has been serving southern Missouri and the state of Arkansas since 1881, with both military and civil missions. The district has a wealth of experience as a planning, design, and construction agency. It has a "can-do" reputation for delivering a quality product on time and within cost. Its employees include professionals in a wide range of disciplines who provide expertise in many areas. The district manages $6.5 billion worth of public infrastructure that provides tremendous benefits to the region and the nation. Among them are 12 multipurpose lakes in the White, Arkansas, and Little River basins that have prevented $2 billion in flood losses and provide drinking water to tens of thousands of people. The district's 13 locks and dams and 308 miles of navigation channel on the McClellan-Kerr Arkansas River Navigation System enable $3 billion worth of commerce to move cleanly and efficiently, the equivalent of about half a million trucks not on the highways. The district's 178 parks help generate nearly $1 billion a year in visitor spending in the

vicinity of district projects. The district's seven hydroelectric plants generate enough electricity to power 250,000 average homes each year and prevent about 1.5 million tons of greenhouse gas emissions.

TULSA DISTRICT
1645 SOUTH 101 EAST AVENUE
TULSA, OK 74128-4609
TEL: (918) 669-7366

The Tulsa District was established in 1939, and its civil works boundaries include Oklahoma and parts of southern Kansas and northern Texas. The district's civil works mission is one of the largest in the Corps; it includes 38 multipurpose lakes and five locks, dams, and pools on the McClellan-Kerr Arkansas River Navigation System. Although the primary purpose of district lakes is flood control, they also provide recreation, water supply, hydropower, navigation, and fish and wildlife habitat. The district's navigation channel boasts the most inland, ice-free river port in America and provides waterway commerce to the heartland of the country. District projects have prevented nearly $6 billion in flood damages, and the district's eight hydropower facilities provide about $52 million in annual sales. The district has 230 parks with more campsites – 6,000 – than any other district in the Corps. The Tulsa District's military construction mission provides engineering and construction management services to two Army and four Air Force installations. During the last 10 years, the district has managed the design and construction of more than $1 billion in facilities for its military customers.

TRANSATLANTIC DIVISION

225 FORT COLLIER ROAD
WINCHESTER, VA 22601
TEL: (540) 662-5401

The Transatlantic Division, the newest Army Corps of Engineers Division, located in Winchester, Va., stood up for the second time on Oct. 1, 2009. TAD was originally established in 1991 to support the increase reconstruction activities following the Gulf War of 1990-1991. In 1994, it was re-designated as a Center.

Within USACE, TAD is now the ninth Major Subordinate Command. TAD is providing engineering services to the Nation in support of U.S. Central Command's area of operations (AOR) in 20 countries from Egypt through the Arabian Gulf to Central Asia.

Overseeing thousands of projects overseas, TAD also supports the full spectrum of regional support, including the Afghan National Security Forces, U.S. and Coalition Forces, Counter Narcotics and Border Management, Strategic Reconstruction support to U.S. Agency for International Development, and the Commander's Emergency Response Program.

The Division's AOR is also now the second-largest battle space and the No. 1 priority for the United States.

In order to keep the reconstruction efforts in Iraq and Afghanistan steady building and the traditional engineering support to CENTCOM, Coalition forces deployed and other governmental agencies enduring, USACE requires three overseas contingency districts – Gulf Region District in Baghdad, Iraq, and both Afghanistan Engineer Districts – North in Kabul and South in Kandahar.

To reduce the risk to Army Corps of Engineers personnel deployed, the Middle East District, the former Transatlantic Programs Center, in Winchester, Va., has been restructured to be a Support District for the Transatlantic Division to provide maximum reachback support to USACE contingency operations forward. Most recently, the Middle East District has been designated as the worldwide Center of Standardization (COS) for scalable designs in support of CENTCOM and Army Forces Central Command's (ARCENT) centric needs.

The Division and its four districts provide high-intensity engineer capabilities for all current USACE Overseas Contingency Operations.

AFGHANISTAN ENGINEER DISTRICTS
NORTH AND SOUTH
ATTN: QALAA HOUSE • PO AE 09356
TEL: (540) 665-3440

Established first as an area office and subsequently in 2004 as a district, the U.S. Army Corps of Engineers Afghanistan Engineer District (AED) is now two districts, AED-North in Kabul and AED-South in Kandahar. The USACE mission in Afghanistan is to conduct project management, construction, and engineering in the Central Asian Republics, primarily Afghanistan, to help establish a secure, stable environment and promote construction and infrastructure development. USACE has supported coalition forces participating in Operation Enduring Freedom since 2002, and the first Corps district in Afghanistan, now AED-North, was established in Kabul in March 2004.


Afghanistan Engineer District

In support of U.S. forces, the districts provide facilities to support bed-down, administration, and base operations in Bagram, Kandahar, and Kabul in Afghanistan, and Manas Air Base in Kyrgyzstan. Through Strategic Reconstruction efforts, the districts work with Combined Forces Command - Afghanistan, the U.S. Agency for International Development, donor nations, and agencies to identify areas where projects will have the most significant impacts to build alternative livelihoods, create ownership, and erode enemy support. Projects include water management studies and alternative power initiatives. The Commander's Emergency Response Program reinforces USAID/donor efforts to procure security for infrastructure. Current projects primarily consist of construction of national and provincial roads and micro-hydropower stations.

From 2002 through 2009, USACE has done more than $7 billion in construction in Afghanistan, mostly building facilities for the Afghan National Security Forces and the coalition forces. Even more work is planned in the next few years to provide facilities for incoming U.S. and coalition forces.

Work includes construction, rehabilitation, and refurbishment of facilities, with construction or completed facilities at more than 50 sites around the country. Through the construction of police stations, barracks, and administrative facilities at 40 sites, the Afghan National Police (ANP) Program is improving the country's law enforcement infrastructure, thus fostering greater security and stability within the country. The Counter Narcotics and Border Management Initiative programs seek to improve the region's security and stabil-

USACE photo by Leslie J. Wright

ity. Besides forward operating base stations and border crossings, projects include the National Investigative Unit, Judicial Center, and Joint Aviation Facilities within Afghanistan as well as Pakistan observation towers on the Gulf and Tajikistan border crossings.

GULF REGION DISTRICT
APO AE 09348 • BAGHDAD
TEL: (540) 665-5339

For six years, the U.S. Army Corps of Engineers has been contributing to the reconstruction of Iraq. As U.S. forces have drawn down in Iraq, USACE's Gulf Region mission has gone through multiple changes: the Gulf Region Division stand-down, the Transatlantic Division stand-up, and the combining of three districts into one Gulf Region District on March 29, 2010.

Today, the Gulf Region District (GRD) continues to provide engineer expertise, manage contract construction, develop partnerships with designated government of Iraq ministries, and build engineering and construction capacity in the Iraqi theater of operations in order to advance sustainable security, reconciliation, economic development, rule of law, and the government of Iraq's assumption of responsibility for its national infrastructure.

As of Sept 2010, USACE has deployed more than 5,000 Soldiers and Civilians in support of the Iraq reconstruction effort. These USACE Soldiers, Civilians, and some 40,000 Iraqis have completed more than 4,800 reconstruction projects nationwide in security and justice; electricity and oil; public works and water; transportation and communications; and buildings, health, and education valued at more than $7.8 billion with an additional $1.2 billion in current projects.

USACE and its partners in Iraq (Iraqi ministries, State Department, United States Forces-Iraq, and others) continue to make significant progress in rebuilding and improving the country's infrastructure and facilities. The men and women in uniform, U.S. government civilians, and contractors of the Gulf Region District work side by side with coalition forces and Iraqi citizens to help them build a solid foundation on which to grow their democracy.

MIDDLE EAST DISTRICT
P.O. BOX 2250 • WINCHESTER, VA 22604-1450
TEL: (540) 665-4085

The Middle East District is among the Army Corps of Engineers' newest districts by name, but already has more than five decades of service in the Middle East region. In 1976 the Army Corps of Engineers created a stateside unit near Winchester, Va., to provide rear echelon design and contracting support for the forward-based organizations in the Middle East. For more than 30 years, a U.S.-based Army Corps of Engineers organization has supported overseas operations in this geographic area. The Middle East District also houses the USACE Deployment Center to train, prepare and equip Army Corps of Engineers personnel as they deploy to Iraq and Afghanistan. Formerly called the Transatlantic Programs Center, the district was renamed as part of the newly activated Transatlantic Division, effective Oct. 1, 2009.

The Middle East District provides quality, responsive engineering, construction, and related reachback services on time, within budget and safely to designated U.S. and foreign customers, partners, and stakeholders in the Middle East, Central Asia, and other areas. With its headquarters in Winchester, the Middle East District has multiple field offices in the Arabian Gulf region and an administrative contracting office in Kosovo.

The Middle East District offers engineering, construction, and contracting services enabling its customers to meet their missions.

The work falls into the following areas:

1) Designing and building facilities for U.S. forces deployed within the U.S. Central Command's area of operations, with projects primarily for the U.S. military.

2) Managing operations and maintenance service contracts for various military customers, ranging from maintaining and repairing structures for customers throughout its area of operations to providing life support, logistics, and maintenance services for U.S. Army Europe's operational requirements in the Balkans.

3) Providing engineering, project management, contracting, and support services to the forward-deployed Army Corps of Engineers organizations in Iraq and Afghanistan.

4) Designing and building facilities under the Defense Department's Foreign Military Sales program, aimed at supporting the defense interests of the United States and its allies; this program permits eligible foreign governments to purchase U.S. defense equipment and services, including Army Corps of Engineers services.

5) Providing specialized engineering services to other U.S. government agencies working in the region, such as the Department of State and the U.S. Agency for International Development.

CENTERS

USACE HUNTSVILLE CENTER
P.O. BOX 1600 • HUNTSVILLE, AL 35807-4301
TEL: (256) 895-1694

The U.S. Army Engineering and Support Center, Huntsville provides specialized technical expertise and manages programs worldwide in support of U.S. Forces, their families and the nation. Huntsville's 750 employees manage a $1.3 billion annual budget that supports a very diverse customer base, which includes many federal government agencies. Huntsville Center was activated in October 1967 as the Huntsville Division with its sole mission being the Sentinel ballistic missile defense program. Since that time, the center's mission has evolved and diversified significantly to include installation support, energy, ordnance and explosives, chemical demilitarization, and engineering and environmental programs. Huntsville Center is the Corps' mandatory center of expertise for the Army range and training lands program; electronic security systems; medical facilities; environmental and munitions; and utility monitoring and control systems. The center is also home to many technical centers of expertise: energy savings and performance contracting; facility systems safety; heating, ventilation, and air conditioning; installation support; and operation and maintenance engineering enhancement. In addition, Huntsville Center is assigned 17 centers of standardization facility types in the following categories: medical facilities; child and family services; sports and fitness facilities; fire and emergency facilities; correctional facilities; and training ranges.

USACE FINANCE CENTER
5722 INTEGRITY DRIVE • MILLINGTON, TN 38054-5005
TEL: (901) 874-8401

The U.S. Army Corps of Engineers Finance Center provides

responsive and professional day-to-day operating finance and accounting support worldwide. This support includes the full range of customer services, payments, disbursing, accounting, and financial reporting for civil works- and military programs-appropriated funds and revolving and trust funds. The Finance Center is responsible for performing research, analysis, and development, installation, and systems maintenance for the Corps of Engineers Financial Management System (CEFMS) and the Corps of Engineers Enterprise Management Information System (CEEMIS). The Finance Center has the principal responsibility for providing overall operating finance and accounting functions for the Corps of Engineers. The Finance Center accomplishes the mission with a dedicated, professional staff of accountants, accounting technicians, and various other support personnel. The Finance Center is always aware of and concerned about costs of operation coupled with the desire to maintain a highly motivated staff, achieve the commander's vision, and continually improve business processes and financial systems. The Finance Center searches for ways to reduce costs by identifying and eliminating duplicative processes, taking advantage of leading technology, encouraging ecommerce, and improving business processes.

USACE VICKSBURG CENTER

3909 HALLS FERRY ROAD • VICKSBURG, MS 39180-6199 •
TEL: (601) 634-3111

The U.S. Army Engineer Research and Development Center (ERDC) is one of the most diverse engineering and scientific research organizations in the world. The ERDC conducts research and development in support of the Soldier, military installations, and the Corps of Engineers civil works missions, as well as for other federal agencies, state and municipal authorities, and with U.S. industry through innovative work agreements. ERDC efforts focus on three primary technical areas to support the Corps of Engineers, the Army and the nation: Soldier support – force protection, force projection and sustainment, maneuver/counter-maneuver, and operational support; Military installations – facilities and infrastructure, transformation, training, operations, and environmental issues such as military land management and stewardship; and Civil Works – water resources infrastructure, navigation, flood control and storm damage reduction; environmental remediation and restoration; land planning, stewardship and management; threatened and endangered species; and cultural resources. The ERDC headquarters is located in Vicksburg, Miss., along with four of its seven laboratories. The capabilities of ERDC's seven laboratories: Construction Engineering Research Laboratory in Champaign, Ill.; Cold Regions Research and Engineering Laboratory in Hanover, N.H.; Topographic Engineering Center in Alexandria, Va.; and the Coastal and Hydraulics, Geotechnical and Structures, Environmental, and Information Technology Laboratories in Vicksburg provide a wide range of research expertise that can collectively address complex engineering challenges. ERDC has a staff of more than 2,500 permanent and contract engineers, scientists, and support personnel, with an annual research program exceeding $1.5 billion. ERDC permanent staff includes more than 1,000 engineers and scientists, many with advanced degrees (28 percent hold doctorates and 43 percent hold master's degrees). ERDC outreach and partnering efforts result in numerous cooperative research agreements engaging leading experts from academia, private industry, and other agencies. ERDC has more than $1 billion in research facilities, many of which are unique national assets. The ERDC hosts one of four major Department of Defense supercomputer centers; the three supercomputers here have a capability of 437 trillion calculations per second, putting ERDC in the top tier worldwide for computing capacity.

Other world-class facilities include the world's most powerful centrifuge, blast-effects facilities, physical models of river and coastal projects, endangered species laboratories, heavy vehicle simulators, hazardous waste research laboratories, frost and ice engineering facilities, and an 1,800-foot coastal research pier. ERDC has been named the Army's top research laboratory five of the last eight years and for the last three consecutive years. ERDC research is recognized throughout the Corps, Army and DoD for making the world safer and better.

USACE GEOSPATIAL CENTER

7701 TELEGRAPH ROAD • ALEXANDRIA, VA 22315-3864
TEL (703) 428-3736

The U.S. Army Geospatial Center (AGC) became a direct reporting center under the U.S. Army Corps of Engineers to provide geospatial support and products to warfighters, expanding its mission to support the Army's Battle Command systems and facilitate the dissemination of relevant geospatial information across the operational environment. The AGC coordinates, integrates, and synchronizes geospatial information requirements and standards across the Army, as well as develops and fields geospatial systems and capabilities to the Army and Department of Defense. The center is also designated as an Army Knowledge Center for Geospatial Expertise.

The AGC supports the Army, Department of Defense, and the nation by: 1) Executing policy and implementing standards while monitoring emerging technologies and validating Army Geospatial Enterprise (AGE) technical solutions; 2) Serving as the Army Knowledge Center for geospatial expertise by providing direct support to Army units and activities (geospatial data production, analysis and reachback); 3) Providing technical, acquisition integration, and logistical support to Army select programs of record and transitional technical capabilities under Army and Joint Capability Demonstrations, while also building and maintaining the Army Geospatial Logical Data Model; and 4) Conducting Research, Development, Testing and Evaluation (RDT&E) focused on increasing the agility of Battle Command across the full spectrum of military operations – from conventional armed conflicts to counterinsurgencies and irregular warfare.

One of the AGC's primary goals is to enable an AGE, which will correct the geospatial capability gaps preventing systems from achieving a true common operating picture. At its core, the AGE is a distributed database and supporting infrastructure based on a common suite of interoperable software. This enterprise allows geospatial data and information to be collected, stored, fused, analyzed, and disseminated horizontally and vertically (from peer to peer and from echelon to echelon, down to the individual Soldier). The center's development of an Army Standard Data Model agreed upon by all battlefield functions, development and fielding of enterprise-enabled systems and capabilities, and direct geospatial support and products to the warfighter will address these gaps. These efforts will allow warfighters to view relevant information across every level of the battlespace, helping them better understand the operational environment for full-spectrum operations and make forces more effective, survivable, and lethal.

MARINE DESIGN CENTER
WANAMAKER BUILDING • 100 PENN SQUARE EAST
PHILADELPHIA, PA 19107-3391
TEL: (215) 656-6850

The Marine Design Center is the Corps of Engineers' center of expertise and experience for the development and application of innovative strategies and technologies for naval architecture and marine engineering. The center provides total project management including planning, engineering, and shipbuilding contract management in support of Corps, Army, and national water-resource projects in peacetime and augments the military construction capacity in time of national emergency or mobilization.

The Marine Design Center was established in 1908 to give the Corps of Engineers a group of naval architects and marine, mechanical, and electrical engineers who could design, build, and maintain the complex craft needed to improve and maintain the inland and coastal waterways. Located in Philadelphia since 1939, the center is a field operating activity under the Directorate of Civil Works that provides services to the Corps worldwide. The center's skills and talents have also served other federal agencies and foreign governments through international agreements. The center's work is naval architecture, marine engineering, and marine construction management, including the assurance of quality construction. These efforts have been concentrated on the "turn-key, design-to-delivery" philosophy. The center also offers expertise in design, preparation of plans and specifications, contract management, and inspection of marine equipment including structures and machinery. Experience includes projects for dredges, towboats, floating cranes, survey vessels, and various other service vessels. The center has completed hundreds of such projects since its inception. The Marine Design Center can also be called upon to study and make recommendations concerning vessel modifications, occupational safety, energy conservation, fire-prevention programs, or environmental problems, or to conduct an accident investigation or marine condition survey.

U.S ARMY INSTITUTE FOR WATER RESOURCES
7701 TELEGRAPH ROAD, CASEY BLDG.
ALEXANDRIA, VA 22315-3688
TEL: (703) 428-8250

The U.S. Army Corps of Engineers Institute for Water Resources, located in Alexandria, Va., was formed to provide forward-looking analysis and research in developing planning methodologies to aid the Corps' civil works mission. Since its beginnings in 1969, the institute has provided the Corps with long-range planning capabilities to assist in improving the civil works planning process. The institute is the USACE center of expertise for integrated water-resources management (IWRM), focusing on planning analysis and hydrologic engineering and on the collection, management, and dissemination of civil works and navigation information, including the nation's waterborne commerce data. Forty years later, the institute continues to provide the civil works program with a variety of products to enhance the Corps of Engineers' water-resources development planning. In July 2000, the Corps' Hydrologic Engineering Center (HEC) in Davis, Calif., and the Corps Navigation Data Center (NDC) in Alexandria, Va., were added to the institute. HEC is a world-renowned research and development, training, and consulting organization in the area of hydrologic engineering, hydrologic model development, and water-resources planning and management. NDC is the Corps' designated center of expertise for the management of infrastructure utilization and performance information for U.S. waterways and ports and harbor channels. Data collected by NDC includes waterborne commerce statistics, vessel characteristics, port facilities, dredging information, and information on navigation locks. The primary mission of HEC is to support the nation in its water-resources management responsibilities by increasing the Corps' technical capability in hydrologic engineering and water-resources planning and management. An additional goal is to provide leadership in improving hydrologic engineering and analytical methods for water-resources planning. HEC models represent state-of-the-art tools and are widely used throughout the world. The institute's Navigation Data Center (NDC), with its Waterborne Commerce Statistics Center in New Orleans, La., is the nation's premier navigation data and statistics operation. NDC directly supports the Corps of Engineers' navigation, hydropower, recreation, environmental compliance, water supply, regulatory, homeland security, emergency, and readiness functions as well as those of other federal, state, and local agencies, plus those in the private sector with interests in water transportation. NDC also provides integrated business information in support of Corps of Engineers decision-making to include financial, output, and performance measurements.

ENGINEER COMMANDS

249TH ENGINEER BATTALION (PRIME POWER)
10011 MIDDLETON ROAD
FORT BELVOIR, VA 22060-5837
TEL: (703) 805-2643

The 249th Engineer Battalion (Prime Power), headquartered at Ft. Belvoir, Va., is the Army's only Prime Power Battalion. Known as "the Army's Power Company," it supplies commercial-grade power to support warfighting operations and supplies power-related technical services to installations and disaster-relief operations. A popular slogan, "the sun never sets on the Prime Power Battalion," describes the battalion's geographic distribution. It is dispersed among six states (Hawaii, Massachusetts, North Carolina, Pennsylvania, Virginia, and Washington) and two foreign overseas locations (Germany and Korea). Four detachments of Reserve Soldiers complement the battalion's active-duty units. The 249th operates in a manner similar to the Army's Special Forces. It conducts missions in elite elements ranging from two-man teams to 16-Soldier detachments. Detachments consist of a warrant officer and 15 sergeants. All of the Soldiers of the 249th specialize in one of three skill areas: electrician, mechanic, or instrumentation technician. These Soldiers must be specialists or sergeants in the Army and complete a year of specialized schooling at the U.S. Army Prime Power School at Ft. Belvoir. Standards are high and selection is competitive. The 249th operates the Army's Prime Power School, a 49-week course conducted in three phases – academic, operator, and specialty. During the academic phase, Soldiers focus on theory. During the operator phase, Soldiers get hands-on experience. And during the specialty phase, Soldiers focus on their specialty area – instrumentation, mechanical, or electrical.

The primary mission of the 249th is support to the warfighter and support to the National Response Plan for disaster responses.

As a result, the 249th has continuously had some element deployed since September 11, when the battalion was deployed to Manhattan and the Pentagon in response to the attacks. Further deployments since then include Operation Iraqi Freedom, Operation Enduring Freedom, and the response to Hurricane Katrina.

416TH THEATER ENGINEER COMMAND
10 S. 100 SOUTH FRONTAGE ROAD
DARIEN, IL 60561
TEL: (800) 315-6327

The 416th Theater Engineer Command (TEC) is a Major Subordinate Command of the United States Army Reserve Command that provides engineer planning support to the United States Southern Command and the United States Central Command. Headquartered in the Chicago suburb of Darien, the 416th TEC deployed to both Operation Desert Storm and Operation Iraqi Freedom.

The 416th TEC leads 135 units in 37 states across the United States, encompassing more than 10,000 Soldiers, three brigades, and one facility engineer group.

During combat operations, the TEC exercises command and control over a wide range of units covering the full spectrum of engineering missions. During the first deployment in support of Operation Iraqi Freedom, the command oversaw the planning and construction of several prisoner-of-war camps, U.S. military logistics bases, and a 230-mile-long Inland Petroleum Distribution System (IPDS) – the largest ever constructed in wartime by the U.S. Army – from Kuwait through the southern desert of Iraq to ensure the availability of fuel for the units moving forward. The 416th Theater Engineer Command serves as the principal engineer force provider and engineer planner for annual exercises around the globe such as Beyond the Horizons (formerly New Horizons) in Central and South America and Bright Star in Egypt. Beyond the Horizons emphasizes humanitarian assistance every year in a different Central or South American nation, while Bright Star emphasizes joint and international military readiness. The 416th Theater Engineer Command motto is "Serving by Building."

412TH ENGINEER COMMAND
1265 PORTERS CHAPEL ROAD
VICKSBURG, MS 39180
TEL: (800) 637-1051

The 412th Theater Engineer Command (TEC) is a Major Subordinate Command of the United States Army Reserve Command, providing engineer planning and support to the United States Pacific Command, the United States European Command, and the United States Eighth Army. Headquartered in Vicksburg, Miss., the 412th TEC has deployed to 59 countries over the past 10 years and has participated in both Operation Joint Endeavor and Operation Iraqi Freedom. The 412th has three forward detachments located in Yongsan, Korea; Schofield Barracks, Hawaii; and Heidelberg, Germany. During combat operations, the command is designed to command and control subordinate units containing more than 16,000 Soldiers, able to accomplish the full spectrum of engineering missions for a theater of operations. The 412th Theater Engineer Command participates as the planning and engineer headquarters for annual exercises around the globe, such as Operation Sand Castle in Fort Irwin, Calif., Cobra Gold in Thailand, and Ulchi Focus Lens in Korea, focusing on improving the readiness of Reserve component units and incorporating them in the joint fight. The 412th Theater Engineer Command's forward detachments are the executive agents for the United States Army Reserve's Troop Construction Programs in their respective theaters. The 412th Engineer Command motto is "Build to Serve."

FORWARD ENGINEER SUPPORT TEAMS

579TH ENGINEER DETACHMENT (FEST-M)
4155 CLAY STREET, SUITE 120
VICKSBURG, MS 39183-3435
TEL: (601) 631-5987

The 579th Engineer Detachment (Forward Engineer Support Team-Main) is a great field force engineering team operating as a deployed mini-district providing support and communicating with engineering kits and reachback capabilities to deliver technical expertise to globally unique challenges. The detachment's mission is to provide vital contract construction and technical engineering services to strengthen command and control of expeditionary elements and synchronize engineering functions across areas of responsibilities during overseas contingency operations and disaster-relief efforts.

Constituted on March 9, 1944, in the U.S. Army as the 1797th Engineer Foundry Detachment, the 579th Engineer Detachment (FEST-M) was recently reactivated on Oct. 16, 2007, as one of the largest of the Field Force Engineering teams in the U.S. Army Corps of Engineers. The deployable team, which is comprised of nine Soldiers and 27 civilians, has design capabilities from various disciplines to include civil, electrical, environmental, and mechanical engineers; and support from logistical, contracting, and resource management officers. In short, it can be described as a mini-district that can be augmented with structural, environmental, and other engineering skills depending on the mission.

The FEST-M is a flexible team capable of rapidly deploying into military contingencies and disaster-relief operations. Support to these missions includes, but is not limited to:

- Providing infrastructure engineering planning and design to construct base camps and facilities
- Coordinating technical engineering reachback through Internet protocol router networks
- Managing deployed USACE elements and engineering communications equipment
- Supervising all contract construction for American military forces
- Organizing all requests for environmental baseline surveys
- Giving geospatial engineering support
- Contracting services and support

The right choice no matter what the challenge.

It's the beginning of a new era, with large-scale projects like dams, bridges and building facilities at the forefront of national and global construction. These projects call for massive amounts of concrete, and the U.S. Army will be involved in many of them.

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