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Corps labs take top Army honors

For the first time, the Army's annual Research and Development Organization (RDO) Awards are recognizing a first place winner in *two* categories (large and small labs). The winners in both categories are U.S. Army Corps of Engineers labs.

The Cold Regions Research and Engineering Laboratory in Hanover, N.H., was named the Army Research and Development Organization of the Year in the Small Laboratory category. The Waterways Experiment Station in Vicksburg, Miss., was named the Army's Research and Development Organization of the Year in the Large Laboratory Category.

Corps labs have taken first place five out the last seven years of the competition, and placed second in the other years.

The Assistant Secretary of the Army for Research, Development and Acquisition presents the Army RDO Award. It recognizes the Army labs deemed most effective based on a number of criteria including technical accomplishments, managerial ability, and strategic vision/plan.

A peer review panel of members of the Army Science Board, academics, and others review submissions from each lab. The labs also brief the board on their programs and accomplishments.

"One of key things the labs do in their submissions and briefings is explain their most significant technical accomplishment during the past year," said Dr. Ed Link, Director of Research and Development. "They also focus on efforts to improve the organization's efforts and to align more closely with what the Army needs."

Small RDO

This is the first year for a small lab category. The division was created so the competition would be more equal, with organizations competing against others of similar size and resources.

The award recognizes CRREL's accomplishments in such areas as vehicle detection using seismic and acoustic sensors, mine detection, mobility, environmental quality technologies, snowmelt hydrology for military operations in Bosnia, and civil works emergency management.

The major focus of CRREL's research program is to support the military's ability to fight and win in cold climates and seasonal winter conditions. The lab's presence and reach extend from pole to pole, and to federal, state, and local governments, academia, and industry.

During fiscal year 1997 (FY 97), CRREL researchers worked under harsh conditions at the South Pole to demonstrate the feasibility of excavating a subsurface snow tunnel for the future U.S. South Pole Station. Through the lab's civil works program, Corps districts were able to apply increased capabilities in remote sens-

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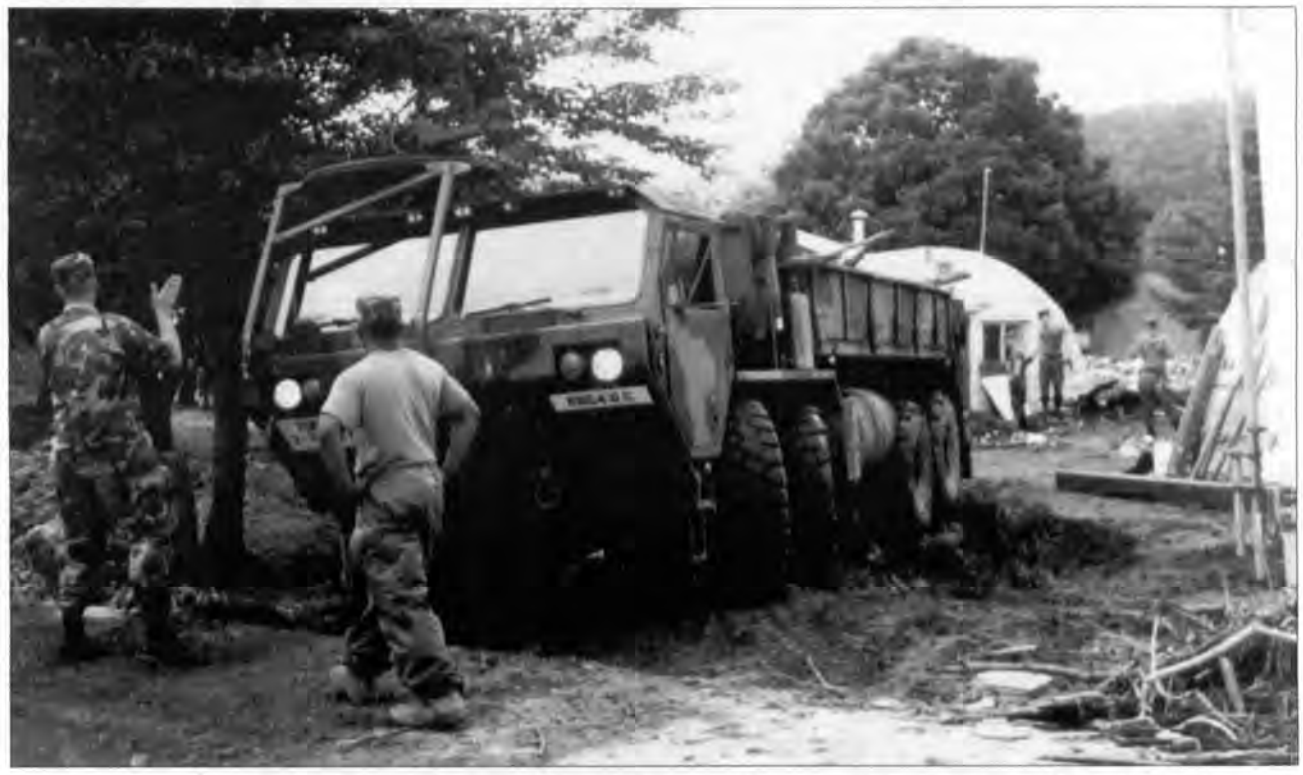

Soldiers clear debris from flooded areas of Camp Casey, Korea. (Photo courtesy of Far East District)

Corps supports 8th Army flood recovery efforts

The U.S. Army Corps of Engineers is in the final stages of responding to devastating floods in Korea. More than 40 inches of rain have fallen in the northern region of South Korea since Aug. 5. About 230 people have been killed or are missing, including three U.S. servicemen. About 120,000 Korean citizens were left homeless.

U.S. military facilities in the Uijongbu and Tongduchon areas of Korea were hardest hit. Assessments are still underway, but damages to buildings, equipment, supplies, and personal effects have exceeded $250 million.

"Far East District estimates the replacement cost for buildings that can't be repaired economically at about $110 million," said Scott Bearden, Deputy District Engineer for Programs and project Management (PPM) of Far East District (FED). "In addition to those buildings we are recommending for replacement, facilities and infrastructure items valued in excess of $50 million which were damaged are in need of repair or replacement."

While no FED job sites suffered damage, significant damage occurred at U.S. military installations. Damage from the floods include scattered debris, open drainage ditches, weakened bridges, washed-out roadways, broken and/or damaged electrical lines, and unstable buildings and Quonset huts. As of Aug. 26, the district's damage assessment teams have identified the following at U. S. military installations in Korea:

- Camp Red Cloud Area — 120 buildings of 1,083 assessed have been damaged.
- Camp Casey Area — 283 buildings of 1,704 assessed have been damaged.
- Western Corridor -- 50 buildings have been damaged of 809 assessed.
- Area II (Seoul Area) -- Eight buildings have been damaged.

The FED compound itself, in Seoul, was among the installations damaged. On Aug. 3, water flooded the supply building, motor pool, snack bar, and AAFES administration office.

People from FED began responding to the disaster in Korea almost immediately. On Aug. 8 a flood damage Emergency Operation Center (EOC) was established in the district's PPM Division (PPMD). On Aug. 9, FED began assisting the 8th U.S. Army (EUSA) and the 19th TAACOM when the district deployed a geotechnical team to Camp Tango. They provided technical assistance to the recovery efforts at the camp following significant mudslides caused by the floods.

On Aug. 10, five multi-disciplined assessment teams totaling 26 architects, engineers, project managers, and cost estimators left the FED compound for Camp Casey. Three engineers from Honolulu Engineer District and two from Japan Engineer District arrived to augment the FED teams. Additionally, both Alaska and St. Louis Districts each provided one team member to participate in the assessments.

They supported U.S. Forces Korea by investigating flood conditions and damages, especially those affecting U.S. military forces. Their primary mission has been to conduct detailed damage assessments and, as of Aug. 26, they had assessed 3,596 buildings on 29 installations, 461 of which were damaged.

"Our approach here is three-pronged as we assist Eighth U.S. Army, the 19th TAACOM and the installation Directors of Public Works in flood dam-

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LETTERS

Abandoning the frontier

It was with very mixed feelings that I read the article in the July 1998 *Engineer Update* concerning the Buffalo Creek wetland, which is being developed on the site of the abandoned Superconducting Super Collider (SSC) near Waxahachie, Texas. I am a staunch supporter of environmental protection and restoration, but I found it painful to read this reminder that our nation has turned its collective back on investigations into the fundamental nature of the universe.

The irony, of course, could not be greater -- instead of developing the furtherest reach of humankind's technology, the most powerful particle accelerator in the world, we are attempting to build a natural ecosystem. That would ordinarily be a commendable thing, but we must consider what we have foregone.

Twentieth century science has revolutionized our concept of the universe. From special relativity to general relativity to quantum mechanics, we have discovered that the universe is governed by laws so counter-intuitive as to be nearly incomprehensible. Newton's laws of motion were sufficiently accurate to allow us to send spaceships to the moon and back, but they break down at the extremes -- near the speed of light, near massive gravitational fields, in the world of sub-atomic particles.

The concept of the frontier has been pre-eminent in the development of America. For most of our history, there has always been the land beyond, the place unknown, the territory still unexplored. The geographical frontiers have disappeared, but the frontiers of knowledge still lie before us.

I applaud the Buffalo Creek Wetland project, but let us not forget the dream that lies buried there. When Congress abandoned the SSC, it was as if we stood upon the verge of a windswept plain, weighed the cost of a journey into the trackless wilderness against whatever unknown benefits it might bring, and finally returned quietly to the comfort of our little houses, to light our dim, smoky oil lamps against the growing darkness.

Stan Green Jr.
Metairie, La.

Contractors work to remove debris near Spruce Street in Caldwell, Ohio, after a flood disaster in the area. (Photo courtesy of Huntington District)

Huntington tackles Ohio flood

By Steve Wright
Huntington District

During July and August, 25 of 88 counties in central and southeast Ohio experienced a federally-declared flood disaster. Huntington District responded to missions from the Federal Emergency Management Agency (FEMA) Region V by preparing preliminary damage assessments (PDAs), damage survey reports (DSRs), and clearing debris from streams.

Huntington received a mission for PDAs on Monday night, June 29, and by early Tuesday morning seven PDA writers were on the road to affected counties in Ohio. Their job was to determine if sufficient damage existed for a Presidential Emergency Declaration.

The district received two other missions, writing DSRs on damage to infrastructure and public buildings, and clearing stream debris in Noble County. Huntington asked for and received DSR writers from each of the Great Lakes and Ohio River Division's (LRD) seven districts.

These writers, as many as 32 during the first two weeks, wrote 1,600 DSRs assessing $15.1 million in damages in slightly more than 30 days at a cost of $725,000. This effort was on-time and within budget.

According to Tom Porter, the U.S. Army Corps of Engineers' team leader at the Disaster Field Office (DFO) in Columbus, Ohio, the DSR effort was extremely successful.

"The DSR work was a team effort, beginning with the districts sending the right people," Porter said. "They received quality classroom training, and benefited from good leadership. Bob Waigand from Pittsburgh was the DSR coordinator, and FEMA was very complimentary about Bob's leadership, hard work, subject knowledge and teaching ability."

Of the 32 DSR writers assigned, 10 were trainees. All received FEMA DSR training, and the trainees were partnered for one week with more experienced DSR writers to add to their hands-on experience. This training allowed LRD to increase its number of experienced DSR writers for future disasters, which benefits the individuals, FEMA and the Corps.

FEMA assigned Huntington the mission of removing debris in streams from 14 sites in Noble County. After assessing the debris mission, the district mobilized its Indefinite Delivery Contractor within two days. Initially, $600,000 and 30 days were budgeted to clean up the 14 debris sites. During the debris removal work, an additional six sites were added to the mission by FEMA. This work was completed in three weeks at a cost of nearly $400,000 -- ahead of time and below budget despite the additional work.

The Corps rendered personal assistance, too. Just outside Caldwell, Ohio, Brenda Montjoy, the construction representative for the debris removal, noticed that a lady came and quietly watched the work for several hours. Montjoy spoke to her and learned that she was grieving the loss of her parents who died when floodwaters carried their mobile home downsteam. The word got out and, without discussion or organization, workers began picking up keepsakes they found to give to the grieving on-looker.

The DSR and debris mission totaled $1.15 million work for the Corps. Up to 10 percent of this total ($115,000) can go to the district in a non-specific mission account to cover expenses related to the disaster response. Huntington District was able to minimize these costs and only charged FEMA $2,300 which allowed almost all of the $115,000 to be used in the disaster mission response.

"The mission was completed on or before time and a quality product produced," Porter summed up in his after-action report. "The Federal Coordinating Officer wants to use the mission as an example to other FEMA response and recovery directors."

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Corps helps fight drug war in Latin America

By Maj. Mark Moulton
Mobile District

The first floating Forward Support Base, designed and built by the U.S. Army Corps of Engineers, was delivered to the Peruvian Navy in July, 1998. (Photo courtesy of Mobile District)

The U.S. Army Corps of Engineers is doing its part in fighting the "War on Drugs." The *1998 National Drug Control Strategy* proposes a conceptual framework to reduce illegal drug use and availability 50 percent by the year 2007. The strategy focuses on prevention, treatment, research, law enforcement, protection of our borders, and international cooperation.

In international cooperation, the Corps is hard at work in Latin America with offices of Mobile District established in Bolivia, Colombia, El Salvador, Honduras, Panama, and Peru. Millions of dollars of design and construction are being executed to support and complement source country drug control efforts and to strengthen source country political will and drug control capabilities.

In Peru alone, more than $4 million in design and construction was executed in fiscal year 1998 (FY98), with that figure expected to double in FY99 and FY00.

On June 26, a ceremony in Iquitos, Peru, dedicated the Joint Peruvian Riverine Training Center (JPRTC) and christened the first floating Forward Support Base (FSB). More than $7.5 million has been allocated for the Corps to design and build the JPRTC during the next two to three years.

The FSB, designed entirely by the Corps and built under Corps supervision, is the first of several floating support bases and maintenance platforms to be built to support the Peruvian Riverine Program.

The dedication ceremony was a big event in Peru with Cesar Saucedo Chavez, the Peruvian Defense Minister; Gen. Nicolas Hermoza Rios, Chairman of the Peruvian Joint Chiefs of Staff; Dennis Jett, the U.S. Ambassador to Peru; and Gen. Charles Wilhelm, SOUTHCOM Commander, all in attendance. During his speech, Saucedo mentioned some of the year's successes -- reduction of coca plantations by 40 percent, the seizure of 20,000 kilos (about 22 tons) of illegal drugs, and the destruction of more than 500 drug laboratories in the Peruvian jungle. All of this would not be possible without the help of the U.S. government and Peruvian cooperation.

The FSB is the first of its kind in Peru and will support a series of river patrol squads which will patrol the 10,000 kilometers (6,200 miles) of river in the Peruvian Amazon basin. The river patrol squads will be manned by members of the Peruvian National Police, and the Peruvian Navy and Coast Guard. These river patrols will be a huge deterrent to the processing, storage, and transportation of illegal drugs which currently takes place.

The Joint Peruvian Riverine Training Center is an integral part of a program started as a joint effort between the Peruvian and U.S. governments to train forces in riverine operations and tactics. Training conducted at the facility will include interdiction tactics from land and water, boat operation and maintenance, boarding and inspection tactics, weapons qualification, and communication procedures. The first course was taught by U.S. instructors to train a Peruvian cadre which will become instructors for subsequent classes at the training center.

The U.S. government's objective is to support the Peruvian government in developing its ability to tackle new challenges in the battle against drug trafficking. The riverine program is just one area of support in the battle to reduce the supply of illegal drugs.

Labs of the Year

Continued from page one

ing to address water resources management and emergency flood support operations. CRREL's 31 active Cooperative Research and Development Agreements show a robust domestic technology transfer effort and the relevance of CRREL's research to many areas of private industry.

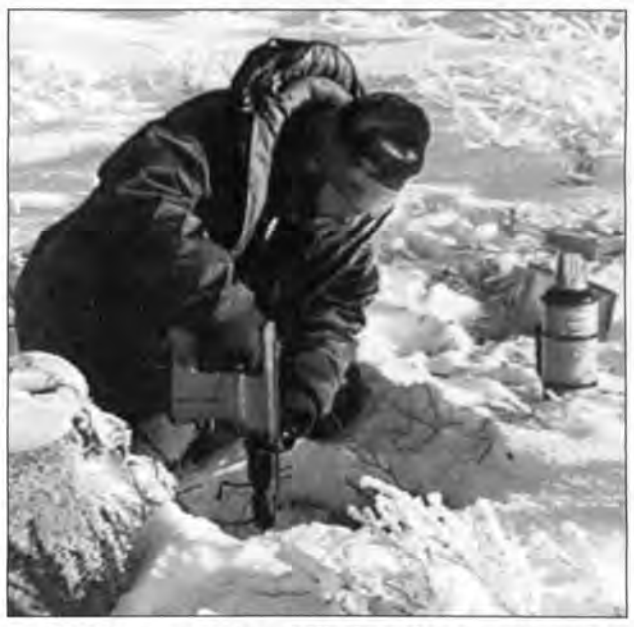
CRREL's FY97 program totaled $38.7 million. Civil works programs made up about 11 percent of the total program; the remainder was military programs and support for others.

CRREL's mission is to gain knowledge of cold regions and put that knowledge to work for the Corps, the Army, the Department of Defense (DoD), and the nation. Headquartered in Hanover, N.H., with a field office in Fairbanks, Alaska, CRREL is the only DoD laboratory addressing problems and opportunities unique to cold regions.

Large RDO

This is the third year straight that the Waterways Experiment Station (WES) earned first place in the Army's R&D awards program.

WES is the largest civil engineering and environmental quality research and development complex in the nation. Under the DoD Science and Technology Reliance Strategy, WES is the lead laboratory in three major sub-areas of civil engineering (airfields and pavements, sustainment engineering, and survivability and protective structures) and one major panel of environmental quality (installation restoration, cleanup).



A CRREL researcher drills into frozen ground to place a seismic sensor for Hornet mine system tests in Alaska. (Photo courtesy of CRREL)

In FY97, WES performed about $50 million of research, development, testing, and evaluation in support of DoD agencies in the reliance subareas. The lab also completed four science and technology objectives in rapid obstacle creation, reduction, and planning; field fortifications; vehicle terrain interaction; and lines of communication--construction materials and methods.

For the second year, WES provided military hydrology and general engineering support to U.S. forces deployed to Bosnia, with rapid responses to more than 600 questions from the field and highly accurate forecasts of Sava River stages. The support was provided almost entirely by Internet.

Technological breakthroughs included an innovative probe to detect subsurface radioactive contaminants that saved $800,000 for one site characterization. Additional savings are projected to be in the millions. WES researchers also solved the uncertainty of structural stability of intake towers at Corps water resource facilities through an innovative analytical procedure. Applying the procedure to evaluate just six intake towers that were found to be stable avoided a potential $30 million in rehabilitation costs.

Through five technical laboratories (Environmental, Geotechnical, Structures, Information Technology and Coastal Engineering), WES conducts research in diverse scientific and engineering fields for the Corps military and civil works programs.

Cultural resource program protects native treasures

By Gerry Arbios
Seattle District

At Bear Paw Rock, the mountains, water, and sky come together in a powerful landscape. The scene probably inspired the long-ago Indian artist to choose this rock for the petroglyph (rock carving) which has greeted travelers in northern Idaho for more than two millennea.

The art also represents one reason why the U.S. Army Corps of Engineers' cultural resource program plays such an important role today in protecting these sites.

When Northwestern Division's first Native American Workshop was hosted by Seattle District in April 1995, the tribes said it was long overdue. They had a lot to talk about with the Corps at the workshop, and they are still talking.

Although the district has been involved in cultural resource programs since 1974, more cooperative projects between the Corps and Northwest tribes came about as a result of the workshop. Dave Rice heads up the district team of archeologists which includes Lawr Salo and Bert Rader, who promote close working relationships with tribal governments.

"The workshop did a great deal to make tribes visible to our project managers, as well as to make Corps programs visible to tribes in this region," said Rice. Since that time, the district has enjoyed partnerships in cost-shared projects such as the Neah Bay Marina Project, the Lummi Shore Road in Bellingham Bay, and the Chief Joseph Dam Pool Raise study with the Colvilles on the Columbia River.

The district also works flood control issues with the Yakamas; habitat improvement projects with the Muckleshoots, the Skokomish, and Stillaguamish; and Superfund hazardous toxic and radioactive waste issues with the Suquamish at Eagle Harbor and Manchester.

Today when cultural resources are mentioned, the Kennewick man comes to mind, but graves are only a small part of the picture. Cultural resources cover small settlements from early pioneer days, village sites, camps, historical sites where missions have occurred, and rock art in the form of petroglyphs or pictographs (drawings).

Under the National Historical Preservation Act, all federal agencies are required to inventory their lands; survey, identify and evaluate sites for listing with the National Register of Historic Places; process artifacts; and, finally, plan for storage and curation of the finds.

Since cultural resource sites are non-renewable, if the site is threatened, some form of treatment is considered to mitigate its loss.

This year the Bonneville Power Administration will take an active part in cultural resources. Since the 1930s the agency has marketed the power from federal dams and in recent years has used the proceeds to enhance fisheries and wildlife habitat.

When the Columbia River System Operation Review environmental impact statement was completed in late 1995, one outcome was a commitment to cultural resources by three federal agencies -- Bonneville, the Corps, and the Bureau of Reclamation.

The three agencies met with the region's upriver tribes in Spokane, Wash., in February and the lower river tribes at Rock Creek, Wash., in March to firm up the commitment to the cultural resource program.

This commitment was also realized in a direct funding agreement that was signed last December between Bonneville and Corps Headquarters. The agreement was designed to provide monies for operations and maintenance repairs at federal dams along the Columbia River to increase efficiency of the dams for hydropower and to address cultural resource effects.

This October, funding for the cultural resource program begins and will continue for 15 years with five-year budget periods and an annual budget of $3 million divided among Corps districts in the North Pacific Region of Northwestern Division.

The districts have formed cultural resource groups that include cooperating agencies and Indian tribes. The groups are identifying needs and work items at each federal reservoir, placing priorities on the items, and developing a five-year budget plan.

This petroglyph (rock carving) at Bear Paw Rock in Idaho is representative of the types of cultural resources the U.S. Army Corps of Engineers is working to preserve in cooperation with Native American tribes. (Photo courtesy of Seattle District)

The funding enables the tribes to expand their capabilities, such as adding archeologists to their staffs or developing tribal historical archives, so that they can participate more in surveys, site evaluation studies, and curation of the artifact collections. In addition, the funds will help in public education, oral history recording, and promoting sensitivity to antiquities laws enforcement.

"These cultural finds enhance the region's history and speak with the oral histories of Native Indians who have kept the memories of their past alive for eons," said Salo. "We are trying to do science as well as foster a feeling of appreciation for the past."

Interagency team improves industrial park

By Nancy Allen
Norfolk District

Recently, Norfolk District was part of a team of federal, state, and local government agencies that used teamwork and cooperation to improve the quality of life in Newport News.

In 1979, Newport News established a 39-acre Seafood Industrial Park beside the federal navigation channel in Newport News Creek. The park contains businesses that use the navigation channel -- fishing fleets, fuel barges, boat repair yards, tour boats, and seafood processing facilities.

By 1989, the Seafood Industrial Park was rapidly running out of space. So the city decided to expand the park into a 13-acre underwater parcel it owned near Interstate 664. But that also meant a need to expand navigation access.

Newport News contacted Norfolk District and requested studies to identify a federal interest in providing navigation access. The studies, conducted under authority of the River and Harbor Act of 1960, concluded that a 16-foot-deep entrance channel, access channels, and a barge anchorage area were in the federal interest, and that the federal government would cost-share the construction with Newport News.

"We had good cooperation from the Corps," said Robert Bates, Newport News Port Development Administrator. "It resulted in more business and more jobs. The demand for space in the Seafood Industrial Park is far more than what we have available. The deepening of the harbor continues to attract new vessels."

The studies also determined that building the navigation channels would provide about 60,000 cubic yards of beach-quality material. The city offered eroding public beaches at King-Lincoln and Anderson parks as placement sites for the dredged material. Had the city rebuilt the beaches with material from upland sources, the cost would have been about $600,000. But by piping the sand directly from the dredging site to the beaches, the city got beach-quality sand at half the cost. The Corps also saved money. The alternative would have been to transport the material to Craney Island.

Said Mark Mansfield, acting chief of the district's Planning Division, "Thanks to the cooperation of the Virginia Marine Resources Commission and the Virginia Department of Environmental Quality (which also saw the benefit of combining the dredging with the beach nourishment), and through the cooperation of three levels of government, the total value received was even more than we envisioned."

"We're real happy with the move," said John Malbon, president of PAPCO, a tank line formerly based in Hampton, that relocated to the park after the expansion. "It met all our expectations. It allowed us to have a larger barge, to have a better grade of sulfur diesel available, and to service the marine segment of our business more efficiently. It's opened up the market. We can serve a larger customer base."

"This was really a compilation of different projects all tied together," said Bates. "It was a challenge to get federal, state and local governments to work together and within the timeframe, but it worked."

As a result, Newport News now has an improved navigation channel serving the expanded Seafood Industrial Park. This project resulted in many benefits to the city including increased employment opportunities for its residents, an increased tax base, and two rebuilt public beaches in the most densely populated portion of the city.

"This project was a complex challenge," said Doug Stamper, of the district's Engineering Division. "The coordination between many district offices as well as the Geotechnical and Hydraulics Labs at the Waterways Experiment Station, North Atlantic Division, and Headquarters ensured success."

(Robert Bates, Port Development Administrator, Newport News; Doug Stamper, Engineering Division; and Mark Mansfield, Planning Division all contributed to this article.)

Rangers at Granger build Texas prairie

Article and Photo
By Anita Horky
Fort Worth District

It's hard to imagine what the Blackland Prairie must have looked like to early settlers. Hundreds of species of colorful wildflowers and prairie grasses, some as tall as seven feet, blanketed the treeless terrain from San Antonio to the Great Lakes. These plants lived in fertile soil and could withstand wildfire, long periods of drought, and periodic high-intensity grazing. In Texas alone, there were more than 12 million acres of prairie.

Then, in less than 100 years, humans almost entirely destroyed the prairie ecosystem. Long before environmental awareness, humans plowed the prairie under for farms, ranches, railroads, bridges, and roads. Over time, as the prairie grasses died, humans introduced Eurasian and African grasses, such as johnsongrass, and forever changed the face of the North American landscape.

The prairies disappeared so rapidly that scientists didn't have the opportunity to study the native plants. Only recently have people begun to preserve what few native species still exist. One such effort is at Fort Worth District's Granger Lake northeast of Austin, Texas.

There, the lake staff, with assistance from the Texas Parks and Wildlife Department, Texas State Soil and Water Conservation Board, and the Native Prairie Association, manage a gene bank and prairie replication site.

"Granger has the best collection of Central Texas gene types of native Texas grasses and flowers," said Carey Weber, former Granger Lake manager and native plant enthusiast. Weber, who now manages the district's Georgetown Lake, was instrumental

Kim Knopp, a park ranger at Granger Lake in Central Texas, examines some of the native grasses that now grow in the lake's gene bank.

in getting Granger's natural restoration program off the ground in the early 1990s.

"After the lake recreation facilities were built, we kept trying to get bermuda and rye grass to grow, but we had no luck," he recalled. That's when then-park ranger Craig Kislingbury (now in the district's Real Estate office) mentioned the possibility of native grasses and flowers. Native species are hardier, adapt better to environmental changes, provide excellent wildlife habitat, and require less maintenance once established.

"The local farmers thought we were crazy," Weber said.

And not all of the restoration efforts were immediately successful. The on-going project receives limited funding and depends on volunteers. But several years after the start-up, plants are growing, even thriving, in the set-aside areas. The gene bank, which started with 64 parent plants, has blossomed into hundreds, thanks to additional plantings and the work of Mother Nature.

"This is exciting," said park ranger Kim Knopp, as she walked through the gene bank and examined the tall grasses. "The big bluestem and Indian grass are doing really well."

Started in 1991, the gene bank is a collection of native species where the plants' genetic material can be preserved for future environmental and educational uses. The native grasses and plants now growing in the four-acre area have been transplanted from other areas of the state where they would likely have died out in the next 10-20 years.

The 110-acre replication prairie gives visitors a better idea of what the vast prairie of yesterday must have looked like. A variety of native species, from sideoats gamagrass and Alamo switchgrass to purple coneflowers and Maximilian sunflowers, provide year-round color.

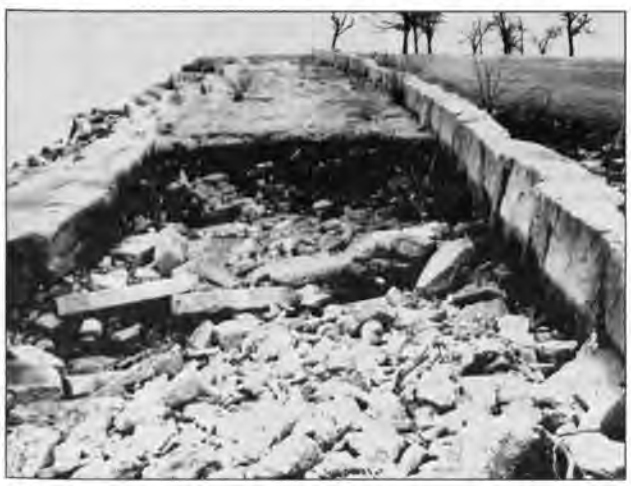
"The prairie has to be experienced by vast expanses to be fully appreciated," Weber said. "We've never experienced that because America's prairies have been chopped up. But even on a small scale, it can be a very pretty thing."

Windy City gets protection from water

By Vanessa Villareal
Chicago District

Although Chicago is called the Windy City, it actually faces a greater threat from water. Lake Michigan would slowly devour much of the city if Chicago District were not helping make a difference.

Much of Chicago's shoreline is man-made. In fact, everything in the city east of Michigan Avenue is landfill. Holding the shoreline in place are rapidly deteriorating shoreline protection structures built in the early 1900s. In some places, the existing structures are nothing more than rubble and debris laying on the shore. In other areas, the outer revetment structure may appear intact, but inside there are large voids where the stone fill has washed out, leaving a hollow structure on the verge of failure.



Chicago's eroding shore protection structures are being rescued, thanks in part to Chicago District. (Photo courtesy of Chicago District.)

What could be lost if the deteriorated structures were not rebuilt? More than $5 billion in lakefront facilities and property, including Lake Shore Drive (a federal highway and major route for daily commuters), an airport, the South Water Filtration Plant serving more than two million residents in Chicago and 50 suburbs, several harbors with about 5,000 mooring spaces, a wetlands/bird sanctuary, plus hundreds of public facilities including some of the largest museums in the nation.

But thanks to Chicago District, the city of Chicago, and the Chicago park district, the shore protection structures are being rebuilt. Construction began soon after Congress authorized the Chicago Shoreline Protection Project in the Water Resources Development Act of 1996 (WRDA 96). Using extensive field data developed by the U.S. Army Corps of Engineers, as well as Corps design work for revetment reconstruction, the non-federal sponsors (the city and park district), began construction on the first section in August 1996. Work on this portion of shoreline is scheduled to be completed this fall.

In 1997, the city and park district also began rebuilding the breakwater protecting the South Water Filtration Plant. The sponsors began building in April 1997 after executing a project cooperation agreement (PCA) for this portion. Chicago District provided survey data, soil borings, and design to the sponsors, as well as construction oversight. Because of the district's expertise in coastal engineering, it was able to suggest significant cost-saving modifications, including a more economical armor layer stone that saved nearly $1 million in building costs.

The sponsors will be reimbursed for the federal share of building the breakwater. Breakwater reconstruction will be completed this fall, at a cost of about $9 million.

Chicago District began revetment construction south of 31st Street this summer. The district has been working closely with the city and park district since early 1997 to develop the revetment design for this portion.

At the request of the city and park district, Chicago District, along with the Waterways Experiment Station, conducted physical model studies on 18 different stair-step revetment design alternatives before the city selected one for this portion of the project. The selected design has also formed the basis of the design for the remainder of the project. Chicago District awarded the construction contract last month, soon after the PCA was signed on Aug. 7.

The sponsors will also be performing work for credit under a statutory maximum of $5 million. The city and park district will award contracts in August and September to rebuild a 1,000 foot revetment at Belmont Harbor and provide beach nourishment at 31st Street Beach. Chicago District reviewed the sponsors' designs during the design process and provided input.

In fiscal year 1999 (FY99), Chicago District will award three more contracts for revetment reconstruction -- from I-55 to 30th Street south of McCormick Place, from 33rd Street to 37th Street in the Burnham Park area, and in the Lincoln Park area north of Belmont Harbor. It will also continue with design to produce plans and specifications for continuing construction on both the north and south reaches of the shoreline project.

The current approved cost estimate for the total project is $269 million. Chicago District and the sponsors are working to expedite the schedule from the originally projected completion in FY11 to completion in FY08. They are also working to negotiate a PCA for the remainder of the project.

What's shakin'?

Corps hosts earthquake conference

Article and Photo
By Jim Pogue
Memphis District

Scientists predict a catastrophic earthquake will probably strike somewhere in the eastern U.S. in the near future. They estimate a 50 percent chance for a magnitude six or greater earthquake occurring in the New Madrid seismic zone in southeastern Missouri within the next 15 years.

Recognizing this threat, Maj. Gen. Phillip Anderson, commander of Mississippi Valley Division, invited a broad cross-section of leaders to a Disaster Response Conference aboard the U.S. Army Corps of Engineers' vessel *Mississippi*. "We've come together to better understand the worst-case scenario to anticipate what the effects would be,"Anderson said.

Federal, state, military, and academic leaders met to share ideas and plans to deal with what could be the most destructive natural disaster to ever strike the U.S.

As the *Mississippi* left Memphis and headed north on the river, Dr. Arch Johnson, director of the University of Memphis Center for Earthquake Research and Information (CERI), presented historical descriptions of the catastrophic earthquakes of 1811 and 1812. They were so powerful that they temporarily caused the Mississippi River to flow backwards, rang church bells in Washington, D.C., and formed Reelfoot Lake. The area was then sparsely populated, so there was little loss of life.

But that is not the case today. Johnson put those historical accounts in the context of what would likely happen to the thousands of high-rise buildings, bridges, highways, dense population, and other features of the 20th century mid-South.

Arriving the next morning in Tiptonville, Tenn., the group went ashore to view some of the geologic features caused by the 1811 and 1812 earthquakes. Dr. Roy Van Arsdale, also with CERI, showed the group where the earth lifted, crossing the Mississippi in at least three locations.

They then went to Reelfoot Lake. According to Van Arsdale, the ground lifted up, forming a natural dam across Reelfoot Creek. This action, along with the water that bubbled up from the liquefied ground, may have formed the 10,000-acre lake in less than a day.

The *Mississippi* left Tiptonville that afternoon and continued steaming northward to Cairo, Ill. During their time underway, representatives from the Federal Emergency Management Agency (FEMA), the Corps, the Central U.S. Earthquake Consortium, and other agencies made presentations in their areas of expertise.

Later in the conference, Dr. Bill Marcuson of the Waterways Experiment Station talked about the effects an earthquake would have on the levee system if it coincided with high water or flooding. "Overall, the levee system would survive," he said. "There would likely be point failures, and we would make point repairs as quickly as possible. If we were dealing with a flood on the scale of 1927, though, those point failures could be devastating."

Most of the participants came away from the conference feeling that much had been shared, but much remained to be done. "I think we recognized the need for a new steering committee that can work in conjunction with the Federal Emergency Management Agency to ensure we have a unified, organized, and viable response plan ready to go if we get a major 'quake," said Jack Hurdle, head of Memphis District's Readiness Branch. "This conference has laid some important groundwork. Now we need to draft a mission statement and ensure we don't lose momentum in our planning efforts."

Hurdle said the U.S. Army Corps of Engineers will be a major player in any planning and mission execution associated with the New Madrid seismic zone. "When the big one comes, you can bet on the Corps being there to help get the region back on its feet," Hurdle said.

Dr. Roy Van Arsdale, a geologist with the University of Memphis' Center for Earthquake Research and Information, explains how the earthquakes of 1811 and 1812 could have formed 10,000-acre Reelfoot Lake in less than a day.

Major project will test large engines for the U.S. Navy

By Tim Dugan
Mobile District

The $47.9 million Navy Large Engine Environmental Test Facility at Arnold Air Force Base in Tullahoma, Tenn., is one of Mobile District's biggest projects.

This newly-completed project, at the Arnold Engineering Development Center (AEDC), is one of two which will support the BRAC '93 initiative to transfer the U.S. Navy large turbine engine testing function from the Naval Warfare Center at Trenton, N.J. to Arnold AFB.

"The project relocated two standard T-9 Test Cells from Grand Forks Air Force Base, N.D. and Griffis Air Force Base, N.Y., to Arnold and made significant modifications to meet engine sea level environmental testing requirements," said Area Engineer John Rollyson of the Tennessee Area Office.

The Large Engine Environmental Test Facility tests turbine engines for icing and corrosion, and includes new sea level environmental jet engine test facilities. It is a single story structure with a permanent high-bay, and blast-resistant construction. Administrative, control room, warehousing, and storage facilities were also built.

"The test capability that transferred from Trenton to ADEC is needed to generate data for risk assessments in developing design changes to medium-size turbine engines such as those in fighter aircraft," Rollyson said. "The tests determine if engine design performance is affected by corrosion. The air flow's concentration of salt-to-air is about 400 parts per billion."

The test cycles require short periods of engine run times, hence the need for RAM air, interspersed between periods of keeping a low mass air flow through the engine. Icing tests are done by refrigerating the air flowing into the engines.

"The RAM air system provides a temperature and pressure regulated air supply directly to the turbine engine being tested," Rollyson said. "This is done by connecting the air supply ductwork to the engine inlet. This allows for simulating flight and environmental conditions. It uses the existing compressors and heaters from the Aeropropulsion Systems Test Facility."

The architect-engineer firm Burns and McDonnell in Kansas City, Kan., designed the facility. Naturally, the project included many elements common to Corps-managed military construction -- pavements, landscaping, drainage, sewage, potable water, oil-water separator, HVAC, plumbing, and other facility work. But the interesting features are related to testing large jet engines on the ground, indoors.

It provided two new test cells, installed the test cells and additional ducting, thrust stands, salt spray generators and mixing equipment, process air blowers with control centers, fuel conditioning systems, and R-12 based skid mounted refrigeration systems.

It also required jet-engine mounting floor stands, engine exhaust augmenter tubes, augmenter enclosures, stainless steel tubular acoustics, and modifications to two T-9 noise suppressors (engine test cells). Mechanical requirements included liquid air system, gaseous nitrogen, aviation fueling systems, a RAM-air ducting system and accessories, both water and carbon dioxide fire protection, and refrigeration turbines. The building was built on 92 drilled piers 70 feet deep and socketed into bedrock.

The project required relocating, refurbishing and re-installing two T-9 test cells, and heavy coordination as the Navy closed the station in Trenton. "The project was a joint operation that included Navy, Air Force, and Army," Rollyson said. "Partnering contributed significantly to the open communications that provided a successful project on schedule and within budget."

Scientists find 'needle in haystack'

Topographic Engineering Center uses historical aerial photography to locate hazardous waste

By Glenn Frano
Topographic Engineering Center

Identifying and cleaning up hazardous sites are problems that affect many U.S. military installations. Sites may contain such hazards as chemical warfare materials, unexploded ordnance, and radioactive and toxic materials. The fact that many sites were created years ago complicates their identification. Many sites are completely obscured today by the burial of materials, rapid re-vegetation, or changes in land use.

Historical aerial photography is a significant tool for identifying these potentially hazardous sites in a rapid, cost-effective manner.

The Topographic Engineering Center's Terrain Analysis Branch (TAB) conducts two types of historical aerial photographic investigations of U.S. military bases — historical aerial photo analysis and photogeologic analysis. TAB does these investigations for Department of Defense (DoD) customers to support the Defense Environmental Restoration Program, Installation Restoration Program, Formerly Used Defense Sites, and for Base Realignment and Closure sites.

These investigations find potential sites or sources of environmental contamination. Using historical aerial photography to identify hazardous sites can save DoD customers as much as 10 dollars for every dollar spent on analysis. Having a more informed idea of where to look for these sites reduces the effort of geophysical surveys. Less time in the field yields cost savings.

Photogeologic analysis

Historical aerial photographs help identify terrain and geologic influences that affect the migration of groundwater contaminants. Analysis may also use geologic maps, information on faults, and the location of wells and springs. The analysis of surface terrain features, combined with other geologic and groundwater information, helps provide customers baseline information for site characterization and to support geophysical studies.

Staff geologists use aerial photography and other information to map rock structure, faults, fracture traces, lineaments (features distinguised by an outline), sinkholes, surface drainage, and other features like mines or springs that can act as pathways for contaminant flow.

Fracture traces and lineaments are the surface traces of fractured bedrock. Knowledge of fracture patterns can provide useful information about the potential for contaminants to drain underground and for the optimum placement of monitoring wells. Fracture diagrams are generated for mapped linear features to provide information on the orientation and length of these features. Such data can provide some insight into the geologic structure of a site.

Sinkhole mapping using historical aerial photos identifies the location of these potential conduits for contaminants into the groundwater.

Also, this type of photographic research can provide detailed wetland mapping, detect changes in wetlands, give the size and extent of wetland features, and map the watershed to support remediation and resource management.

The top photo, taken in 1951, shows the landfill site. The bottom photo, taken in 1995, shows how the site looks today. The bars superimposed on the 1995 photo show where the old landfill is buried. (Photos courtesy of TEC)

Historical aerial photo analysis

Historical aerial photo analysis entails identifying and mapping potentially hazardous sites going back a period of time defined by the customer and the site history. Aerial photographs yield information about the use and alteration of the land from year-to-year. An analyst scrutinizes such information or "signatures" of land changes as potential areas of concern.

These signatures can be trenches, pits, landfills, storage areas, burn areas, ground scars, or mounded material. They could be, for example, the location of landfills, buried hazardous materials, underground storage tanks, or target ranges. By combining aerial photo analysis with historical maps and documentation, some sites can be identified.

This analysis exposes potential health, safety, and legal hazards despite changes in land use that may have rendered these sites unrecognizable today. For example, mapping features from pre-development aerial photography can support testing of sites that are now obscured by buildings, parking lots, or runways.

Sources used for this analysis include historical aerial photography, satellite imagery, ground photos, and a variety of site plans, maps, and other documentation. Data sources that support the analysis include a vast array of federal, state, county and local government agency archives, and private and academic holdings.

One example of this analysis was a study of historical aerial photos for a site in Puerto Rico. The site contained a "known" landfill, but the customer did not know its exact location. The site is in an area of dense tropical vegetation.

Research found a 1951 aerial photo showing three trenches in the suspect area. This photo was rectified to match a 1995 aerial photo. The features were mapped in the 1951 photo and superimposed onto the 1995 landscape.

A field team from TAB and the customer used coordinates from the digital mapping and verified the site of the old landfill using the global position system. This historical and digital mapping process refined the search area, which resulted in finding the site and reducing the need for extensive clearing.

A critical site can be analyzed in about six weeks, including aerial photo ordering time. However, the timeline is usually longer for most sites due to the size and scope of the projects.

Digital mapping techniques enhance the analysis of each project. All the aerial photos used are scanned, then rectified in a digital system to a common map datum and projection. The rectification makes it possible to map historical features with Geographic Information System software, thus allowing display of such features on any image map in the system.

This process lets the user locate suspect historical features on the current landscape. The image maps and files are saved in a digital format and placed on CD-ROM for the customer.

Each type of historical environmental investigation has text and hard-copy maps; they also can be done as solely digital output. Ground photos, maps, and text used in the final reports are saved as digital files and placed on CD-ROM.

This historical resource can be a cost savings to the customer concerned with environmental remediation, monitoring, or management. Large areas can be analyzed remotely and potential problem areas identified, reducing the need for extensive field investigations. Exploiting the historical record is a challenging area of research, but its benefits are of proven value.

Savannah supports Fort Jackson troops

Article by Alicia Gregory
Photos by Jonas Jordan
Savannah District

Cadence calls echo over the rolling hills of Fort Jackson, S.C., as tough, experienced drill sergeants snap commands at fresh-faced recruits. About 40,000 newly enlisted men and women come here every year for Army basic training. It is also here that Savannah District maintains a resident office in support of Fort Jackson's design and engineering needs.

Fort Jackson is located just outside Columbia, S.C.; in fact, it lies within the city's geographical boundaries. The base is home to about 10 organizations, including Training Center Command's Victory Brigade, the Soldier Support Institute, and the U.S. Army Chaplain Center and School. The Victory Brigade, the largest unit, consists of soldiers from the Training and Doctrine Command and Forces Command. It provides command and control administration for headquarters and basic training battalions at Fort Jackson.

During the years, Savannah District has worked for most of the organizations at Fort Jackson. "Right now, the Corps has six projects ongoing at the base and another 10 at Sunny Point," said Jay Wilson, resident engineer. "That's a total current workload of about $50 million."

Sunny Point is the military ocean terminal in North Carolina where munitions are brought in by truck or train and loaded aboard ships bound for Europe. The terminal has a port with three docks and a temporary holding area for munitions. "Most of the projects at Sunny Point are operations and maintenance work," said Wilson.

The resident office also has a reserve center project ongoing in Hickory, N.C., and a barracks project at Shaw Air Force Base, S.C. But the largest share of its workload is on Fort Jackson.

"Our workload is scheduled to go down next year, so we will have to adjust when that happens," said Wilson, who has a staff of between 16 and 13 at the resident office, and three at Sunny Point. "There has been a cutback in DoD spending, so the military has cut funding for new projects here to support various overseas operations and to keep the active components ready."

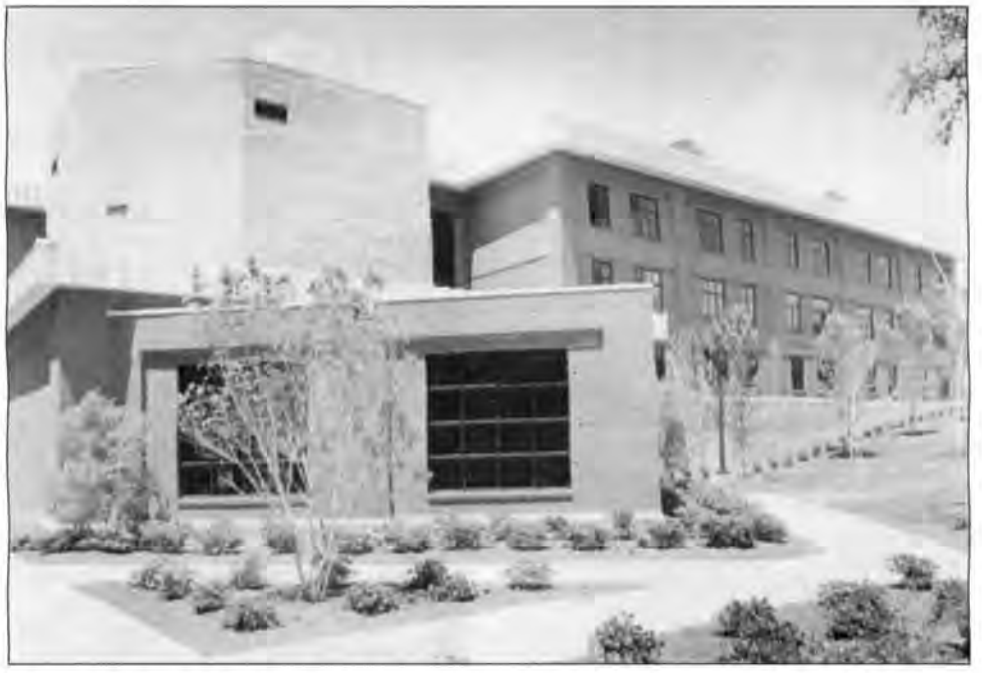
One of the largest projects Savannah District is managing for the installation is the $30 million Single Soldier Housing Complex. It is the first metric project awarded by the district. The design for the 29,900 square meter (98,096 square foot) project was done in-house using the new 1+1 barracks standards. In this design, two soldiers each have his or her own private sleeping area, but they share a common area which includes a bathroom and kitchenette.

"Construction started in July '96 and is about 65 percent complete," said Efrain Rosario, the district's senior project manager for Fort Jackson. The complex consists of eight barracks buildings and two soldiers community buildings for permanent-party soldiers stationed at the post. "The barracks should be ready by October 1999."

The district is also handling small projects (additions and renovations) for the newly-built Soldier Support Institute, which relocated to Fort Jackson due to a Base Realignment and Closure (BRAC).

"We started planning the facility while we were still located at Fort Benjamin Harrison," said Charlie Vines, support division chief for the Directorate of Training Support. "Once we moved in and realized that we had omitted several things, we gave the Corps a laundry list of things we wanted added to the building." The resident office, which had construction oversight of the project, was able to complete most of the post-construction work the institute wanted through purchase orders. "We did a bad job of communicating with the architect, but the Corps was able to provide us the support we needed," said Vines. "They have really done a superb job."

The district completed another BRAC project, the $8 million U.S. Army Chaplain Center and School, last year. Only one BRAC job remains. "The DoD Polygraph Institute is the last BRAC project we have and it's from Fort McClellan," said Wilson. "It is a $5.6 million facility that ACC Construction Company began in January 1998; it is 21 percent complete." The institute provides polygraph training for military and civilian federal employees. The 3,134 square meter (10,282 square foot) two-story building will contain classrooms, training and research suites, support spaces, offices, and a library.



Construction is ongoing at the $30 million Single Soldier's Housing Complex.

The district has also completed several energy-saving projects for Fort Jackson, which is a leader in energy conservation. The chilled water storage tank project and others like it save money by cutting the post's utility bills.

"The installation is going through a transition right now," said Wilson. The Directorate of Public Works has combined with the Directorate of Logistics to form the Directorate of Logistics and Engineering (DLE), under the directorship of Brian McClenning. "At the same time, we are trying to adjust to their new setup and understand how they want to do the work."

"The problem is twofold," said Lt. Col. Kevin Wall, former Director of Public Works. "Some of our contracts need to be installation-specific instead of boiler plate. The second problem is that while we're more interested in the long-term maintenance of a building, the occupant is more interested in aesthetics, and the Corps is caught in the middle. As the eventual building manager, we can see a little bit further down the road on how we're going to be set up and operating, and sometimes we ask for different things that don't get included in the contracts. But the Corps has been very responsive and is working with us on this."

Wall said one of the great things the Corps has done recently is to create an installation support manager (ISM) position and place that individual at the installation to function as part of the DLE team.

"Derek Cudd has done a terrific job on coordination, both at the resident office and the district office," said Wall. Cudd, a former project manager for the district, has been on the job since April.

"Some of the successes we're seeing from this individual, with the introduction of the 'One Door to the Corps' philosophy, has to do with warranty work," said Wall. "The resident office builds the facility and turns it back over to us with the warranty. But now the installation support manager handles any warranty problems." Before the ISM position was created, the DLE had to get in touch with the project officer in charge, which could be different for each project.

"Another thing we're working on is making sure contract specifications support the installation and some of the objectives we're trying to achieve in the long term," said Wall. "One of the specific things we are working is a contract clause for energy management and having the construction firm pay the energy bill for the building until the government occupies it. The new ISM is assisting us in making these things happen.

"We have always had a good relationships with the Corps, but it is even better with our ISM," said Wall. "He works in the building with us, attends all our meetings, including our installation meeting, and even office meetings in our shops. Now it is more of a personal relationship than a phone call relationship."

"I think with Derek out here there's more one-on-one contact to form a personal relationship instead of just relating organization-to-organization over the telephone," said Wilson. "He is ready to step in and highlight for the DLE what we can do to help them."

Jay Wilson, resident engineer at Fort Jackson, and Lt. Col. Kevin Wall, Director of Logistics and Engineering at Fort Jackson (who recently retired), observe the construction of the $30 million Single Soldier's Housing Complex.

The new barracks on West Fort Hood include many amenities such as outdoor picnic areas (above), bulk storage, a mud room, and a continuous, covered walkway connecting the soldiers' rooms with the community building.

Corps modernizes life at Fort Hood

Article and Photos
By Anita Horky
Fort Worth District

Up to 340 soldiers will be able to eat at one time at the new West Fort Hood dining facility.

If you haven't been to Fort Hood, Texas, lately, you'd hardly recognize it. Thanks to Fort Worth District's Central Texas Area Office, the western portion of the world's largest military installation is getting a facelift. Construction crews are pouring foundations for 140 new houses, erecting walls for a vehicle maintenance shop, and completing the first phase of a $50 million barracks complex.

"Our mission that we share with the U.S. Army Corps of Engineers is to ensure that we provide the best facilities for where our soldiers live, where they recreate, and where they work," said Col. Richard Craig, Fort Hood's Director of Public Works. "We're covering the whole gamut of what a soldier's life is all about at West Fort Hood. It's all being improved, and a great deal of it is with the Corps."

The most visible change at West Fort Hood is the huge barracks complex, which replaces several old barracks. The first phase of the complex (which includes rooms for 408 soldiers, a community building, dining facility, three administrative buildings, and a central energy plant) will be finished in September. Phase II, which will double the number of soldiers' rooms and provide another community building and five more administrative buildings, will be completed in 2000.

"I believe it's the most modern set of facilities in the United States Army today," Craig said of the district-designed complex. "As a soldier who's got 30 years in and started out as a private living in the open barracks, it's absolutely amazing to me the progress we've made in providing a real lifestyle for the soldiers in the barracks."

One such soldier is Pvt. Joshua Zinn of the 504th Military Intelligence Brigade. He moved from older barracks on West Fort Hood into the new barracks when half of the rooms were opened to soldiers in July. "They're a lot better than the last ones we lived in, a lot better," Zinn said. "We have a lot more privacy."

Before, Zinn shared a bathroom with 27 soldiers and had to walk to the dayroom to use the microwave. Now he has a private sleeping room in a suite with a bathroom and kitchen that he shares with just one other soldier. Each private room has its own thermostat and walk-in closet, and there are ceiling fans throughout.

"The troops love the rooms, they really do," said Harold Molnes, the area office's on-site construction representative. "It's a very visible project, and we've had a lot of visitors. The soldiers and commanders are happy."

Why wouldn't they be? No details have been overlooked.

The staff duty officer in the centrally-located community building can monitor the smoke alarm system throughout the barracks. A continuous, covered walkway connects the soldiers' rooms with the community building so they won't have to step into bad weather to go play pool, check their mail, do laundry or just hang out. There's bulk storage for the troops' cumbersome military gear, and an attached mud room for the soldiers returning home from duty in the field. No one will even have to fumble for the lights because they're motion-activated.

The dining facility next door (complete with aluminum ceiling tiles, skylights, and ceiling fans with neon lights) is just as modern. An elaborate sound system can pipe in music or be used for public announcements. The seating area can be partitioned for private parties. The kitchen boasts the post's first pulping machine, which turns waste into compost material. There's also a take-out counter and an outdoor seating area.

Come fall, when the dining facility will open, up to 340 soldiers will be able to eat at the same time thanks to the design. It's actually two dining facilities in one with two separate serving and eating areas for more efficient use.

But for now, construction crews are putting the finishing touches on the dining facility and barracks. Grass is beginning to grow around the buildings.

About a mile away, work is progressing on the new $6.5-million vehicle maintenance shop. Many of the same soldiers who will live in the West Fort Hood barracks complex will work at this 27,000-square-foot facility, repairing and servicing military vehicles in nine maintenance bays.

And construction has begun on 140 four- and five-bedroom homes in the nearby Montague Village family housing area. Enlisted soldiers and junior NCOs, who typically can't afford comparable houses off post, will move in this spring.

For the Central Texas Area Office, all of the new construction means satisfying Fort Hood, its largest customer. For the installation, it's more symbolic. A sign outside the barracks complex identifies the facility and says, *"III Corps and Fort Hood: Keeping our promise to soldiers."*

'Jambo, Babu!'

TAD man, 61, climbs Mount Kilimanjaro, highest peak in Africa

The urge to climb the highest mountain in Africa took Clancy Wahl by surprise.

For the past eight years, he has been a resident engineer for the Transatlantic Programs Center in Egypt, but he was baffled by his sudden desire to climb 19,340-foot Mount Kilimanjaro.

"Kilimanjaro suddenly seemed to exert a magnetism that I couldn't resist," he said. "Those I told about my sudden ambition said I must be crazy."

Wahl trained for the adventure with three months of stair climbing, power walking, and a lot of time on a cross-country ski machine. He also mail-ordered a pair of top-quality mountain boots, and cold-weather clothes.

To begin, Wahl flew to Kenya. "The first word I heard after arriving was 'Jambo,'" said Wahl. "It is Swahili for 'Hello,' but it also conveys the feeling of 'Welcome.'"

After an overnight stay at a rustic lodge at Mount Kenya, he caught a bus across the Kenya/Tanzania border. Shortly after crossing the border, Wahl got his first glimpse of Kilimanjaro. "It must have been nearly 100 miles away, but even at that distance it appeared huge and foreboding," he said.

Kilimanjaro is part of a Tanzanian national park and the rules stipulate that registered guides must be used. Each hiker was assigned a guide and porters from the local Chagga tribe, who carried provisions in large sacks on their heads.

"Climb doesn't really seem apropriate for what one does on this trail," said Wahl. It's more like long, heavy-duty hiking. "There are only a few places on this trail, even at its steepest, where I needed to use my hands to pull myself up."

As soon as the hike started, the porters raced ahead, but Wahl's guide set a much slower pace. Even though the first hour of the trail had a gentle slope, the mile-plus altitude caused Wahl to breathe heavily. About four hours after starting, they reached the Mandara camp at about 9,000 feet. "I'm pumped up and feeling good," Wahl wrote in his journal.

Wahl, who is 61 years old, said he was treated with great respect by the guides and porters. They included "Babu" in their greetings, a respectful term meaning "grandfather" in honor of his white whiskers.

The next day, Wahl and his guide left Mandara for Horombo camp. He spent one complete day and two nights at Horombo Hut, elevation 12,000 feet, to acclimatize to the altitude.

Wahl wrote, "The sunset at Horombo camp is magnificent. The entire earth appears blanketed with clouds turned rosy pink. We can see flashes of lightning in the clouds and a few seconds later hear the thunder. Dusk lasts about half an hour, and then the sky explodes with stars. The Milky Way reminds me of white lace on black velvet."

This was Wahl's acclimatization day.

Clancy Wahl stands near the 19,340-foot summit of Mount Kilimanjaro, the tallest mountain in Africa. (Photo courtesy of Clancy Wahl)

About half of the 20 or so climbers hiking the trail spent an extra 24 hours there hoping it would help them avoid altitude sickness. Some degree of mountain sickness is experienced by almost all who climb Mount Kilimanjaro. Symptoms include headache, nausea, loss of appetite, irritability, fatigue, swollen hands and feet, shortness of breath, insomnia, and dizziness.

"I found myself waiting for symptoms to appear, but two or three momentary pangs of headache were all I experienced," Wahl said.

Even his artificial hip joint didn't cause him any problems.

"The metal-and-plastic joint never bothers me in the slightest during the whole Kili climb, although the natural joint becomes slightly sore after one particularly long day of hiking," Wahl wrote in his journal.

The fourth day brought slower progress.

"Everyone appeared to be moving in slow motion, and then I realized we were," Wahl said. "I thought to myself, 'If we're struggling at 12,000 feet, how are we going to manage 19,000 feet?' I forced myself to remember that people climb the mountain every day."

The youngest person ever known to make the climb was 11 years old; the oldest was 74.

As the trail toward Kibo Hut (15,400 feet) became steeper, Wahl's doubts about being able to climb Kilimanjaro grew.

In his bunk at Kibo Hut, Wahl tried to deal with his fear. He wrote, "The 15,500 foot elevation is requiring my body to work harder, even at rest. My normal resting heart rate is about 50 beats per minute, and I count 80. My normal resting respiration rate is about eight breaths per minute and I count 20. I've become totally obsessed. Instead of anticipating completing my climb, I'm writing my obituary. I struggle for self-control."

Wahl and his guide departed camp about midnight and, after a short while, the climb got steeper. Wahl said he tried not to think about climbing. "I made my mind a blank and put my body on autopilot," he said. "This worked better than I thought it would, and I lost track of time."

Many climbers make Gilman's Point their goal, since it is on the rim of the volcano and entitles them to say they have climbed Kilimanjaro. But another two hours of hiking will bring climbers to Uhuru Peak, the absolutely highest point on the rim. This was Wahl's goal.

After several hours of traversing rocks and solid snow, Wahl heard a *"Yahoo!"* ahead, where climbers were celebrating their success. He said it was almost anti-climactic when his guide announced they were at Gilman's Point on Kilimanjaro's volcanic rim.

"Finally it registered -- *I had made it to the top of Kilimanjaro,*" Wahl said. "Until then, I had been so worried about reaching Gilman's Point that I hadn't thought much about continuing to Uhuru Peak. Now it seemed the only thing to do.

"The entire climb that morning had been a study in slow motion," Wahl said. "Time seemed to be suspended as I slogged up the final 100 feet. I hardly dared to believe it as I set foot on the highest point in Africa."

Wahl took both still photos and a videotape of the once-in-a-lifetime view. "I can see clear to the horizon hundreds of miles away," Wahl wrote. "The sun is the brightest and the sky the bluest I've ever seen. What a glorious day!"

After about 45 minutes at the top, Wahl's guide urged him to start back. They 'boot-skiied' part of the way back.

"Boot-skiing involves taking a giant step, digging your heel in the loose surface, and letting inertia carry your forward and down several feet," Wahl said. "Then you take another step with your other foot. It's rather fun, and sped up our descent considerably."

They rested an hour at Kibo Hut, then hiked down to Horombo camp where they spent the night.

"By the time Horombo Hut comes into view, I'm beginning to feel tired," Wahl wrote. "Since starting out, I had climbed from 15,420 feet to 19,340 feet and back down to 12,140 feet, more than 13 miles of trail."

On day six, the final day of Wahl's Kilimanjaro trek, more than 11 miles of trail brought him from Horombo Hut at 12,140 feet to the park entrance at 6,500 feet.

"The feeling is not unlike saying goodby to a friend you know you'll never see again -- sadness, regret, a sense of loss," Wahl wrote. "Will I ever again attempt a challenge as great, or experience a success so sweet?

"Since returning, every trip up the stairway to my apartment prompts thoughts about the climb, and I'm still reliving it in my dreams," Wahl said. "These will fade with time, but I hope they never disappear completely because my Kilimanjaro trek was immensely satisfying and the memories will be worth savoring.

"It is said that a person is never the same after climbing Kilimanjaro," said Wahl. "I believe this is true."

(Denise Tatu of the Transatlantic Programs Center's Public Affairs Office wrote this article based on Clancy Wahl's journal.)

Jack Bartolet steers the *Endeavour* under the guidance of a permanent crewman. (Photo courtesy of Jack Bartholet)

Savannah man sails on *Endeavour*

By Jack Bartholet
Savannah District

(***Editor's note:*** *Few people have the chance to experience the days of "wooden ships and iron sailors." Jack Bartholet, Chief of Construction Management Section in Savannah District, did when he sailed aboard the "Endeavour," an authentic replica of the ship Capt. James Cook commanded when he discovered New Zealand and Australia.*

The "Endeavour" replica, built in Australia in 1994, is a three-masted, square-rigged ship. Her concessions to the 20th century are modern radio and navigation gear and a modern galley, latrines, showers, and engines where the cargo hold would be.

The ship is on a world tour, currently working its way up the east coast of the U.S. It is sailed by a permanent crew of about 20, augmented by about 20 volunteers. Bartholet, who sails an 18-foot sloop of his own, joined the "Endeavour" as a volunteer for the voyage from Portsmouth, Va., to Alexandria, Va., May 13-17. This article is condensed from his journal.)

May 12

At 1400 I sign on and walk the plank onto the ship. The volunteers spend most of the day in orientation. The first meal on board is excellent, some sort of fish baked in a bread shell. Meals aboard will obviously be one of the major events in our lives. Getting into the hammock is a bit tricky but we all manage. I actually sleep very well this first night.

May 13

I have first watch, 0200-0300. I basically guard the ship against intruders. I also check the mooring lines, depth of water in the bilge, wind speed, and freezer and refrigerator temperatures. Then back to bed after waking the next man.

After breakfast the crew sweeps, scrubs, and cleans all horizontal surfaces, then stands for inspection. In late morning we got hands-on training in line-handling, steering, and climbing aloft.

Make no mistake, climbing aloft is a major challenge for most of us. It's *high,* a little over 100 feet. We climb ladders that lean backward to get past platforms about halfway up each mast; then we climb out to the end of the yardarms by walking on a rope suspended two to three feet below them. Then we lean over the yardarm and work with both hands.

At 1400 *we sail!* No tugs. We use a combination of headsails, mizzen sails, and our own engines to clear the harbor and Chesapeake Bay. Lots of cannon firing (wadded up newspaper becomes confetti

The *Endeavour* is a replica of Capt. James Cook's ship. (Photo by Jack Bartholet)

when shot out of the cannon), and we have a water balloon fight with a Navy destroyer, the *USS Stout.*

Once in the Atlantic Ocean we release and set about half of our square sails. I stand night watch from 2000-2400. Weather is still cold and wet. Seas are rough. Several people are sick. I'm okay, but I'm taking Dramamine just to make sure. At one point we could see the moon directly ahead. We use it to steer by rather than the compass alone.

This is my first sleep at sea. The seas are still rough. This ship pitches and rolls a lot, but the hammocks compensate for nearly all of the roll.

May 14

Morning at sea. We're in the Gulf Stream, about 55 miles from shore. Seas are rough with large swells. Looking out at the ocean is like looking at a series of mountain peaks, all in motion. We're rolling as much as 20 degrees to either side. The captain says this is great; we're making seven knots (about eight miles an hour), which is near the maximum speed for this ship.

At 0800, all hands gather on deck to alter course. We must reverse the angle of all sails, and it is organized chaos. Somewhere, someone actually knows what all the commands and yells are for. Most of us just continue doing whatever we were last told to do. We get the sails reversed and change course, now heading back toward the mainland.

About 1500, the sun is *finally* out! Since we now need to steer further into the wind than the square sails can handle, we furl them. This actually is beginning to work well. Most of us now have some idea which line we are hauling or easing, and why. The final step is to go aloft and gasket the sails. Seas are still rough with large swells, so being aloft is quite a roller-coaster ride.

May 15

Morning. Messy, messy, messy. We cover the entire deck of the ship with canvas, climb the rope ladders and coat them with fresh tar to preserve them.

Noon. We're in the Chesapeake Bay. It's actually warm. It's time for shorts, skin, sunblock, and comparing tattoos. Great lecture by the first mate on the art of course reversal. Now I begin to understand why actually doing it seems like such organized chaos.

Afternoon. The wind is light, so we unfurl all sails, let them hang for awhile, then refurl them. It's still coordinated chaos, but we're definitely getting the hang of it.

Evening. We anchor at the mouth of the Potomac. What a treat to enjoy a balmy evening.

May 16

We motor up the Potomac and anchor just off Quantico. Tomorrow is the last day. General attitude tonight is tomfoolery.

May 17

A fun day. We pass through the Wilson drawbridge at 1100 and make a close pass of Old Alexandria. Lots of people, lots of cannon firing -- not all ours, but we scare the people in a motorboat running alongside us. Lots of waving.

On to Washington D.C., where we join a huge fleet of boats. At the 14th Street Bridge we turn. The wind's just strong enough to fill the sails, so we descend upon Alexandria in grand style. Once there, we furl the sails, turn into the wind, fire cannons, and dock.

All of a sudden, it's over. This was one of the major highlights of my life, right up there with getting married and soloing an airplane.

U.S. Army Corps of Engineers National Awards

*(**Editor's Note:** The awards listed here are national Corps awards only, for Corps people. Army and DoD awards are not included here, nor are professional society awards. The Engineer Update does publicize such awards, but not in this special section. Many of the following awards were presented at the recent Senior Leaders Conference in Dallas. The Civilian of the Year Award has great prominence and is listed first. The remaining awards are listed in no particular order. Some awards presented last year were either not presented this year or are biennial awards and not scheduled to be awarded again until next year.)*

Civilian of the Year (Lt. Gen. John W. Morris Award)
Donald L. Basham, Louisville District

Donald L. Basham, Louisville District's Deputy District Engineer for Project Management, was awarded the Lt. Gen. John W. Morris Civilian of the Year Award. Under Basham's leadership, his district's Programs and Project Management Division was frequently recognized for outstanding communications, relationships and execution.

Basham serves as Career Program Manager for Engineers and Scientists, teaches a class on career management to supervisors and managers, and is widely seen as both a coach and mentor. He shared the career planning guide he authored throughout the Ohio River Division.

Basham also crafted Louisville District's first strategic plan and was instrumental in helping the district's Engineering and Construction divisions attain their ISO 9000 certifications.

Outside his district duties, Basham was appointed by the Governor of Kentucky to a Biodiversity Task Force, the result of which was a number of strategies and action plans for conservation which are now underway throughout the state.

Interpreter of the Year
Carol J. Ryan, Omaha District

Carol J. Ryan, a park ranger at Lewis and Clark Lake area, Yankton, S.D., is Interpreter of the Year. She managed the visitor center's major facelift, including an overhaul of the center's bookstore that resulted in double the number of books now available to the public and a major increase in the bookstore's revenue.

Ryan used inmates from a local prison camp to overhaul much of the visitor center's interior, saving taxpayers thousands of dollars. She also presented eight water safety programs to area youth, wrote articles for two local newspapers, oversaw a full redesign of the project brochure, and coordinated a recycling program with area scouts.

Ryan represented the Corps as a member of the chamber of commerce visitor industry committee and served on the mayor's council for the Lewis and Clark Bicentennial. She also partnered with the National Park Service to construct a new trail site adjacent to the visitor center.

Logistics Management Excellence Award
St. Louis District Logistics Management Office

The St. Louis District Logistics Management Office was recognized with the top logistics organizational award. The district negotiated to buy systems furniture for its field offices from a recently closed Army command, saving about $590,000. The property book officer maintained inventories and reports of survey at 100 percent compliance.

The Supply Branch disposed of $550,000 in excess property. The district reduced its vehicle fleet and converted Corps assets to the General Services Administration, which reduced expenditures and brought in revenue. Equipment availability for mission readiness has increased through a comprehensive maintenance program. The Transportation Branch streamlined the airline ticket procedure resulting in better service to customers. The Logistics Management Office also developed a quarterly newsletter for hand receipt holders.

Logistician of the Year
Gayle G. Boone, New Orleans District

Gayle G. Boone, Chief of the Logistics Management Office, New Orleans District, was recently recognized for her ability to sustain a strong logistics program in an era of change, downsizing and resource constraints. She made numerous internal changes to her organization, realigning job descriptions with true logistics functions and the Corps' strategic vision.

Boone mentored others in her field and saw them through career progression. She also fully supported a number of new business practices and initiated the change to reduce the warehouse stock record account from 500 line items to only five.

In addition to her regular duties, Boone also served as a member of the district's executive steering committee to implement the Army Performance Improvement Criteria, and chaired the district's Combined Federal Campaign.

EEO Trophy Award
Omaha District

While facing the fourth year of reduction-in-force actions, the Omaha District increased representation of minorities and women and moved them into increasingly higher grades. While only 31 positions were filled by outside recruitment during the year, the district used outreach efforts for vacancies where there is underrepresentation.

The district used developmental assignments and temporary promotions to give people the skills and experience they need to advance. The district maintained an informal resolution rate above the Department of the Army goal for five years and kept settlement costs at a minimum.

Omaha District also increased its efforts for training and development and its employees are involved in several local and national programs such as Women in Science and Engineering and numerous efforts to enhance the math and science skills of local youth.

Planner of the Year
Carol Hollaway, Galveston District

The Planning Excellence Award for 1997 was given to Carol Hollaway, Galveston District, for her work developing and using innovative methodologies for evaluating project benefits. Serving as the economist for the Cypress Creek project, Hollaway developed and conducted the analysis of various buyout plans.

At a training course, she learned about a new analytical tool in development that could benefit the project. Though the tool was not yet fully developed, she worked with a hydrologist to design a methodology for using the untried program. Holloway demonstrated initiative and technological skill by using electronic pictures of the structures involved in the buyout plans so that participants in a critical teleconference could understand the project. The project moved forward more quickly as a result. According to the award nomination, "Her creativity and initiative in adapting analytical tools to fit the particular project represent a significant advancement in the planning process."

Planning Team of the Year
Beargrass Creek Feasibility Team, Louisville District

The Beargrass Creek Feasibility Team carried out a study to reduce flood damages along Beargrass Creek in Louisville, Ky. They first prepared a model project study plan that guided their study to completion within the original schedule despite complex formulation issues.

According to the nomination package, the team was able to resolve technical issues and questions during the study thereby improving the quality and timeliness of the final product. They used an independent technical review team from start to finish.

The team also pioneered alternative formulation briefings and process improvements. The planning team of the year was also recognized for stretching the state-of-the-art in formulation to address multiple detention basins and incorporate risk and uncertainty analyses.

Natural Resource Employee of the Year
Jason C. Anderson, Sacramento District

Jason C. Anderson, a park ranger at Melones Lake Project, Stanislaus River Parks, was awarded for helping the Corps of Engineers take a leadership role in managing the riparian habitat along 15 miles of the Stanislaus River. Through Anderson's networking, the California Department of Fish and Game and the U.S. Fish and Wildlife Service carried out projects that added 2,000 tons of salmon and steelhead spawning gravels to the river.

Anderson's active, hands-on approach made the Corps a more active member of several river communities. Through his management of the visitor assistance program, he established a strong working relationship with law enforcement officials as well as his own staff and the public.

Anderson trained his staff members in safe boating procedures that helped them perform river rescues during routine canoe and raft patrols. His fo-

U.S. Army Corps of Engineers National Awards

cus on weekend water and boating safety lead to a summer average of 600 public contacts each day.

Natural Resource Project of the Year
Raystown Lake, Baltimore District

A Pennsylvania project team, Raystown Lake of Baltimore District, was recognized for a number of proactive activities. Among these was bringing renewed focus to the project's natural resources program. The team developed a plan to salvage timber harmed by a moth infestation and reforest affected areas.

They worked with Real Estate Division to develop a program to provide affordable cooperative farming opportunities to the public without using Operations and Maintenance Funds. The project team used technology to improve permitting and reporting systems and also automated the preventative maintenance system.

The Raystown staff was also recognized for its success in interagency programs and initiative in public involvement, including customer surveys, and its extensive use of volunteers – more than 15,000 hours of effort worth nearly $130,000 – to accomplish what a minimal staff cannot. The project was applauded for extensive safety efforts as well.

Safety Performance Award for Excellence
Great Lakes and Ohio River Division,* and *Humphreys Engineer Center Support Activity

Two organizations share the 1998 Chief of Engineers Safety Performance Award for Excellence.

Great Lakes and Ohio River Division has not had a government fatality since 1995, or a contractor fatality since 1992. In FY97, they had only nine recordable property damage accidents, their civilian lost-time injury/illness rate was 1.24 per 100 Corps employees, and their contractor lost workday injury/illness rate was 0.57 per 100 contractor employees.

The Humphreys Engineer Center Support Activity (HECSA) had a civilian lost-time injury/illness rate of .43 per 100 workers, the fourth year they have been under the goal set by the Corps. For the third year in a row, they had no contractor accidents. Last year the HECSA Safety Office did a comprehensive evalution of employees' computer work stations. It found that about 30 percent of employees experience discomfort from using computers. This led to purchasing a replacement keyboard/mouse support system which was installed at many locations where employees had complained of discomfort.

Engineering Design Team of the Year
St. Paul Flood Control Project Design Team

The urban revitalization plan of St. Paul, Minn. demanded more flood protection at an abandoned industrial area, a classic brownfields redevelopment. The St. Paul Flood Control Project cleaned up the site and integrated the waterfront with the city by creating a functional protective barrier. The project raised the exisiting three-mile-long flood barrier by three feet to protect about 450 flood-prone acres of St. Paul from a 500-year flood.

This barrier could have continued to be an obtrusive floodwall, but the St. Paul Design Team collaborated with the city staff and community to incorporate a pedestrian walkway and park-like setting with increased flood protection using the existing floodwall and levee. The project includes 250 feet of raised floodwalls, 450 feet of stepped floodwalls, 2,320 feet of levees, six closures, and upgrades to three pumping stations.

The team's integration of active and passive pedestrian walkways and reception areas softened the project's hard edges and opened the river to the citizens of St. Paul.

Civil Works Programming Excellence Award
Linda Storey, Memphis District

The quality of Linda Storey's work for several years led to receiving this award. Her job includes preparing timely, accurate budget documents for Mississippi River and Tributaries (MR&T) construction, operation, and maintenance projects. She is also the district's Force Configuration and Management expert who handles data used to determine the district's full-time equivalent allocations. Storey is the lead programmer and, when the Programs Management Branch chief is absent, she handles the district's programming and budgeting operation.

In December 1994, the Chief of Programs Management Branch unexpectedly retired. Storey stepped in and, as a GS-11, performed duties usually done by a GS-13. She became acting chief in January 1995 until the position was filled in June 1995. During this time, she was responsible for the district executing 98 percent of its MR&T funds. In addition, Storey this year initiated an after-action review of the district's budget submission process. As a result, quality and efficiency of the process has improved.

Program Manager of the Year
Kathleen Ahsing, Pacific Ocean Division

Kathy Ahsing is program manager for all Army programs in Pacific Ocean Division (POD). The total value of the programs is more than $1 billion.

From FY95 to the present she has accepted increasing workload and responsibilities. For example, from FY95 to FY98, Ahsing was program manager and primary point of contact for assuring that studies, planning, design, and construction of all Army programs and projects in Hawaii were completed within baseline budgets and schedules. She had stewardship of about 500 projects. She also assisted the Army in developing a $900 million Whole Barracks Renewal Program in Hawaii.

In FY97 and 98, Ahsing assumed additional responsiblities for Army programs in Alaska, Far East, and Japan districts.

Ahsing also personally developed a facilities master plan for POD. The master plan identifies a facility improvement strategy that will support POD into the 21st century.

Emergency Manager of the Year Award
Lizabeth Miller, Los Angeles District

Lizabeth Miller served as the primary action officer for Emergency Support Function 3 at the Carson City Disaster Field Office during the flood of 1997. She was reassigned to South Pacific Division (SPD) where she helped organize the financial records for the Northern California floods, and helped manage the data flow in the emergency operation centers (EOCs).

Miller worked with contractors in L.A. District to develop an automated database to track messages, emergency mission work, and data on personnel working in disaster relief. This database eliminated about 60 percent of the EOC paperwork.

Miller served as a primary team member for developing the Civil Works Emergency Management Financial Regulation (ER-11-1-320). Miller was also the main project manager for developing a performance measures program in the Emergency Management Business Program.

Miller's work with the California Office of Emergency Services led to SPD and all four districts being able to read CAL-OES situation reports real-time during a disaster.

Attorney of the Year (George Wolfe Koonce Award)
John Roselle, Tulsa District

John Roselle has played a key role in Southwestern Divisions' Regional Teamwork Initiative, which is a model for the Corps. For example, he has been instrumental in developing a regional Hazardous/Toxic/Radiological Waste (HTRW) teamwork initiative, which focused on Geographic Project Manager Leadership and HTRW Design Center support. Roselle is also a leader in using alternative dispute resolution to resolve complex HTRW cases, enabling parties to proceed with accelerated clean-ups while minimizing costs.

Roselle is a recognized expert in contract law and an experienced trial attorney. He has served as an instructor at the PROSPECT Trial Attorney Course. He is also a leader in Tulsa District's Support for Others program, and a key participant in the Project Review Board, Senior TERC board, and the Total Army Quality (TAQ) Steering Committee. As a TAQ initiative, he developed a baseline questionnaire for client comments, enabling his office to work more closely with their clients and better focus on their needs.

Project Delivery Team of the Year
FUSRAP Team

The Formerly Utilized Sites Remedial Action Program (FUSRAP) is a national program for cleaning up sites contaminated during the early atomic energy program. The Corps gained this responsibility in the FY98 Energy and Water Development Appropriations Act.

The FUSRAP team members come from St. Louis, Kansas City, and Louisville districts. The team crosses many traditional boundaries to demonstrate that the "One Door To The Corps" concept is a reality. The team members provide distinct talents in design, construction, legal expertise, and program and technical management to assure success in this $470 million project to clean up nuclear weapons production waste sites in St. Louis and the vicinity. This challenge could have taken months in preparation, but the team quickly developed new methodologies, developed and honed policy, technical and automated business processes, and fostered wide-ranging partnerships for environmental restoration activities.

Bike trek helps cure mid-life crisis

By Nicole Barnes
Headquarters

When Fred Lombardo flipped through the pages of the *Washington Post* newspaper last year, a month after his 50th birthday, he found a cure for his mid-life crisis. There was a full-page advertisement recruiting bikers to participate in the 1998 GTE Big Ride Across America.

The ride's purpose was to raise awareness and funds for the American Lung Association's (ALA) fight against lung disease.

"It looked as if all the planets lined up and this was what I was looking for in my life," said Lombardo, Chief of the Systems Operation and Maintenance Branch in the Directorate of Real Estate at Headquarters. "All the blessings of good health and a good employer have put me in a position to do something for other people. I decided to look into it, and the more information I read, the more I was sure I wanted to commit to make the trip."

He had committed to a 3,200 mile bicycle ride across the northern part of the U.S. from Seattle to the nation's capital. There were two reasons Lombardo decided to ride.

"Having lost my grandmother to emphysema, I later realized an even bigger connection to the purpose of the ride," he said. " Not only was it a new challenge in my life, but I had a personal reason to support the work of the American Lung Association."

Each rider had to raise a minimum of $6,000 to participate in the ride. Lombardo's personal goal was to raise $10,000 and he raised $10,100. According to Lombardo, the people in the Real Estate and Information Management directorates were large contributors, as well as family, friends, and neighbors. Last May, he hosted a pledge party at Headquarters, and the people in the Real Estate office "were major contributors to my successful fund-raising. I raised well over $2,200," Lombardo said.

When Lombardo started training last August, he did not have a regular exercise routine, nor had he ever ridden a bike long distance. He started by riding his bike on the weekends and gradually increasing his mileage. "The last month before the ride I began commuting back and forth to work on my bike," he said.

Lombardo estimates that the commute from his home in Fairfax, Va., to Headquarters in Washington, D.C., is 43 miles round-trip. By the conclusion of his training, Lombardo had ridden his bike a total of 3,300 miles.

Lombardo didn't do all his training alone. The ALA put him in touch with other people from Northern Virginia who were participating in the ride. "There was a fairly large contingent from the Northern Virginia area," he said. "We had about 40 riders and we did occasional training rides together."

On June 15 the ride began. About 730 riders from all over the U.S. took part in the 48-day trip, which included eight rest days.

The first day began at 5:30 a.m. in Seattle with an opening ceremony, and Lombardo says the first day was a tough one.

"We were on the road by seven and as we proceeded east it started raining," he remembered. "By the time we reached the top of Snoqualmie Mountain, it was 38 degrees and raining. Half of the riders were sagged because they couldn't keep up and half a dozen people were suffering with hypothermia. I managed to ride to camp and set up my tent. I knew it was going to be tough. I remember thinking, 'Well, this is how it's going to be, so just keep a positive attitude.'"

The next day was better. "When we woke up the sun came out and it was 70 degrees as we rode through the Yakima Valley, so I quickly forgot how tough it was the day before," he said.

The biggest challenge of the ride was staying healthy, because the riders bicycled through all kinds of weather. Lombardo said that for the most part he stayed healthy. However, "at one period I had a head cold, but I managed to shake that."

Lombardo said his motivation during the ride was "I got to get home. Every day was one day closer to home."

The bicycle route for each day opened at 6 a.m., and all riders had to be out of the camps by 8 a.m. The route closed at 7 p.m. "They would go and sweep the people that were behind," he said.

For two of the rest nights, the riders were fortunate enough to stay in college dormitory rooms, but the remaining time they slept in tents. "There were some little towns we stayed in where we doubled their population," Lombardo said.

He said he ended the ride with mixed feelings. "I was happy that it was over and sad that it was over. I was ready for the ride to end, but the idea of missing all of my friends made me sad. Fortunately, I made a lot of friends from Northern Virginia that I will continue to see."

Although Lombardo enjoyed the ride and the cause, he doubts that he will participate in next year's ride. "Yes, I would do it again, but I'm not sure if I'll do it next year," he said. "It takes a lot of time and effort to do the training and raise the pledges."

Lombardo offers this advice to anyone interested in participating in a similar bike ride. "This is a great way to get in shape and a great experience. And all you have to remember is to keep on pedaling. Just keep pedaling."

Fred Lombardo, Chief of the Systems Operation and Maintenance Branch in the Directorate of Real Estate at Headquarters, took a 3,200-mile bike ride for his 50th birthday. (Photo courtesy of Fred Lombardo)

Korea flood

Continued from page one

age assessment activities," said Bearden. "We are assisting the DPWs in looking for expedient repair solutions, which will get the troops out of the environment and back into adequate temporary facilities. Our primary focus is defining, for EUSA, the long-term fix for facilities damaged by the flood. And, we are gathering information about the flood...documenting high water marks, where the debris flowed or settled, so in our re-construction efforts we can help prevent this magnitude of damage in the future."

Command and control for the assessment operation was initially established at the Tongduchon Resident Office (TRO) under the command of Maj. Paul Cramer. The focus of the operation was to assess the facilities in the Camp Casey area.

"After refinement of the mission, it was necessary to establish a satellite command and control node at the Uijongbu Project Office to facilitate assessment efforts in the Camp Red Cloud area," said Cramer. "Larry Grant, from the district's PPMD, was designated to command this effort."

As assessment efforts in the Camp Casey area neared completion, the two command and control nodes were combined to enable the assessment effort to shift focus toward the western corridor installations. The assessment teams covered a total area of about 70 square kilometers (about 43 square miles).

In addition to flood damage assessments, FED assisted the theater's recovery efforts in other ways. On Aug. 14, FED turned over two 200-person barracks at Camp Casey for use by the 1st Battalion, 15th Field Artillery, to house displaced soldiers. Although the barracks were not 100 percent complete, an arrangement was orchestrated where the contractor could complete punch-list items as troops moved into the desperately needed facilities.

Besides the districts mentioned above, offers of help came from the 249th Engineer Battalion (Prime Power) at Fort Belvoir, Va., which offered power and technical assessment, and the Topographic Engineering Center, also at Fort Belvoir, which offered mapping support.

FED is now expanding the field estimates into a detailed Scope of Work with cost estimates for execution via the design, bid, and build process. For destroyed facilities, FED is assisting EUSA in project definition and cost estimates, which will be used to help program replacement buildings and facilities with Military Construction, Army, funds.

"From an overall operational aspect, the successful contribution we have made to the flood damage assessments has been remarkable," said Bearden. "The district has successfully executed three efforts simultaneously. From Aug. 8-26, more than 5,000 hours of flood damage support effort were logged by FED. In addition, the district has continued executing their on-going $450 million design and construction workload on schedule. We have maintained award schedules for the largest number of construction contracts the district has executed in almost a decade, and are currently focused on the remaining $91 million scheduled for award this fiscal year. Simultaneously, we were a major contributor and participant in the Ulchi-Focus Lens military exercise."

(Larry Hawthorne of Pacific Ocean Division, Gloria Stanley of Far East District, and Bernard Tate of Headquarters contributed to this article.)

Around the Corps

Bridges

In 1994, the Department of Energy asked Charleston District to replace four 1950s-era bridges at the Savannah river nuclear plant in Aiken, S.C. The project was a joint venture of Charleston and Wilmington districts. Charleston performed the geotechnical design, traffic management, and utility relocations. Wilmington did the structural and highway designs. Charleston District's savannah river Area Office administered the contract.

The first bridge was done in four months, including demolishing the existing bridge. The normal time for a similar job is about eight months.

On the second bridge, the shoulders of the roadway had wet soil conditions, but the contract required them to be widened, requiring a lot of fill work. To support the increased embankment, a geotextile fabric was combined with tensar geogrid on the soft clay soil. The embankment was built with ground-up asphalt. Using asphalt grindings instead of stone material and imported fill saved about $70,000.

The third bridge had to have two lanes of traffic open at all times, so construction was done in two phases. From a safety standpoint, it was the most challenging bridge.

The fourth bridge replaced was reportedly the oldest cloverleaf in South Carolina. The roadway under the new bridge was lowered about four feet, requiring significant excavation, but it was still done in 10 months, much faster than required.

Lake study

Outdoor recreation enthusiasts may gain more opportunities to fish, boat, and swim at federal lakes nationwide, now that the Congressionally-authorized National Recreation Lakes Study Commission has been launched. The commission concluded its first two-day meeting July 21 in Washington, D.C.

Authorized by Congress through the Omnibus Parks and Public Lands Management Act of 1996, the commission will evaluate recreation opportunities at federal lakes while also protecting the surrounding environment. It will also evaluate ways of forming partnerships with private and public organizations to boost recreation, recommend whether new legislation is needed, and review the feasibility of establishing a National Recreation Lakes System.

The commission has seven members, including Joseph Westphal, Assistant Secretary of the Army for Civil Works.

"We have nearly 1,800 federal lakes, and water is the number one recreation attraction in the country," said Bob Armstrong, a member of the commission and Assistant Secretary for Land and Minerals Management in the Department of Interior. "The availability of these lakes, combined with the public's keen interest in recreation, gives the commission many opportunities to give something back to citizens nationwide."

Norman exhibit

Memphis District hosted the grand opening of "Time In A Capsule," an exhibit of time capsule artifacts and other memorabilia from the 1925 sinking of the steamer *M.E. Norman*. The public opening took place Aug. 10 in the Clifford Davis Federal Building in Memphis. L.L. Hidinger, Jr., the only survivor of the tragedy known to still be living, was guest of honor.

The exhibit displays the contents of a time capsule unearthed last summer containing artifacts from the *Norman*, which sank in the Mississippi River just south of Memphis on May 8, 1925. The *Norman* was carrying 72 visiting engineers, their families, and crew on a tour of the river when the steamer capsized and sank. River worker Tom Lee was the only witness and, using his small motorboat, he rescued 32 survivors. Despite Lee's efforts, 23 people lost their lives.

The artifacts on display include the oil-soaked Corps flag from the *Norman*, a copy of the newspaper reporting the sinking, and a variety of photos. Other exhibited items include documents, correspondence, and photos related to the sinking, Tom Lee, and the subsequent investigation. A detailed scale model of the *Norman* is also on display. The display will run through the end of this month.

Correction

In the article titled "Tunnel vision serves San Antonio well" in the April *Engineer Update*, the worker pictured is David Knight, a construction representative of the San Antonio Resident Office.

Niagara berth

A historic warship now has a snug harbor, thanks to Buffalo District. Tom Ridge, Pennsylvania governor, recently dedicated the Erie Maritime Museum, home of the U.S. Brig *Niagara*, a replica of Commodore Olive Hazard Perry's flagship in the War of 1812. Some of the first *Niagara's* timbers were used to build the replica.

The *Niagara* at full sail. (Photo courtesy of Buffalo District)

Buffalo District's contractor for construction of the *Niagara's* berth was Durocher Dock and Dredge, Inc. of Cheboygan, Mich.

The museum is a 65,000 square-foot, three-story building that features an observation deck that overlooks the *Niagara's* berth. Other highlights include an overview of the War of 1812, a history of the *Niagara's* preservation, a wooden warship reconstruction, and USS *Wolverine's* prow.

The *Niagara* was Perry's flagship during the Battle of Lake Erie against the British on Sept. 10, 1813. A fleet of nine small American vessels defeated a squadron of six British vessels. The victory secured the northwest territory, opened supply lines, and boosted the nation's morale.

Air Force awards

The U.S. Air Force Design Awards Program has identified three projects designed by Omaha District as award recipients for 1998. The Consolidated Base Support Complex at Ellsworth Air Force Base, S.D., and the Child Development Center at the Air Force Academy in Colorado Springs, Colo., each received a merit award. The Historic Dormitory Interior Renovation Project at F.E. Warren Air Force Base, Wyo., received a Citation Award.

Rangers learn verbal defense

By Bob Rawson
And Patricia Graesser
Seattle District

They wear uniforms and badges, but they don't carry guns.

Park rangers of the U.S. Army Corps of Engineers are perceived by many as law enforcement officers, but they enforce only Title 36 of the Code of Federal Regulations -- the park rules. They make every effort to obtain voluntary compliance from park visitors, and it usually works.

All too often, however, rangers find themselves in an uncomfortable and potentially dangerous situation dealing with angry, intoxicated, or irrational people. Local law enforcement is available to provide assistance, but response time is sometimes unpredictable. A ranger must have the tools to defuse the situation.

Seattle District sponsored a Verbal Judo training session recently to give rangers these tools. In the two-day session in Seattle, 22 Corps rangers from Seattle, Alaska, and Portland districts learned skills for resolving conflict and communicating effectively.

The Verbal Judo Institute in Tijares, N.M., trains many law enforcement employees around the country to reach the goal of gaining compliance at the lowest level of force. The course stresses the need for dealing with the public in a professional manner, even when under verbal assault. By reacting to difficult situations professionally rather than by expressing personal feelings, the officer is more likely to successfully resolve the immediate problem.

The goals of Verbal Judo for the Corps are to enhance ranger safety, reduce their personal stress, increase the level of professionalism, decrease complaints from the public, and decrease government liability.

The course taught tactics and principles that will end a confrontation successfully and peacefully -- how to use the right words at the right time with the right people to foster cooperation. The instructor showed how to maintain a believable, straightforward presence, project competence, and demonstrate leadership. He also taught how to deliver bad news with dignity and respect, how to identify and defuse potentially violent situations before they are out of control, and how to identify, communicate and take action with those under the influence of drugs, alcohol, or emotion.

"Our rangers are often mistaken for law enforcement officers, but we don't have their training or the self-defense equipment," said park manager John Coyle. "Rangers are faced with a variety of conflict situations. It's important to get the best information we can and learn as many techniques as we can."

Coyle explained that local law enforcement can take anywhere from five minutes to half an hour to respond to a call for assistance at Albeni Falls Dam in Idaho, where he works. "Even five minutes is a long time if you're staring down the barrel of a gun."

Vicky Silcox, one of the rangers who attended the training, said she has already used a couple techniques she picked up in the class. When faced with an infuriated camper, "I kept repeating 'I'm here to help you. Please help me help you,'" said Silcox. "Every time I repeated it he became a little calmer. He was still upset, but I was eventually able to have a conversation with him."

At Libby Dam in Montana, where Silcox works, it can take 15 to 20 minutes for the local sheriff to arrive on the scene. For that reason, Silcox said she found the training "very beneficial." She also commented that she would like to hear more scenarios specific to the park setting and thinks a follow-up course should be offered to keep the techniques fresh in the rangers' minds.

Coyle agreed that effective training needs to be ongoing, and said he hopes they can continue to learn and practice the Verbal Judo tools at coming ranger meetings.

District builds waterfowl waystation

By Michael Watkins
Kansas City District

Michael Watkins, wildlife biologist, checks bullrushes on the edge of a wetlands management unit. (Photo by Ken Davidson, Kansas City District)

It's early fall and more than 20,000 ducks are resting and feeding on aquatic vegetation on the wetlands at Benedictine Bottoms, Kan. Several species of shore birds scurry on the mud flats searching for invertebrates. Waders like great blue herons and egrets make slow calculated moves as they stalk small fish and amphibians.

Just a few years ago, Benedictine Bottoms was 2,110 acres of farmland annually planted with row crops. Today it is quickly evolving into one of the premier wildlife areas in the state. Benedictine Bottoms is located about two miles north of Atchison, Kan., along the Missouri River. The area received its name from the religious community associated with Benedictine College and the Benedictine Abby, which once owned a large portion of the land.

The area is part of the Missouri River Fish and Wildlife Mitigation Project administered by the U.S. Army Corps of Engineers. The project's purpose is to restore about 48,000 acres of wetland and riparian habitat in Kansas, Iowa, Missouri, and Nebraska. This is a portion of the one-half million acres of fish and wildlife habitat that was destroyed when the Corps built the Missouri River Bank Stabilization and Navigation Project from 1912 to 1980. All of the mitigation lands will be purchased by the Corps from willing landowners. Congress authorized the project in 1986 and secured funding in 1990.

Development of Benedictine Bottoms began immediately after the area was purchased, and it is an example of several agencies working together to achieve a common goal. A Corps' wildlife biologist and forester spearheaded re-vegetation of the area, but the Kansas Department of Wildlife and Parks, Kansas State and Extension Forestry, and the U.S. Fish and Wildlife Service provided critical input into the development plan.

The Corps is funding site development and will remain the landowner, but once development is complete the area will be maintained and operated by the Kansas Department of Wildlife and Parks.

During the last four years, the area has gone through a dramatic transformation. The Corps has planted more than 175,000 tree and shrub seedlings on 550 acres, and about 750 acres have been planted with a mixture of native grasses and legumes. The trees were planted in large blocks and interspersed with grassland habitat.

Edges of the tree plantings were planted to several rows of shrubs. The shrubs will provide a transition zone between the woodland and wetland prairie habitats. In addition, food plots and annual weed strips surround the woody plantings. These will serve as firebreaks when the wetland prairie compartments are burned every three to four years.

According to Ken Davidson, a forester with Kansas City District, the tree plantings are progressing quite well. "We selected water-tolerant tree and shrub species that will adapt to the site and provide quality wildlife habitat," he said. "The combination of bottomland hardwoods and shrubs will provide mast as well as escape and winter cover."

Ken Davidson, a forester, inspects big blue stem grass growing in Benedictine Bottoms. (Photo by Michael Watkins, Kansas City District)

A mixture of native grasses, including big bluestem, Indian grass, eastern gama grass, and switch grass were planted, along with wildflowers and legumes. This wetland prairie habitat will provide valuable nesting and escape cover, as well as a source of food.

The native grass plantings have done extremely well. The seed germination and plant growth rate has been phenomenal. The first-year mowing to control weeds, followed by prescribed burns, has accelerated development of native grass stands. Many of the individual plants developed seed heads during the first or second growing season. Native grass plantings normally do not reach this stage of maturity until the third or fourth growing season.

In addition, 16 ponds were built using low-profile earthen fill levees with water-level control structures. They will provide more than 450 surface acres of quality wetland habitat. The large number of wetland units will allow the area to benefit a maximum number of wildlife species.

Some ponds will be operated as permanent marshes, which contain shallow water year-round. Others will be managed as seasonal wetlands or moist-soil management units. These will be completely drained during the late spring or early summer to allow for the growth of wetland plants. These units will be re-flooded in the fall to provide food for migrating waterfowl.

Three wells with electric pumps were installed at the site to provide maximum flexibility in managing the wetlands. The pumps and wells will allow the area manager to fill the wetlands at critical times of the year. In addition, these facilities will ensure that the wetlands are full of water and provide critical habitat when other areas in the region are dry due to lack of rainfall.

Most of the work was completed in the spring of 1997 and the wetlands were flooded for the first time last fall. According to Kirk Thompson of the Kansas Department of Wildlife and Parks, the Benedictine Bottoms project is progressing as anticipated. "From a wildlife standpoint it really looks good right now," Thompson said. "Everything is new, young and fresh, and ready to produce exactly what wildlife needs."

A unique aspect of this project is that biology students from Benedictine College under the direction of Dr. Daniel Bowen and Dr. Martin Simon are monitoring and documenting the evolution of habitat quality at the site. More than 100 students from the college have spent the past three summers collecting data on the biodiversity of the area.

"The project has offered students a living biology lab," said Bowen. "The work is real and means something to the people making decisions about the bottoms and how the river is managed. We jumped into the project from ground zero. Because of that, there will be a continuum that we can study until the Benedictine Bottoms becomes whatever it becomes 100 years from now."

The students have documented more than 130 species of birds at the site and more than 70 species have nested at the bottoms during the past four years. Bowen estimates there were only seven to 10 nesting species in the area before the project began. The study has documented rare and endangered species that many thought were no longer in the area.

In addition, sightings of deer, raccoons, frogs, songbirds, pheasants, quail, and hawks are increasing. Plant diversity has also mushroomed since the area was created. Students have collected and identified more than 100 species of upland and wetland plants.

Benedictine Bottoms is open to the public, but motorized vehicles are not allowed in the area. A parking lot has been built and hikers, sightseers, bird watchers, and photographers are welcome to use and enjoy the site. According to Thompson, "We hope to open the area to hunting in 1998 after the Kansas Department of Wildlife and Parks assumes management of the site. But it will be by permit only to prevent overuse of the area." It is likely that a small portion of the bottoms will be reserved as a wildlife refuge during hunting season.

It will probably take 20 to 25 years for Benedictine Bottoms to approach its maximum potential. But judging from the preliminary study by Benedictine College and the large numbers of birds that used the wetlands during the 1997 fall migration, the area is already providing quality habitat for a diverse number of wildlife species.

(Michael Watkins is a wildlife biologist with Kansas City District.)