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U.S. Army Corps of Engineers, Omaha District

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On the cover: Gavins Point spillway.
Photo by Harry Weddington

OMAHA OUTLOOK

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Keeping positive, working hard vital in these changing times

Joel R. Cross
Colonel
Omaha District Commander

Team,

First and foremost, thanks for all you do every day providing tremendous value to the Nation. Recently we've discussed our ongoing challenges with fiscal cliffs, furloughs and sequestration providing the latest updates in e-mails, phone calls, meetings and in the halls so in this letter, I want to address a topic we can control: how we can cope with the changing times and uncertainties while maintaining our positive attitudes and our exceptional work ethic.

I realize that's no small task, but I feel it's easier today than in our past. Sometimes we tend to forget our origins and take a lot for granted when we have much to be thankful for every day; things like electricity, running water, food, schools, security, community, etc. Many times we generally take our quality of life for granted... and we shouldn't, it is not universal around the globe. Many of you have seen the disparity in Iraq and Afghanistan. So the first thing we can do to help us cope with the current situation is make the decision to maintain positive attitudes, be good co-workers and be thankful for what we have.

Next, I believe for us to succeed in a fiscally constrained environment we need a culture where leaders can assume an acceptable level of risk to accomplish their work. I have recent examples where we are implementing overly broad policies that bring little to no value to the missions we execute. We won't have that luxury in the future unless something is taken off our plate of assigned missions... and that is highly unlikely.

The key for leaders in assuming risks is being able to see the risk clearly – before you take it. I want leaders to be able to assume risk knowingly for their organizations and in many cases you are already doing it. Most of you likely remember the "Just Do It" card. I guess my philosophy is the unofficial resurrection of the JUST DO IT card **with a twist**... As long as it's legal, ethical and moral... **and achieves the Commander's Intent**, then just do it.

Considering our future, my top concern is allowing inefficient, ineffective and overly broad (risk avoidance) policies to rule our processes and behavior and through them, lose our ability to provide tremendous value to the Nation.

So... let's fix stupid!

What I mean is, if we have a process that needlessly impedes us from doing our job more effectively or efficiently – let's find a better way to do it. Here's one recent example – we have a large boat with a fuel tank that costs upwards of $20,000 to fill and the only responsive method we had to fill it was with the government purchase card that had a $2,500 limit. We fixed this. On March 6, the Missouri River Project Office's Swipe SEA Card was approved and was forwarded for activation ($150,000 limit). Our target is to get this system in place before this project office starts using the boats again this Spring.

You don't get the option of not doing your job, so leaders need to ensure you have the tools that enable your work in the most effective, efficient manner possible.

How to Cope

Now, how do we cope with these changing, chaotic times that sometimes make no sense? I believe we can cope by focusing on our jobs, communicating effectively throughout the organization, sharing ideas

Continued on page 11

By KEVIN QUINN, *Public Affairs Specialist*

Gavins Point's largest repair job in history

It was only the largest assessment and repair job ever at Gavins Point Dam, and it took place in the coldest weather and the coldest water imaginable. Piercing Dakota winds chilled the workmen on the spillway and divers submerged in the frigid flow of water passed by the power house. Circling eagles, which dove hell-bent-for-leather for the fish visible below added an aura of drama and artistry to the scene.

The $3-million project to repair flood damage at Gavins Point Dam could also lead to a better understanding of how water pressure affects the dam's concrete spillway. Winter is the best time to do the work because the river is typically low and water is not released through the spillway gates.

Workers and divers had a common goal—to inspect the "apron"—concrete slab that serves as the spillway floor. It called for the crews to drill 40 holes in the concrete to assess the gravel base below.

The work was needed not only because of the age of the 55-year old structure, but also because the Flood of 2011 smote it a mighty blow as it passed 150,000 to 160,000 cfs for 65 days during the flood.

The removal of eight million pounds of sediment and debris, from the submerged concrete surface, preceded the work, a challenge of great proportion in and of itself.

"We knew it was well built," said Gavins Point Project Operations Manager Dave Becker. "The Corps has a well-founded reputation for building good structures and these have held up well for 55 years. We were really pleased with how the spillway held up through the flood of 2011. It had very high flows going on for a long time and held up extremely well," Becker said. "Still, you don't know for sure how well something is going to do, so it is with dam safety in mind that the Corps is always inspecting and testing."

The real test was when crews began drilling holes through the 18-inch concrete spillway to check on the gravel frost blanket beneath it, and to fill a void in the blanket that was found during testing in May. It also gave them the opportunity to insert instruments beneath the spillway to take readings that will give the Corps more data on how the spillway reacts to water flowing over it.

"There are things they want to look at in this gravel frost blanket," said Dave Becker, operations project manager of the Gavins Point Project, one of the six dams that the corps operates on the Missouri River.

Windy weather held up drilling several times, as did ice on the spillway gates, which threatened to slide down the spillway toward the workers. Those holes will give engineers a chance to check the condition of the 3.5-foot-thick gravel frost blanket. After the flood of 2011, the Corps inspected all of its dams for damage.

Meanwhile, as work progressed, on the spillway, other workers are using an excavator mounted on a barge to clear out 3,000 tons of debris from the spillway. Most of that debris has built up along 54 huge concrete baffle blocks 30 feet beneath the water surface at the middle of the spillway. The blocks are set there to slow the water as it flows over the spillway and re-enters the river channel.

"The flood made it more of an urgent matter to assess all our flood structures," Becker said.

In March, Engineering Division ran the spillway gates to check uplift pressures under the concrete spillway slab during flows, a test of the instrumentation that was recently installed under the slab and took a closer look at the uplift pressures.

The results will provide key information for the Engineering Division experts, like Dave Sobczyk, to determine what additional work is needed on the spillway in the future. The investigation of the spillway continued through March, and flows were then increased for navigation season on March 18, calling an end to the spillway work...for now.

"We are still in the process of evaluating," said Sobczyk. "This is a long and deliberate process since the submerged nature of the slabs makes it extremely difficult to perform a comprehensive evaluation. We want to assure that any repairs are both worthwhile and do not create unintended side effects," he added.

Sobczyk anticipated it will be several more weeks, maybe months, before a definite answer can be found. "We can say that, thus far, our evaluations

A barge station near the spillway performed tree and debris removal in the stilling basin; Lower right: crane drops riprap on the downstream river bank. All photos by Harry Weddington

confirm that no urgent situation exists. Further evaluation will determine how the long-term reliability of the structure can be maximized, beyond normal Operation and Maintenance activities."

Gavins Point Dam isn't the only dam being scrutinized, says Becker. The six Missouri River dams are all subject to some work because of 2011's flooding. "The work may be difficult, but it's worth it to ensure a solid future of the man-made structures," says Becker.

Most of the debris is gravel, some of which may have been left there after construction of the dam was completed, Becker said. A lot of rock has also accumulated over the years, as well as pieces of boat dock railings and frames, fishing arrows and other garbage. "It's 55 years of things that you would find in a river with a lot of human activity," Becker said.

Like most activity at the dam, the work on Gavins Point Dam attracted the attention of Yankton-area residents, according to Lisa Scheve, director of the Yankton Convention and Visitors Bureau.

"It's always a topic of conversation," she said. "We're used to the Corps doing some construction at the dam during the last couple years, even before the flooding." The ongoing maintenance is appreciated by the community, which counts on the economic and recreational benefits the dam and Lewis & Clark Lake provide, she said.

"Any structure that's over 50 years old, you want to see it taken care of," Streve said.

By EILEEN WILLIAMSON, *Public Affairs Specialist*

Replacing dams at popular Air Force Academy recreation area

Nestled in the foothills of the Colorado Rocky Mountains and located on the property of the U.S. Air Force Academy is the Farish Recreation Area.

The Omaha District has been executing a contract to essentially replace the Leo Lake and Grace Lake earthen dams, located in the recreation area.

The dams are two of three within the popular 650-acre recreation area, in the mountains west of the Academy, at an altitude of 9,000 feet.

The dams, constructed in the 1930s, were scheduled for repairs through the Air Force Academy's Operations and Maintenance program. Repairs to the third dam took place several years earlier as an Air Force-managed project.

Changes to certification requirements necessitated that the Leo and Grace Lake dams be renovated or replaced. The U.S. Air Force Academy Civil Engineering squadron contracted the design of the repair project and then selected the Omaha District to execute the repair because the Corps has more experience performing dam projects.

The contract for the nearly $3.5 million project was awarded in late June 2012 and work began in August after a delayed start caused by the devastating fires in Colorado. The nearest fire was only a few miles from the project location, with roads leading to the project location closed and the area falling under an evacuation order.

Both lakes were drained to accommodate the work effort allowing the existing earthen dams' valves and gates to be removed. New outfall, spillway, inlets, and crest walls were also constructed.

Many locations within the Farish Recreation area remained open throughout construction. Summertime visitors to the Farish Recreation Area partake in activities such as hiking, mountain biking, fishing and camping. Because Farish is open year-round, winter visitors can ice-fish or go snowshoeing, tubing, sledding, ice skating or cross-country skiing.

The area's recreation activities led to some interesting discoveries following the draining of the lakes. Items ranged from fishing items such as lures and kids' fishing poles to hockey pucks, hockey sticks, golf balls, cell phones, car keys, sunglasses, etc.

One of the most interesting finds was a wallet. The wallet contained the owner's driver's license and various credit cards along with other pieces of identification. The project team was able to track him down through an Internet search for his name. A team member called the number associated with his name and it turned out he was still working and still at that number. The gentleman returned the call and the team was able to return his wallet to him. He was very happy. He said he had lost it during a family reunion planned by his son. He was fishing and the wallet fell into the lake. He had many fond memories of the trip and was pleased to have his wallet back after all these years.

Another gentleman who had learned about the project contacted the team to gain access to the lake bed after it had dried. The man had lost his wedding ring in the lake and had dropped a cinder block in

At top: Grace Lake Dam looking North.
Above: Grace Lake Dam, articulated concrete mat blocks.
Right: Leo Lake Dam demo.
All photos by Harry Weddington

an effort to mark the location where the ring fell off. He brought out a metal detector and spent some time searching the area where he thought the ring might be. Unfortunately, he was unable to locate it but he was grateful for the opportunity to look.

The project has reached significant completion on Grace Lake, which is less than 1 foot from reaching its normal operating pool of 9,046 feet above mean sea level.

Work on the Leo Lake Dam is progressing. The lake has been drained, crews have nearly completed demolition of the existing structures and the contractor is beginning construction of the new structures.

The U.S. Fish and Wildlife Service and the Air Force Academy's natural resources staff manage the lakes' stocking program. The lakes are typically replenished four to five times a year, with the first stocking taking place just before Memorial Day and the final just before the arrival of ice.

As the fish stocking program returns to full force, the project approaches its official final completion, which includes final inspections and certifications that remain before the project will be fully complete in early summer 2013.

By MAJOR ELI ADAMS

Redefining Service and Construction Quality at Fort Carson's Butts Army Airfield

Omaha District's 4th Combat Aviation Brigade "Net Zero Ready" Military Construction Program

The Army is standing up a new unit at Fort Carson in 2013 – the 4th Combat Aviation Brigade. With more than 130 helicopters, the 4th CAB will provide much needed aviation support to the 4th Infantry Division.

Fort Carson's Butts Army Airfield can only support a little more than 50 additional aircraft. To expand and improve the airfield, the Army has programmed several military construction projects. The CAB Military Construction Program represents the final round of new construction intended to support the growth of Army units at Fort Carson.

The program also presents several unique challenges. First, the airfield is crowded with contractors and aviators. The CAB's aircraft are already arriving on Fort Carson and new units will be occupying the airfield at the same time that it is being rebuilt. Second, Fort Carson has been designated as a Net Zero energy, water and waste installation – meaning the installation must produce as much energy as it consumes, return as much water as it draws to the same watershed, and eliminate waste normally deposited in landfills.

These goals require new approaches to design, acquisition and quality assurance. They also demand effective partnerships with contractors, Corps Centers of Standardization and Centers of Expertise. To meet these challenges, the Omaha District's design team, project managers and Rocky Mountain Area Re-stationing Resident Office are working closely to plan and manage construction that will transform Butts Army Airfield.

"Build it and they will come," is not the approach the Army has adopted with Butts Army Airfield. Rebuilding the airfield as Soldiers and aircraft arrive requires extra coordination between project delivery teams and the using unit. With five contractors working on separate projects in close proximity, Omaha District Project Engineer Jake Wiegmann leads weekly contractor coordination meetings. These meetings address topics such as contractor traffic plans, project site boundaries, and using unit activities. At the same time contractors are hauling fill, erecting silt fences or operating cranes, Soldiers are conducting physical fitness training, receiving shipments of aircraft parts or flying aircraft. Maintaining safe roads and minimizing conflicts between different projects is paramount to limiting impacts on Army operations.

The Re-stationing Resident Office is also using 3-D Building Information Models to help identify conflicts with utilities and infrastructure between existing facilities and future facilities. Matt Ellis, Resident Engineer for the Re-stationing Office, said, "The CAB is to be funded throughout several years requiring a significantly larger coordination and planning effort for the various phases and projects." Due to phasing aspects, roads and utilities are being designed and constructed under several different contracts. As the designs progress under the various contracts, they are uploaded into the Road and Utility BIM to de-conflict interferences before the physical work begins. "Proactive identification of conflicts and their early resolution is an incredible time and cost saver," said Ellis.

To help the airfield plan future operations, a separate 4-D BIM visually depicts the available facilities and active project sites over time. Such tools have proven invaluable to planners at biweekly meetings with 4th Infantry Division staff and Fort Carson's Department of Public Works. As the new using unit undergoes significant organizational change, the Corps team has remained focused on managing stakeholder expectations, avoiding surprises, and delivering quality facilities.

Meeting customer demands on the CAB program not only requires quality construction, it also requires building a Net Zero Ready airfield to support Fort Carson's goals. Located several miles away, the development on Butts Army Airfield and neighboring Wilderness Road Complex is practically an island apart from the rest of Fort Carson. Seizing the opportunity to maximize energy performance, Fort Carson has adopted the strategy of using a

An aerial view of the construction site at Butts Army Airfield. U.S. Army Photo.

Central Energy Plant to more efficiently provide heating, cooling and electricity for facilities in the area.

Next to building function, the primary design consideration for the rest of the CAB projects is to minimize building energy demands. One highlight of the Fiscal Year 2012 program is the Aviation Support Battalion Hangar project. Awarded as a design-build project, the ASB Hangar is the first of its kind for the Army. The hangar by itself will be a Net Zero facility with features such as radiant heated floors, superior wall and roof insulation, solar air ventilation preheating panels, and efficient day-lighting of work spaces. A nearby 1.4 megawatt photovoltaic array will provide the energy for the building. "There is no one 'most innovative aspect' to this project in my mind," said project manager, Jimmy Harding. "The innovation for this project is the holistic and thoughtful use of many proven technologies and construction requirements to achieve the overall goal."

The first CAB project, the CAB Brigade Headquarters, is due to be completed in the fall of 2013. Justin Scherzberg, Project Engineer, can attest to the construction quality. "This building will be Net Zero ready thanks to use of the hot/chilled water network and a tighter building envelope constructed of insulated concrete formwork, which serves the dual purpose of formwork and insulation with high R values. Additionally, air tight vestibules, solar reflecting insulating glazing on exterior windows, and a projected energy performance 40 percent better than a baseline building as prescribed in American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. Standard 90.1-2007, the occupants can look forward to a comfortable work environment while providing minimal impact to the outside environment," said Scherzberg. Such features are also a direct result of implementing the evolving USACE standards and guidance on building energy performance and sustainable design and development.

Setting new standards is nothing new to the Omaha team of designers, project managers, and Fort Carson resident offices. Thanks to the teamwork between the Corps, its customers and its contractors, the installation recently increased its inventory of LEED certified buildings to 60 – maintaining its claim as one of the highest concentrations of LEED facilities in the nation. Practices such as LEED certification, life-cycle cost analysis and enhanced commissioning have improved building energy performance and helped produce a community of expertise in sustainable design and development. Project Engineer, Nicholas Alexander, was recently named resident expert for air barriers on the Northwestern Division's Center of Expertise for Sustainable Design and Development.

The team is also working to help refine Fort Carson's strategy through an Architectural and Engineering contract to produce a Net Zero Roadmap. This product will serve to help establish new goals for architects, engineers and stakeholders working on CAB projects from across the Corps. Ultimately, the reward of such teamwork is not just another LEED certification or even another photovoltaic array on Fort Carson. When the dust settles on Butts Army Airfield, the Omaha District will have contributed immeasurably to Fort Carson's mission and its Soldiers quality of life.

By MONIQUE FARMER, *Sr. Public Affairs Specialist*

How the Corps of Engineers used creativity to maximize flood risk reduction

A blend of public laws, government regulations and processes doesn't likely conjure images of engineers bouncing creative, out-of-the-box thinking strategies or ideas off one another.

But efforts executed by the U.S. Army Corps of Engineers, Omaha District, have proven that perhaps it should. The district achieved groundbreaking results in less than one year of levee repair projects following historic flooding.

The Missouri River Flood of 2011 ravaged communities from Fort Peck, Mont. to St. Louis, Mo. Two critical levee systems protecting communities, agricultural land and infrastructure breached the areas they were designed to protect. The town of Hamburg, Iowa was jeopardized after a breach on Levee L-575 while the Corps' engineers worked with the mayor and emergency management officials to construct a temporary levee to hold back floodwaters. Another breach occurred on Levee L-550 just north of Highway 136 in Atchison County, Mo. In the end, five breaches occurred on the Missouri River Federal levee system.

Before the flooding ended, the previous Northwestern Division Commander Gen. John McMahon tasked the Omaha District's Chief of Flood Risk and Floodplain Management, Randy Behm (and a team of engineers, real estate specialists, cost estimators, biologists, geographic information specialists and economists) with reviewing the floodplain system from Omaha south to Rulo, Neb.

The team developed a Conceptual Levee Setback report to identify alternative floodplain management opportunities, including levee setbacks. Once the report was developed, concepts were taken to the field by the district's Chief of Emergency Management and the Omaha Systems Restoration Team for execution in areas where irreparable damage required complete levee reconstruction.

The conceptual levee setback team analyzed viable options for floodplain restoration. By researching historic documents, identifying trends and incorporating state-of-the-art computer modeling, the team identified solutions that could achieve a projected annual savings of $14 million, lower water surface elevations, and reduce operation and maintenance costs with a lower likelihood of emergency evacuation and future cleanup costs.

The original conceptual setbacks proposed by the team aimed to achieve conservation benefits of up to 6,470 acres by reconnecting river hydrology and providing fish and wildlife with access to larger habitat areas.

Public Law 84-99 is the law that provides strict guidelines for managing funds associated with flood damage repairs. Those familiar with it may wonder "How could the team have accomplished this while ensuring compliance with PL 84-99?"

Here's how.

They recognized the historic trends, potential for better results

Behm, a 27-year Corps employee has learned a thing or two about flood events, their potential impact to river hydrology in the short and long-term and ways others have implemented flood risk management techniques. During the 2011 flood, McMahon looked for ways to minimize future flood impacts including smart floodplain management.

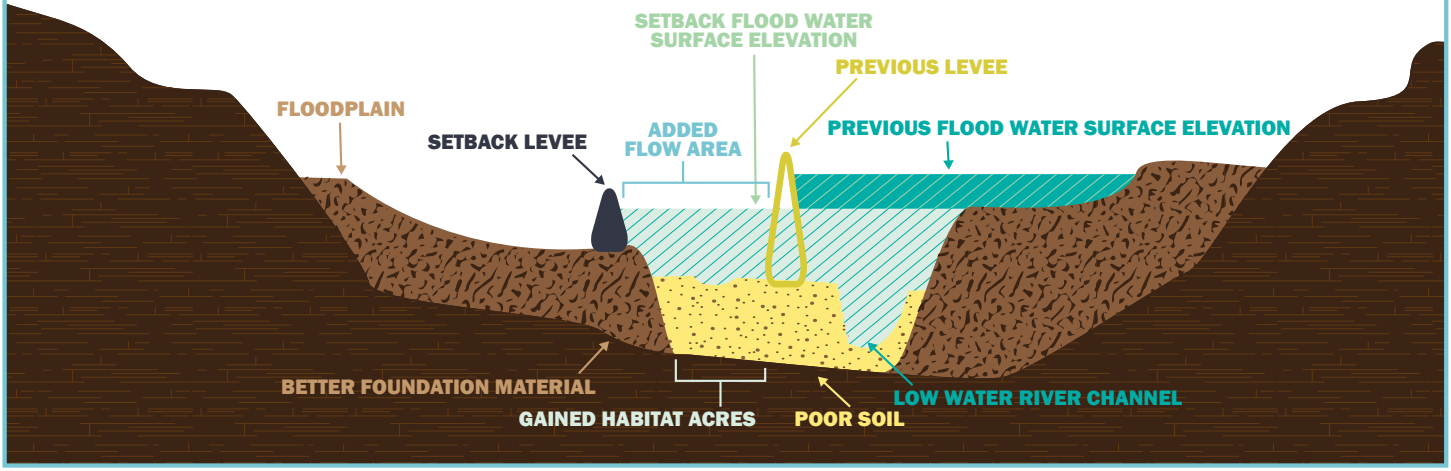
The Missouri River has a well-documented history of wet and dry period extremes, requiring savvy engineering and proactive management techniques. Upon detailed analysis of flood events, patterns became more salient, Behm said.

With support from the commanding general, the team revisited recommendations from the 1994 Galloway Report, issued by the Interagency Floodplain Management Review Committee following the 1993 Missouri River Flood. The report recommended specific policy and programmatic changes addressing floodplain management. Among other points, it envisioned reduced flood damages,

US Army Corps of Engineers ®
Omaha District

MISSOURI RIVER LEVEE SETBACK BENEFITS

- Levees set back on higher ground **use less materials.**
- **Reduced flood water surface elevation.**
- **Increased level of protection** behind adjacent and opposing levees.
- **Reduced costs** for **operations and maintenance.**
- **Reduced costs** for **repair, replacement and relocation.**
- **Less frequent need for emergency operations** and flood-related activities.
- Increased potential for **additional acres of fish and wildlife habitat.**



minimizing impacts to families and communities, mitigating economic impacts, and aimed to diminish the toll on communities and taxpayers following Missouri River flooding. The team reviewed the document as well as accounts of the floods of 1952, 1956, 1962, 1984, 1993 and 2010.

One of the first patterns the team identified were significant damages occurring in cycles along identical levee reaches when they were loaded with above average discharges.

"We noticed traditional problem areas where we had experienced breaches in the past," Behm said. "There were certain places in the river that consistently experienced high stages and high velocities due to constrictions in downstream areas of the channel."

Those constricted areas behave like a dam, backing up water and limiting channel velocity and conveyance, Behm said.

Further investigation uncovered guidelines in the Flood Control Act of 1944 that led the team to consider repairs to levee segments by setting them back farther from the river than originally constructed. The basic levee setback concept relocates a levee segment from its alignment close to the river bank to a location farther back. A setback alignment takes advantage of better geotechnical conditions, opening up habitat potential, and increased flood conveyance.

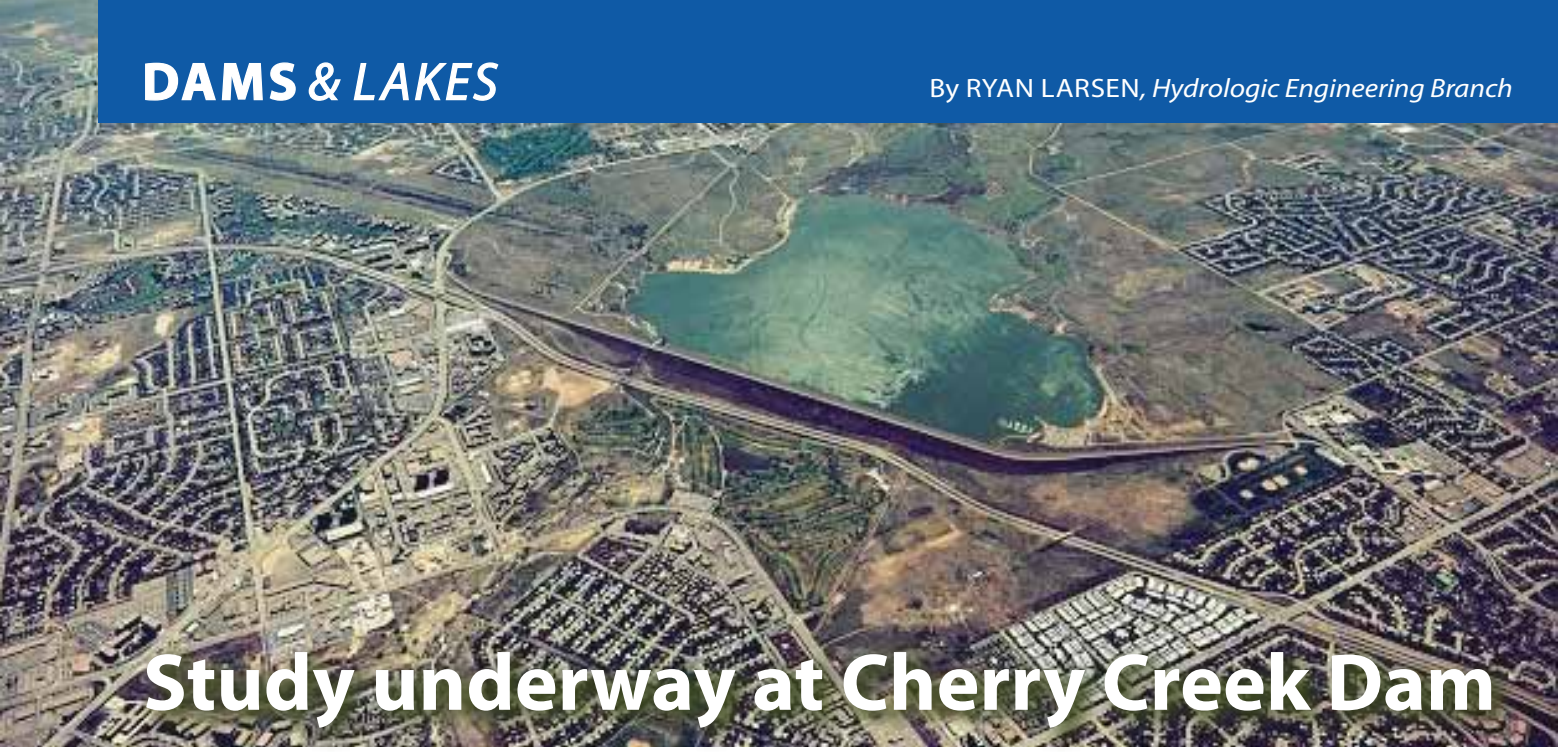
They worked with, educated levee sponsors about the process

To achieve success with the new approach, levee sponsors and other stakeholders had to learn advantages of floodplain management tactics. In the past, many techniques weren't considered for sake of expedience, however, extensive damage in 2011 left everyone wanting a better way to reduce flood risk, said John Remus, Chief of the Hydrologic Engineering Branch.

Education was key, said Kim Thomas, Chief of the Omaha District Emergency Operations Center and PL 84-99 Program Manager. "It took sitting down with the sponsors and key stakeholders to explain to them what we were trying to achieve by constructing a setback levee versus repairing the previous levee," said Thomas. "The levee setbacks under consideration were localized realignments of previously existing levees using a risk-based levee design."

Continued on page 17

By RYAN LARSEN, *Hydrologic Engineering Branch*



Study underway at Cherry Creek Dam

A Dam Safety Modification Study is underway to help define the risks associated with Cherry Creek Dam and to identify options to reduce the potential for loss of life and property damage.

The Cherry Creek Dam project was authorized in the 1940s for the primary purpose of protecting the city of Denver against floods from Cherry Creek. The dam is located in a densely populated area on Cherry Creek, 11.4 miles above its confluence with the South Platte River and provides flood protection to over 200,000 people. Studies beginning in the 1970s indicate that the original designers underestimated the required capacity of the dam resulting in an overtopping risk. Overtopping issues associated with Cherry Creek Dam were initially brought to light in 1970 after the National Weather Service completed a site-specific Probable Maximum Precipitation study of the upper South Platte River basin for the design of Chatfield Dam (a nearby dam on the South Platte River). A PMP is a maximum amount of precipitation that could occur if all meteorological elements were maximized to allow a perfect environment for the forming precipitation; the resulting streamflow from a PMP is defined as the Probable Maximum Flood. Applying the 1970 PMP criteria to the Cherry Creek basin resulted in a larger flood than used in the project's original design. Depending on the pool elevation of the Cherry Creek reservoir at the start of the PMF, the dam has the potential to overtop. Since 1970, the NWS and the U.S. Army Corps of Engineers have completed several PMP and PMF estimates including a Cherry Creek basin, site-specific PMP study completed by the NWS in 1995. In all cases, results indicate Cherry Creek Dam has the potential to overtop during a PMF.

Starting in 2005, the Corps sought to better categorize the risk at all of its dams using the Dam Safety Action Classification system. Risk as defined in the DSAC system considers both the probability and consequences of a dam failure. This system was implemented by evaluating all 694 USACE dams using the Screening Portfolio Risk Assessment process. The SPRA process gave an initial ranking to each dam based on risk in order to prioritize the expenditure of dam safety funds. The DSAC rating system ranged from 1 (Highest Risk) to 5 (Lowest Risk). Cherry Creek Dam received a DSAC II rating because of the high consequences resulting from dam failure even though the probability of failure is extremely low. Because of the DSAC II rating, the Omaha District completed an Issue Evaluation Study in 2011 to further evaluate Cherry Creek Dam's safety issues and corresponding risk.

The IES findings were presented to a Senior Oversight Group appointed by the Corps' Headquarters. The SOG reviewed the IES and confirmed the DSAC II rating for the dam. Omaha District was directed to proceed into the DSMS phase, which is currently underway and is charged with the task of properly defining the risk associated with the Cherry Creek Dam's safety issues and assessing possible options for mitigating the risk (i.e. reducing loss of life and property damage).

Continued from page 1

and concerns and knowing that your leaders do care and are fighting for you and the organization's reputation as the Federal Engineers of choice in the midwest.

Focus on our jobs: every member of the Omaha District plays an important role in the daily operations of our Nation – our value to the country is immeasurable. When I'm asked what Omaha District does, my 30-second sound bite is this: Strong, disciplined, poised and ready. Since 1934 the Omaha District has saved lives and property by managing 27 dams in Midwest states, including the largest dams in the Corps of Engineers portfolio. We have aided the Nation in times of war and peace. We built military and civil construction marvels, handled anti-terrorist construction, cleaned nuclear and hazardous waste sites, and national and natural disaster sites as well. We work with people of all backgrounds as we strive to lead the Region and the corps in delivering premier, high quality engineering products and services. Our greatest asset is our people – teams of well led, highly trained, disciplined and talented professionals.

> ***"...to hammer out as compact and solid a piece of work as possible and to give our all to make it first rate"***

And yes, there's a lot of pride when I say it... as there should be for you, because that's who I am talking about...YOU.

We must continue to focus on the things we can control, and don't dwell on those things we can't. In our complex environment, common sense and simplicity are crucial. We must all remember that sometimes things will go wrong – it's how we handle those situations that count. We can't let the Nation's political quandary of today endanger our environment for the future. We need to stay focused on our jobs.

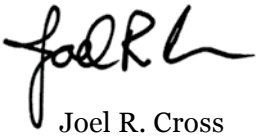
Millions of Americans and people of other nations look to us for our finished products. Millions need you to be at your best everyday because you make the world a safer and far better place.

Share ideas and concerns: The good ideas normally come from where the rubber meets the road, not from the top. Please keep them coming. It is our commitment to you, to listen to you, hear your concerns, get excited about your ideas, and take action to help fix stupid. More important now than ever, I expect all leaders to get out of their offices and interact with their employees. Be open, candid and transparent. Listen, comment when you can add value and send up the good ideas and workplace concerns. I encourage all of you to participate in Employee Advisory Council sponsored events like brown bag or on-line discussions.

I'll close with the words Oliver Wendell Holmes, Jr. They speak precisely to what I am talking about:

"The greatest service that we can do for our country – and for ourselves – is to see so far as one may see... and to feel the great forces behind every detail, to hammer out as compact and solid a piece of work as possible and to give our all to make it first rate."

Essayons,



Joel R. Cross
Colonel, EN
Commanding

By KEVIN QUINN, *Public Affairs Specialist*

Kempton: Hard charger

Maybe that old snapshot of the 6-year-old kid cleaning ball bearings in his Dad's aircraft maintenance shop tells the story of Larry Kempton as succinctly as a hammer strike, as crisply as the nighttime gale in winter.

The Northwestern Division's Hard Hat of the Year has always worked, always worked hard, and always collaborated with others to achieve what was needed.

The 32-year-old Construction Representative from Rocky Mountain Area's Construction Office is motivated by an inner drive "to be the very best at what I do."

Jumping aboard the family business even before he lost his first tooth has paid off. Consistent effort has become his habit, his signature, his very brand.

The written nomination for the award—which rivals the Bible in length—trumpets Kempton's winning ways with customers, contractors and teammates, and credits them to his competence, confidence and self-effacing manner.

The official reason he was nominated by Brian Dziekonski, Rocky Mountain Area Engineer, and Robert Giles, Fort Carson Resident Engineer, is for his *"outstanding service as a Construction Engineer Technician on multiple major projects including, the 8-phase, 3.5 year MILCON Renovation of the Fort Carson Evans Army Community Hospital."*

But there is a lot more...

Kempton's goals have always been crystal clear—he wanted to be the first in his family to graduate college, pursue a professional engineering registration, maintain a private pilot's license and be an outstanding role model for his children.

Score four.

As a kid, he reached for the stars—his heroes: Chuck Yeager, Lou Gehrig and Ted Williams.

Big do-ers—pacesetters forging their own path through life just as they pleased, bringing glory and achievement to those they led, inspired and launched on similar journeys.

Overstated? A bit dramatic?

His bosses don't think so...they wrote *"Larry Kempton has demonstrated extraordinary effort, commitment, and expertise in completing the $20.4M Evans Army Community Hospital Alteration (BRAC FY08) project and the follow-on $20M ARRA Hospital Alteration project. These renovation projects are extremely complex with 8 construction phases in the first contract and two in the second, including the coordination of hospital clinic moves between phases while maintaining 24/7 hospital operations without disruption to patient care.*

"His consistent professional excellence directly impacted the success of these projects. He influenced others to higher professional achievement and created a business relationship with the Health Facilities Planning Agency (HFPA) and hospital staff that is unmatched."

The kid has been here just four years...he graduated from Colorado State University in Construction Management. He is a Contracting Officer's Representative and is International Code Council certified.

> **"...and though the winds of change may bend us, they will not break us, due to the resiliency of our spirit"**
>
> **—Unknown**

What personal qualities allow him to perform like he does?

"I've been a self-starter and I work hard to keep a positive attitude. I truly try to remain calm under pressure," he says.

And he knows well the "R" word used consistently by Corps leaders throughout the country.

"Relationships are the foundation for success in our businesses. I have worked for and learned from contractors prior to working for the Corps, and the let me help you to help me attitude has always provided positive results for me," he says.

The nomination says: *"Because Larry's contractors recognize and respect his abilities, he always maintains a good working relationship*

is Hard Hat of the year

with them. He is quick to coordinate issues with the Project Manager and the rest of the Project Delivery Team to assure that responses to issues are fully developed from a total District perspective. As his supervisor, I routinely receive notes of appreciation from his peers and Health Facility Planning Agency (HFPA) for successful project outcomes."

In the words of his supervisors, Kempton's winning ways are summarized this way:

- Small town family-owned business upbringing and work ethic to match; gets the job done safely and correctly no matter the constraints
- Great team player who helps out the whole office despite his own heavy workload; pulls more than his share of night and weekend shifts
- His past work experience as a production machinist helps him relate to workers as a peer while his continued education and on-going training serve as an inspiration
- Wins over customers, contractors and teammates through competence, confidence and his self-effacing manner

Laying it on thick? There's more...

"In many cases, his engineering and construction skills solved many historical building deficiencies which ultimately resulted in a very satisfied customer and a perception of professional confidence in the Corps of Engineers. Larry even received congratulations from the Surgeon General of the Army during a site visit."

Kempton is known to work with all parties to de-conflict designs, schedules and access issues so all parties can continue to work effectively. Normally a contract with 20-percent cost growth and contractor conflicts would also experience time growth.

By working evenings and weekends to meet critical deadlines, the team finished every major phase of work between 12 and 90 days early. His dedication to safety *"is directly observable on the jobsite. More than a thousand days without lost time and no deficiencies over four district safety inspections speaks volumes,"* say his bosses.

This article is out of room...but there is so much more said of and written on Larry Kempton...

Larry Kempton

it's most likely to be picked up next time he wins something.

Larry and his wife, Maren, live in Monument, Colo. where they raise their son Larry, 1, who awaits the birth of his sister in June.

The Grand Junction, Colo. native is an airplane pilot. What else is going on in his life?

"I have recently begun reading more...I am reading Ayn Rand books. A little wordy, but..."

...oh, yes, Ayn Rand, the 20th century Russian-American novelist, philosopher, playwright, and screenwriter, who once said "The question isn't who is going to let me; it's who is going to stop me."

Go figure.

Larry Kempton's Training/Education/Certifications:

- Bachelor of Science, Construction Management, Colorado State University
- ICC Commercial Building Inspector
- Associate of Applied Science in Manufacturing
- Healthcare Constructor Certificate, American Society of Healthcare Engineers
- Airframe and Powerplant Mechanic, Production Machinist and Private Pilot

By EILEEN WILLIAMSON, *Public Affairs Specialist*

Discovering a steamboat relic of Missouri River trade

When you think of shipwrecks, it might be pirates, the ocean, sunken treasure and the stuff of movie–style wonder. But the Mighty Mo' tells a tale with hundreds of shipwrecks of all sizes along its length.

Through its history, the Missouri River has offered an interior access way to the upper Midwest. Native Americans built canoes and dugout boats from trees. Captain Meriwether Lewis and Captain William Clark traveled from St. Louis, Mo., to Washington State and back along the Missouri River launching their journey in May 1804 with a 55-foot long keelboat and two 40-foot pirogues.

For the U.S. Army Corps of Engineers, knowledge of these shipwrecks as well as the presence of other items of cultural or historic significance means something else. "We don't come across them often, but we do come across them," said Sandra Barnum, an archaeologist with the Omaha District.

For the Corps, there are several responsibilities: regulatory permitting for construction in areas where a discovery may occur, the need to mitigate a construction project to address a discovery and the need to protect and respect the significance of a discovery among others.

It is for this reason that the Corps does not release the locations or details of discoveries when they are made. Federal Laws including the Historic Preservation Act and the Native American Graves Protection and Repatriation Act prohibit vandalism, looting, digging, collecting or selling artifacts from Federal property.

Recently Barnum and Matt McCullor, also a District archaeologist, were dispatched to a Corps project that encountered an inadvertent discovery.

"We know there are all kinds of items out there," said McCullor, "It's part of the regulatory permitting process stipulating project work will stop for reporting inadvertent discoveries to the proper authorities."

In this case, it appears the inadvertent discovery might very well be a shipwrecked steamboat.

A contractor was excavating during a weekend and began to bring up varying material that was different than anything they had encountered previously on the project site.

Melissa Letak, the project engineer, said the contractor responded perfectly to the situation. They immediately stopped work and notified the Fort Crook Resident Office of the potentially historic find. The following Monday, her team went to examine the uncovered debris and, in turn, notified the Omaha District archaeologists to evaluate what the debris may have come from."

"It was exciting to get the call," said McCullor, "Sandy (Barnum) was on another project and I got the call."

Letak says it isn't often artifacts are uncovered during the construction of a Corps project.

"It was great to see the enthusiasm that the contractor had to preserve this potential historic find. The superintendent even did a little research by getting a book about historic ships," said Letak.

The Corps goal is always to protect, preserve and respect these discoveries. In the case of this discovery the project encountered loose boards, boards showing joinery, large square nails and what turned out to be the skeletal remains of a deer.

"Our first priority is always the discovery of skeletal remains," said McCullor, "When the contractor calls us, they also call the local sheriff to determine whether the remains are human and whether they are modern remains."

The Omaha District has a very robust Cultural Resources program with 53 Federally-recognized Tribal Nations of which 29 are along the Missouri River system. When human remains are determined to be Native American remains, the Corps works with the Tribes in an effort to ensure the discovery is treated with respect and according Tribal custom.

Once the skeletal remains were identified as from a deer, the focus turned to the lumber and nails. The Corps works with the State Historic Preservation Officer and the State Archaeologist to identify the discovery and then whether a discovery has historic significance and needs to be registered with the National Register of Historic Places.

Luke Wallace inspects ship timbers after the contractor reported an inadvertent discovery on a recent project. Photo by Melissa Letak.

By examining the material the contractor encountered and comparing it with other vessels such as a barge or ferry, the archaeologists determined that what was found was most likely an approximately 120-foot long, 30-foot wide steamboat. Comparing known information about Missouri River shipwrecks and their approximate locations, McCullor figures the steamboat sank possibly between 1840 and 1870.

After identifying the discovery, the SHPO and the Corps' recommended action was to avoid further damage to the ship and leave it in place.

In this situation, the Corps was able to relocate the project with minimal impacts to the project itself. The steamboat's location was documented and registered with the SHPO and the steamboat was covered back under the earth.

"The contractor was very responsive during the entire situation and cooperative in rerouting the project to avoid the shipwreck," said Letak.

"As an archaeologist, there is that desire to cordon off a location and perform an archaeological excavation to get to really see what you've found," said McCullor, "but in this case, and as often is the case, what is best for what was found is to leave it where it is. It will be better if left in its location for future archaeologists with more advanced recovery and testing techniques."

Record low water levels along the Mississippi River have exposed some of its shipwrecks and brought attention to the Missouri River's history as well. But, many of the Missouri River's shipwrecks are no longer in the river – at least today's Missouri River. As the Missouri River rose and fell, it meandered in different locations sometimes more than a mile from today's river channel.

From the mid-1800s, steamboats, ferries and barges were busily carrying commerce, products and people along the river. But the Missouri River we know today was very different back then; the river's waters were shallow with many bends, currents and sandbars. Boats were specially designed to travel the Missouri with flatter bottoms and powerful engines to fight the current.

Often, the river and its snags (trees, sandbars, ice jams, shipwrecks, etc.) won the battle between river and boat. The typically shallow river rose during the spring thaw and in early summer with final snowmelt runoff and upper basin rainfall. An early spring could send ice chunks downstream damaging boats that were tied up for winter.

An 1897 Report of the Chief of Engineers included a report of the Missouri River Commission, which included a list of steamboat wrecks on the Missouri River from the opening of steamboat navigation up to 1897. Developing the list was cumbersome and included collecting information from newspaper reports, merchant's exchange reports, mail surveys of river pilots and other documents from city libraries. The list totaled nearly 300 wrecks and about 275 boats lost to the Mighty Mo'.

Knowing the shipwreck locations, however, is another story. In addition to the river's ever-changing course, a shipwreck reported in St. Louis may be recorded as south of Yankton by one boat captain and north of Omaha by another. Some ships were raised and repaired, some broke apart and washed away, some destroyed by fire or were salvaged for parts and others were left to be buried by the muddy river's sediment deposits, covered by time and the river's changing course.

Many ships were engaged in Missouri River trade carrying supplies for rail construction, groceries, whiskey, furs, tobacco, rope, wood, corn, wheat, etc.

With the recent low water, there is always the chance a vessel could be exposed on a sandbar or a riverbank.

"We understand the temptation to explore is there. But, it is important for the public to remember that Federal lands are protected and removing items from federal lands is a punishable offense. Our goal is to protect these items, preserve them for future generations and respect the cultures that brought them here in the first place," said Cultural Resources Program Chief, Julie Price.

For those interested in the history of the Missouri River trade, there are a few museums like the Steamboat Arabia in Kansas City, Mo.; the Steamboat Bertrand collection in DeSoto, Iowa, which is currently closed after the visitor center complex was severely damaged during the 2011 flood; the Sioux Ferry Boat, which ran from 1952 to 1962 in Washburn, N.D.; and the Steamboat Twilight in Odessa, Mo., to name a few.

As excavation exposed materials from the sunken ship, timbers showing joining techniques helped archaeologists identify that they had found a steamboat. All photos by Melissa Letak.

Additionally, the Corps has visitor centers at Gavins Point Dam, Fort Randall Dam, Oahe Dam and Fort Peck Dam where the public can visit, for free, collections that tell the story about the regions where the dams are located.

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With Levee L-575, we completely reconstructed two major sections of those levees because of their damages, said Thomas. But, careful cost-analysis and the long-term benefits of reconstruction were considered. PL 84-99 requires repairing levees to their pre-flood conditions. The tremendous foundation damages meant the geotechnical designers' best and only solution was to relocate the levee to better foundations, thus resulting in a setback, Thomas said.

Cost estimates compared inline repairs to setback costs indicating it was cheaper to set back the levee.

Once Leo Ettleman, President of Responsible River Management and agricultural land owner behind L-575, saw the cost estimates comparing inline repairs to setback costs, he quickly realized it was the appropriate solution considering the amount of sustained damage.

Working through the PL 84-99 process with the Corps was a learning experience for everyone involved, said Ettleman. "These were massive projects that none of us had ever been through," he added. "This was a 500-year event and a tremendous amount of damage to personal and business property occurred. Watching everybody keep their emotions in check and get through the process was certainly encouraging."

"The levee sponsors really made this a priority," said Thomas. "They were obligated to take on quite a load to make these repairs in a timely manner. That meant relocating utilities, county roads and other major tasks. They worked diligently to get the work done."

They capitalized on the economic savings

The saying, "Show me the money" rang true once the team began developing the Project Information Report, which is required for PL 84-99 rehabilitation activities. It was the basis for justification to gain approval from the Corps' headquarters for constructing levee setbacks. Side-by-side cost estimate comparisons between in-place repairs and setback alternatives consistently favored setback alternatives.

These highly damaged reaches typically had deep scour holes near the levee toe and extensive seepage areas. "In some cases, setting the levees back from the scour and seepage areas was the best engineering solution," said Bryan Flere, levee safety program manager.

The levee sponsors, along with Corps technical experts, leveraged relationships with the Corps' Missouri River Recovery Program, counties, levee stakeholders, State of Iowa Department of Natural Resources and the Natural Resources Conservation Service to cut the cost of borrow materials including sand deposits and dirt from Corps-owned conservation land managed in partnership with the state and NRCS to construct setback levee units.

"The major savings in using the Corps' recovery lands as a borrow source was that often the distances were much shorter to the construction sites. In total, more than 3 million cubic yards were used with savings of an estimated $2 per yard," said Brad Thompson, Chief of Planning.

They used technology to their advantage

The team used state-of-the-art river engineering software HEC-RAS. When the Corps was developing its National Levee Database, the Omaha District Levee Safety Program conducted an inventory and analysis of the district's current levee system, gathering critical data about the original construction design of levees, historical maintenance information and levee status conditions. In 2009, the Flood Risk and Floodplain Management Section also completed a floodway model for FEMA to support the agency's update of their floodplain mapping information.

The team input information from both data sets into HEC-RAS and included Geospatial Information System overlays to analyze potential areas of concern, said Behm. Tony Krause, hydraulic engineer, said combining the data sets and GIS information made it easy to identify historic damage points and locations where levees appeared to be located too close to the river.

They remembered to be good environmental stewards

Secondary benefits of the setback levees were to reconnect additional acres to the historic floodplain

Continued on back cover

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SUSTAINABLE *SOLUTIONS*

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and create wetlands through borrow activities. The Corps has been working to mitigate habitats lost due to the Bank Stabilization and Navigation Project, constructed from the 1940s through the 1970s, and resulting in negative ecosystem impacts.

The conceptual setback levee projects identified 6,470 acres of land that could potentially be reconnected to the river. Actual on-the-ground repairs resulted in approximately 2,000 acres of reconnected flood plain and created an anticipated 500 acres of wetlands—land that will help influence shallow water habitat benefits for threatened and endangered fish and wildlife. Fish and wildlife is one of the Corps' eight congressionally authorized purposes for regulating operations within the Missouri River basin.

"It was good working with the [Corps] because they were willing to incorporate innovative ideas that were going to benefit wildlife at the same time as improving the levee projects along the river," said Carl Priebe, wildlife biologist with the Iowa Department of Natural Resources. Iowa DNR manages Corps property that has been acquired for mitigation for the Missouri River Recovery Program. "Before there were just grass and trees in many of these places," said Priebe. As the river interacts with this newly connected land and wetlands, Priebe said he expects to see more diverse species of fish, mammals and birds taking advantage of the new landscape.

"It's public access land so anyone can come enjoy it and its going to be land that has a wealth of opportunity for outdoor pursuits whether it be hiking, bird-watching, hunting or photography. There are opportunities for all of those things now on that public land where there haven't been before."

Two large-scale levee setbacks, several miles each, were completed as a result of the team's efforts. Several smaller scale setback projects were also constructed. Total levee rehabilitation work totaled $160 million. Critical repair work was completed before the 2012 runoff season, which began March 1, 2012. Most of the remainder of repair work was completed in the fall of 2012 with a few final projects set for completion this spring.

"Our contractor, construction personnel and engineers executed this work in record time with no accidents and that's commendable," said Thomas. "All of our think tank construction and engineering folks were also right there providing great quality assurance and engineering oversight that helped move this rehab work along as efficiently as possible, within budget and ahead of schedule."

Other communities that have faced flooding issues in the past have also paid attention to the team's work. The State of California recently requested a copy of the final Conceptual Levee report.

The Conceptual Levee Setback team was recognized in 2012 as the Northwestern Division Innovative Project Delivery Team of the Year. Additionally, Behm received a national award, Flood Risk Manager of the Year. The OSRT won the Corps' Outstanding Unit/Team Award for Specialized Services and Construction Contracting.