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Questions/Comments:  
[CEMVS-PA@usace.army.mil](mailto:CEMVS-PA@usace.army.mil)

# Stream Bank Erosion Protection



STORY BY *GEORGE STRINGHAM, PA*

Rain threatened and delivered throughout the day and, at times, the air was cold enough you could see your breath. But there was no turning back for St. Louis District's Jaynie Doerr (Regulatory Biologist) and David Derrick (Research Hydraulic Engineer at the Engineering Research and Development Center) as they gave a workshop to landowners and local and state officials in Pike County, Mo., on what they can do to help prevent stream bank erosion.

The two-day event took place March 10-11 and kicked off with a half-day seminar in Frankford, Mo., where Derrick described the various methods that can

be used to stabilize stream banks. He also showed those in attendance projects in other communities where those techniques were used and why. Anybody could register to attend the free seminar, though most attendees were from county highway departments, emergency management organizations, natural resource agencies and the Missouri Department of Transportation. All told, 44 people registered and attended the event.

"This event adds a lot of value to a landowner who's trying to prevent the stream in their backyard from cutting into their porch or for the county highway

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Participants in the workshop watch as a track-hoe places rock as part of a stream bank stabilization demonstration in Pike County in northeastern Missouri, where a tributary of the Salt River threatens a county road.

*USACE photo by George Stringham*

**From the Corner Office**



*Col. Thomas E. O'Hara, Jr.*

**Team – Three thoughts on my mind this month: C3, regionalization and safety.**

Collaboration, cooperation and coordination, or C3, is our battle cry for how we will deliver our products and services in the future within the Regional Interdependence Model structure that St. Louis District and all of MVD is moving towards. These are a lot of big words that can be boiled down to working together to leverage the full regional team in order to deliver the best service to our public. That full team includes the District, the rest of MVD/USACE and our external teammates.

Recently, senior leadership of the District and the Division met in the St. Paul District to better understand and to drive this movement to a C3 culture within the Valley. The purpose for the change is to prepare

us to handle the challenges of the future, and to forge stronger linkages in all we do at the District, Division and USACE levels.

Terms such as campaign plan, implementation plan and operating plan are going to become more familiar to you all in coming weeks and months.

In the military, we speak in terms of an over arching campaign plan to prosecute a military operation over a wide area, or theater. There are components of the campaign plan – things that divisions, battalions and even small units must do in proper sequence to achieve the campaign plan objectives – to win. The purposes of each Soldier or other service member must all be pointed in the same direction – linked – to attain victory.

Our USACE Campaign Plan, MVD IPLAN and District OPLAN are designed to do the same thing – where victory is defined as moving us all from a good organization to a great organization that is built to last. Our collective challenge is to be clearly focused on this shared vision of what it means to be a great organization and then to understand how each of us contribute to attaining that vision.

This is not a criticism of past or current efforts at any level – from individuals to organizations. It simply recognizes that if we all understand, believe in and are focused on common objectives, we're more likely to succeed and to deliver the products and services that

America depends on us to provide.

To these ends, regionalization absolutely is our future. We in St. Louis already leverage regional assets in our work. For example, the valley-wide team that came together cooperatively a couple of summers ago at Mel Price to perform critical maintenance at both ends of the main chamber was a classic example. A crane and people from Rock Island, cable handling experts from Memphis and Vicksburg, and so forth, all came together in St. Louis. Had we been obliged to do the work ourselves it would have required twice as long or two closures. But by regionalizing we delivered a better product faster. Our customers deeply appreciated it.

A few days ago a group from the upper three Districts, the Coast Guard and our navigation industry partners collaborated at Mel Price to

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District Commander..... Col. Thomas E. O'Hara, Jr.  
 Chief, Public Affairs ..... Alan J. Dooley  
 314-331-8002  
 Public Affairs Specialist..... Nicole Dalrymple  
 314-331-8068  
 Editor..... George Stringham  
 314-331-8095  
 US Army Corps of Engineers, St. Louis District  
 ATTN: CEMVS-PA  
 1222 Spruce Street  
 St. Louis, MO 63103-2833  
 www.mvs.usace.army.mil



*CORNER OFFICE, FROM PREVIOUS PAGE*

coordinate Recovery Act and other work on the Mississippi and Illinois Rivers. Ideas were exchanged, priorities were compared and a way ahead was developed. This was regionalization and cooperation not only of Corps resources, but with our partners.

So you are already deeply involved in regionalization. But we need to better formalize the processes to be better prepared for the future and to build our flexibility to best deliver for those who depend on us.

I urge you to visit our Intranet site at the bottom of our home page and to link to the “District Commander Message June 2009” to hear these plans and directions.

OK, now on to the third topic on my mind – your safety.

Safety must continue to be paramount in all we do. For examples, water safety is critical during the summer recreation season. Safe work during high temperatures and humidity is

essential, especially for those working outdoors.

Just as we are seeking to forge a more effective team throughout the USACE, we must be team members and watch out for each other in our work. I urge everyone from individuals, to supervisors and top leadership to be watchful for threats and dangers to our safety.

We must plan our work. We must review common hazards like tripping and falling, or improper lifting. Then when we have identified possible dangers we must plan to avoid them.

It is important that we plan our work well for safety. But it is critical that we work our plan – that we don’t identify threats and then ignore them. Use proper procedures. Use proper safety gear. Use proper, properly functioning equipment and use it correctly.

If you see a danger, caution your team mates. If questions arise, don’t assume someone else has answered them. Ask for yourself and for your team.

We have an incredible amount of work ahead of us. There is over a quarter billion dollars worth of Recovery Act work in the next 18 months. We are charging hard to provide a 100 year level of protection to New Orleans by 2011. And we are continuing to deploy people to Iraq and Afghanistan at a high rate.

We need to be the best team we can be to accomplish this work and to deliver for America. We cannot afford to lose any of you because of a preventable accident, so please be diligent and focused on safety.

I continue to count on each of you to help us move ahead to the future. You each are critical pieces in our puzzle of success. These are exciting and rewarding times for us all. Understand, believe, and then act in a way that helps us collectively rise to the challenge and attain victory!

***Keep up the great work!***

**Hooah!  
COL O**

## Water Safety... on the Interstate?

Some pretty innovative efforts go into telling the water safety message at U.S. Army Corps of Engineers lakes. Mark Twain Lake in the Corps’ St. Louis District has upped the ante and is partnering with the G. C. Potterfield Trucking Company of nearby Monroe City, Mo., to send that lake’s water safety message all over much of the nation east of the Rocky Mountains – at 55 miles per hour.

Forty large, white, 53-foot trailers from G. C. Potterfield are now running the nation’s Interstate system and thoroughfares emblazoned with three large blue oval decals – left and right sides as well as the rear of each trailer. Each delivers a simple message: “Life Jacket... Good.

Drowning... Bad. Mark Twain Lake.” A graphic of an orange and white life jacket and another image of a drowning person calling for help, complete the compelling statement.

“We run the eastern half of the country, minus the New England states, plus as far west as the plains states,” said company owner Randy Potterfield. Potterfield went on, “A friend of ours lost a son in a boating accident several years ago. If he had been wearing a life jacket he might still be with us.” Many G. C. Potterfield employees are avid boaters at nearby Mark Twain Lake. “We’re proud to be partners with the Corps of Engineers to make Mark Twain Lake as safe as it can be,” he added.



Mark Twain Lake, northwest of St. Louis, was created in 1983 when the gates were closed in the Clarence Cannon Dam, which impounds the Salt River. The multipurpose lake went into operation a year later in 1984 and today, the 18,600-acre lake project hosts some two million visits annually. A large number of those visits focus on water recreation activities – safely, we hope.



# LEVEL OF PROTECTION ACHIEVED

STORY BY ALAN DOOLEY, PA

The summer of 2008 witnessed a series of high water and flood events that in some ways mimicked the record floods of 1993.

While highest elevations of the Mississippi River on the St. Louis gage came in more than 10 feet under record measurements, the mighty river first exceeded flood stage in St. Louis in mid March. Then it went there seven more times before the end of September.

## Elevation and duration

Two killers of levees are flood elevation and duration. Levees may be damaged or destroyed by water that rises above them or by water that stands against them for a prolonged period.

Water that rises above the protection and overtops a levee often scours their protected sides and land immediately adjacent to the toe of the protected side as it rolls down the backside of the levee en route to flooding the protected acreage.

Similarly, levees are not dams. They are not built with the intent of holding back water year around. Rather, they are intended to provide temporary relief until water levels either recede or people and property can be evacuated. They buy time.

One consequence a levee being overtopped or having high water against it for a prolonged period is breaching, during which sections of the levee may be washed out, to or below the original foundation and land level.

Breaching, due either to overtopping or sustained saturation, cannot be interpreted as failure either of the levee or efforts to flood fight it.



Trucks from Magruder Construction, subcontracted under Keith Contracting, deliver the final loads to the Byrants Creek breach repair in Lincoln County on January 23, 2009. This particular levee repair would be completed a day later and the crews would move on to make repairs to the Kickapoo levee breach the next week.

Levees are actually a form of insurance and decisions about how high to build them, to which standards should be based on what are termed “risk informed decisions.”

Costs must be balanced against benefits in this decision. Costs include actual construction expenses. Usually levee material must be bought and moved in from elsewhere. Levees are also more than simple rows of dirt. They include elements such as gravity drains, which in normal times allow rain to drain from inland into the river. They may also include pumps to move water from inland when the gravity drains are closed during floods.

Costs also include the land that must be surrendered to accommodate levees. Both sides of a levee normally have a 3:1 slope – three feet wide for every foot high. Levees also normally include a 20 foot wide flat crown that

*USACE photo by George Stringham*

provides access for maintenance and inspection. Thus a 10 foot high levee is already some 80 feet wide before a set back from the river is added and a non-use area on the inside toes is similarly designated.

Benefits may include reducing flood frequency. Land that might typically be flooded nearly every year might be protected by a levee that engineers tell us has a five percent likelihood of being overtopped in any given year. The old terminology for this elevation is a 20-year levee. That term is receding into the past because it confused people into believing it was a predictive measurement – that being overtopped in 1995 meant there was no danger until 2015, for example. In truth, the event may occur two or more years in a row, or, as in 2008, more than once in a year.

People living and working behind levees, including farming,

— SEE *LOP ACHIEVED*, PAGE 6

*STREAMBANK, FROM COVER*

maintenance department to keep a road from falling into a creek,” Doerr explained. “Although they still need a permit to do this kind of work, they learn that there are more environmentally-friendly ways to slow down erosion than pouring concrete.”

At the conclusion of the seminar, everyone put on their foul weather gear, hardhats and proceeded to the field where they would “learn-by-doing,” and actually stabilize a stream bank that was threatening to cut into a county road.

“This is where the fun is and where we get to get dirty,” Derrick exclaimed. “This is where we’ll put everything from this morning to practical use.”

Once in the field, everyone was able to see the job before them. A tributary of the Salt River in northeast Missouri was threatening to cut into a Pike County road. The weather still wasn’t cooperating though, as a steady



Dave Derrick, center, points out different features of the project to Rob Gramke and Matt Shively, both of St. Louis District’s regulatory branch.

*USACE photo by George Stringham*

and sometimes heavy rain continued to keep everyone wet throughout the afternoon.

Once on scene, Derrick explained to the county how and where they needed to dig a key into the bank in order to anchor the stabilization project. The key will help prevent water from flanking (getting behind) the stabilization project and provide further bank protection.

When that was accomplished, willows were placed in the trench and rock was placed on the stream-side of the trench, thereby protecting the quickly eroding bank.

“Willows are ideal for this stabilization work,” Derrick explained. “This is their native environment;

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Above, the day after completion of the project. Soil has been added to the willows that were placed in the trench. Right, less than three months after the project was completed, the willows have started to take root and grow. Several significant high water events have already left sediment deposits in the restored area.

*photos courtesy of LaDon Atkins*



*LOP ACHIEVED, FROM PAGE 4*

must recognize what their risks are and what the levee is intended to do. When higher water levels are low enough, levees protect. When they are not, they buy time.

**After the flood(s)**

During the high water and flood events of 2008, numerous breaches developed in agricultural levees in the St. Louis District. Other problems included damage to gravity drains and a few pumps. Elsewhere, there were slides, in which the sides of levees partly gave way.

As flood fighting experts changed hats to damage assessment teams in August and early September, the District's new commander, Col. Thomas E. O'Hara, Jr., who inherited the summer's flood from his predecessor in early July, issued a challenge: "Restore the level of protection (LOP) by the end of February," he told his team. And February was as usual, a short month.

As teams worked overtime to identify and measure damages, Mother Nature had one more flood

in store. In mid-September, the Mississippi River surged briefly again above flood stages. While water flowed in through breaches and back out relatively swiftly, it caused two main problems. Already completed assessments had to be redone. This was complicated by the saturated, muddy ground that hampered those efforts. In late-December, the Mississippi River, once again, rose out of its banks and temporary repairs were made to the breaches to keep the levee districts dry.

Sources of the proper materials – much of it high quality clay, which is resistant to water damage – had to be identified. Environmental impacts of getting this material and installing it had to be determined and compensated for. Surveys of possible archaeological and cultural resources had to be conducted in accordance with laws that didn't exist when the original levees were built.

Contracts for repairs had to be let for bids, bids had to be assessed and negotiated and work had to begin.

The District commander turned to Army engineer Maj. Jason Taliaferro to complete the task of

effecting the repairs. Civil engineer Greg Bertoglio then stepped in to relieve Taliaferro when the Major was transferred at the end of his tour in St. Louis.

The calendar entered the equation. Winter descended to add complexity to the repairs. Contractors often had to work with either very wet (muddy) or frozen soils. When it rained or froze hard they had to alter methods or in some cases, cease work. They made up lost ground by working weekends.

Always the challenge loomed: "Restore the level of protection by the end of February."

**Who pays for this?**

Levees such as the agricultural levees in Pike and Lincoln counties in Mo. are usually built by levee districts or other local interests such as a small group of farmers. Other levees providing higher levels of protection may be built by the Corps of Engineers or by other entities.

Once a levee has been built, assuming it has been built to acceptable standards, its builders and operators can apply for acceptance into the Public Law 84-99 – or PL 84-99. This program provides for Federal funding to

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Above, the Mississippi River's floodwaters overtop the Winfield Levee June 18, 2008. Right, on January 21, the same section of levee is repaired and restored to its original authorized level of protection.

*photo above courtesy of Maj. Jason Taliaferro  
photo at right courtesy of Donny Ludwig*



LOP ACHIEVED, FROM PREVIOUS PAGE



Plastic is placed over the barren dirt of the recently repaired breach of the Elsberry Levee, known locally as Kickapoo breach repair.

*Courtesy photo*

repair flood damages, with a Federal share of 80 percent of repair costs being matched by a non-federal of 20 percent. That may come from a levee district, a county or even a state. Sometimes progress may be delayed while the non-federal partner identifies and accumulates its share.

To remain in the PL84-99 program, levee districts must pass annual Corps of Engineers inspections of their maintenance and operating procedures. They are also subject to less frequent, but more detailed inspection of material conditions and stability.

***Pushing to LOP and beyond***

LOP is defined as restoring the levees’ elevations to their pre-flood elevation or height. In some parts of the nation, such as in New Orleans, that may not be as high as the levee’s original height due to progressive subsidence of the ground under them. But in the St. Louis District, ground is firmer,

including substantial bed rock and authorized levels are normally still present years or decades after construction.

In the end, a day before the self-imposed deadline of Feb. 27, 2009, a partnership of contractors, levee district officials and other local government leaders were able to declare success. They had achieved LOP.

According to project head Greg Bertoglio, “There’s a lot still to be done before the levees are as good as they were. But without closing the breaches, we could not possibly flood fight them if there had been a flood.”

And days later, the breach repairs were tested in Missouri just north of St. Louis. The Mississippi River rose to and above flood stage by heavy rain north of St. Louis. Exposed breach repairs did not have their erosion-resistant grass cover yet, as it does not germinate in February in the region.

So, Corps of Engineers flood fighters recommended to levee operators that they should protect the lower reaches of the new levee sections by covering them with heavy sheet plastic, securing that water resistant material with sand bags. Materials were quickly pulled from storage in the Corps’ warehouse in Granite City, Ill., and made available to the people who would carry out the repairs.

The tactic was successful, as water rose onto the protective plastic briefly before receding back below flood stages.

Work continues and will continue throughout the summer.

Gravity drains are being assessed. Grass has been planted to secure underlying soil. Soil that slid down the side of other levees are being excavated and reinstalled or replaced as necessary.

Once work is completed this summer, things will be as good or better than before.

“We are not allowed to make levees higher or to improve them,” Greg Bertoglio said. “But we are using latest methods to rebuild them the best we can. I believe that even at their same heights, the repaired sections of the levees will be the strongest parts of the systems. It’s been a tremendous partnership with skilled contractors and dedicated local officials to do this. Everyone deserves congratulations for regaining LOP and for what they still will accomplish.”

***Why not rebuild higher?***

As noted previously, levees being repaired are being rebuilt to their pre-flood elevations. Some ask, “Why not go higher? They were overtopped this time.”

There are a number of reasons and possible future options.

First, if federal dollars are going to be expended to raise levees, such increased protection must be authorized. This is the step wherein the Congress gives its permission to an activity.

Then dollars must be appropriated to fund the authorized activity. Both of these steps are usually preceded by constituents asking for this, even campaigning for it. Authorization often emerges and is not soon – or ever – followed by appropriation.

Second, to be built, such projects must be subjected to and pass a rigorous cost-benefit analysis. Each Federal dollar must “buy” a dollar or more of reduced flood damages. The higher the ration of benefits to costs – or returns on investments – the greater is the likelihood of legislation for a project of successfully navigating the halls of

— SEE LOP ACHIEVED, PAGE 14



# OVERSEAS SERVICE: DEPLOYING IN SUPPORT

## CHAD ADAMSON



Chad Adamson of Marion, Ind., is en route to Iraq with the U.S. Army Corps of Engineers. There he will be part of Task Force Safe, an initiative to find and correct electrical problems that have injured and killed several service members serving in Iraq.

The 36-year-old Adamson has volunteered to serve for six months with Task Force Safe, who are trained electricians deploying to Iraq with the Army Corps of Engineers.

A 1992 graduate of Marion High School, Adamson is a four-year Army veteran who was an infantryman with the 10th Mountain Infantry Division in Fort Drum, NY. After he served in the Army Adamson used his G.I. Bill benefits to be trained as an electrician in the International Brotherhood of Electrical Workers (I.B.E.W.).

An employee of the U.S. Army Corps of Engineers for three years, Adamson maintains a variety of electrical equipment at the Melvin Price Locks and Dam near Alton, Ill.

When asked why he has volunteered for a six-month tour in Iraq, Adamson said his family has a strong military tradition. A cousin, Collin Bowen, died from injuries sustained when his vehicle was destroyed by an IED in an attack on his Army unit, Adamson said.

“It was tragic to learn of Collin’s injuries and then his death,” Adamson said. “As bad as dying from combat is, it would be even more tragic for some Soldier to die from an avoidable accidental electrocution. I want to do my part to prevent that from happening to any Soldier.”

Adamson resides in Edwardsville with his wife Nikki. They have four children: Kyla-17, Marciece-16, Alexa-14 and Jada 10.

Chad says he has numerous relatives in Marion. “I’ve got them all connected through Facebook,” he said. “I know I am going to be busy in Iraq and that way I can keep them all up to date on what I am doing.”

## FRANK JOHNSON



U.S. Army Corps of Engineers Contracting Specialist Frank Johnson is en route to a six-month voluntary assignment in Afghanistan. The 43-year-old man will serve the Corps of Engineers District Headquarters contracting office in the Afghan capital of Kabul, performing contract administration duties in support of U.S. and international efforts to establish a secure and stable environment in Afghanistan.

Johnson describes himself as duffel bag baby, who grew up as an Army brat. He is also an Army veteran himself, having served nearly 15 years. When asked why he is going to Afghanistan, Johnson said, “My Dad is a retired Army noncommissioned officer. I served in the Army. I guess I just feel a deep sense of responsibility.” No stranger to overseas life – he has lived in Germany and served in Korea and Europe, this will be his first venture to Afghanistan.

Johnson came to work with the St. Louis Engineer District 10 months ago. Before that he worked in the Office of the Base Director of Contracting at Fort Leonard Wood, Mo. He has also worked in private business, locating parts for aging Army equipment.

Illustrative of his world wide travels, Frank Johnson graduated from Zwiebrucken American High School in Germany while his father served there. After earning an associates degree from the University of Alaska in Fairbanks, he completed his bachelors degree from Keller-Devry University in business & accounting. He just recently completed a master’s degree in Acquisition and Government Contracting with American Graduate University.

Frank resides in Wood River, Ill., with his wife, Renee, who is a nurse specializing in diabetic care. Three children round out his family: Kayla, 18, freshman at Lewis & Clark College; son Trevor, 17 and daughter Katie, 15, both in high school. His father, Wilbur Johnson also resides in Wood River.

*These four individuals, plus one on page 11 stan, in support of our Nation’s*

# T OF OUR IRAQ AND AFGHANISTAN MISSIONS

## ALLEN BARNES



Damascus native Allen Barnes is on his way to Iraq with the U.S. Army Corps of Engineers. There he will be part of Task Force Safe, an initiative to find and correct electrical problems that have injured and killed several service members serving in Iraq.

Barnes normally works as an electrician at the Chain of Rocks Locks 27 near Granite City, Ill., for the Corps of Engineers.

A 1995 graduate of Southside High School in nearby Bee Branch, Barnes is employed by the Corps of Engineers as an electrician at the navigation Locks that serve either as the entry point or southern terminus of the Upper Mississippi River navigation system of locks and dams.

Barnes is deploying for a six month assignment with the Task Force. He will work in a number of locations throughout the country, focusing on facilities serving and housing U.S. Army personnel. "Our mission is both to find and fix electrical problems" Barnes said.

The 31-year-old has worked for the Corps of Engineers for 3 years and maintains a variety of electrical systems at the Chain of Rocks Locks 27 from 110-volt to 480-volt control systems.

Barnes reports that he has never worked overseas before. But if his work results in saving one Soldier's life it will be well worth the hardships he anticipates.

Barnes' parents Gary and Glenda Barnes reside in Damascus as do his grandparents, Roy and Elsie Barnes and Carlene Barnum-Cleaver, who lives in Scotland, Ark.

*, have recently deployed to Iraq or Afghanistan and the Corps' missions there.*

## ROB SCHIFFER



Robert "Rob" Schiffer of the U.S. Army Corps of Engineers St. Louis District's Engineering and Construction Division has deployed to Iraq for six months. Schiffer, who has volunteered for the arduous tour, will serve as the resident engineer in the Balad Area Office northwest of Baghdad. There he will administer and oversee numerous contracts for construction projects in the region.

"I have several motivations," Schiffer said. "A lot of my friends are asking me, 'Why?'" he said.

"I have wanted to do this for a long time," the 33-year-old St. Louisan said. "When I tell people that it's for duty and country, more than a few don't understand," he added. "Maybe I also feel like I have missed something by not joining the military. To me this is an opportunity," he affirmed.

A 1993 graduate of St. Charles, Mo., West High School, Schiffer went on to what is today known as the Missouri University of Science and Technology in Rolla, Mo. He earned a Bachelor of Science Degree in Civil Engineering from there in 1998.

"After graduating, I worked in commercial construction management in Oklahoma City," he said. "I worked on a new hospital there. I also worked on a variety of construction projects in the St. Louis area."

From that work he returned to St. Louis where he was able to secure a contract working for the Corps' FUSRAP – Formerly Utilized Sites Remedial Action Program – cleaning up low-level radiation contamination from cold war weapons manufacturing sites in the St. Louis Region. Schiffer came to work as a fulltime Corps employee early in 2008 and states he hasn't been tied to a desk. "I spent three months in Iowa in 2008 helping with FUSRAP work at the Iowa Army Ammunition Plant there. He also took part in last summer's flood fights in both Winfield and Cape Girardeau areas.

Rob will also have family close by when he deploys. "I have a nephew in the Army and he's on a second tour in Iraq, serving in Baghdad. It's a big Army, but maybe I'll see him there," he noted.

— SEE *DEPLOYERS*, PAGE 11

# Keeping it Clean: New Water Quality Partnership at Rivers Project

STORY AND PHOTO BY MINDY CORY,  
RIVERS PROJECT OFFICE

In the spirit of collaborative partnership, the St. Louis District's U.S. Army Corps of Engineers' Rivers Project Office is teaming up with the St. Louis Confluence Riverkeepers. Through this partnership, the Rivers Project Office hopes to expand the campaign of water safety to include a focus on safe water.

As the leading federal provider of water-based recreation opportunities, the Corps has long emphasized the importance of water safety. Each year the Corps renews its commitment to reduce recreational incidents and fatalities in and around water.

The safe use of water must begin with water that is pollution free. Raising public awareness of the need to protect the quality of our nation's water resources for current and future generations will empower project visitors to make wise decisions regarding our most precious natural resource, fresh water.

The central goal of Riverkeepers, a 501(c)(3) not-for-profit organization, is to preserve and protect 150 miles designated on the Mississippi, Missouri and Illinois rivers.

Mike Bush, the director of St. Louis Confluence Riverkeepers, is setting up shop at the District's Rivers Project Office. Riverkeepers has signed a license agreement to jointly use space at the Rivers Project's West Alton, Mo., facility. With the shared goals of healthy and sustainable water uses, the new partnership between Riverkeepers and the Corps will prove to be

mutually beneficial.

Pat McGinnis, the Natural Resource Manager at the Rivers Project Office, is pleased to be developing a partnership with this water-focused organization.

"Water is a thread that clearly connects all of us, we all depend on clean, available freshwater," McGinnis says. "Stewardship of our natural waterscapes gives many groups with a relationship to the river a reason to come together."

This latest collaboration adds to the long list of Rivers Project partners, which includes the Meeting of the Rivers Foundation, the National Great Rivers Research and Education Center, Audubon Society, the Great Rivers Land Trust, and other local and regional nature tourism proponents. All of these groups agree on the ever increasing need to sustain the quality of the region's water resources.

The Corps has routinely

monitored the quality of water where it has operational projects, an effort that will be greatly augmented by additional site specific monitoring to be undertaken by Riverkeepers. Over time, the organization hopes to collect enough data to identify sources of pollution, and they've already identified 10 data collection points in their coverage area that will be used for baseline testing.

"We expect to see certain trends, such as high nitrates in the springtime because of fertilizer runoff," said Brock Lutz, who is working alongside Bush with Riverkeepers.

Water sample collecting will be performed in Bush's boat, a 22-foot C-Dory. The vessel's shallow draft allows it to access many areas which would be difficult for larger craft. The boat also features an enclosed cabin, allowing year-round river monitoring.

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Mike Bush, the director of St. Louis Confluence Riverkeepers, stands beside his boat at the Alton Marina, a 22-foot C-Dory.

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## KALE HORTON



Perry, Mo., native Kale Horton recently departed on what he terms “an adventure of a lifetime” when he deployed half a world to Afghanistan. Horton is deploying there for six months as a project manager for work the Corps of Engineers is carrying out in Afghanistan.

As a project manager, the 33-year-old Horton says he will monitor contractor compliance and

provide quality assurance oversight for construction work.

A 1994 graduate of Mark Twain High School in Center, he went into the Air Force immediately after high school. During that tour he served as a security officer.

On return he went to Missouri State University in Springfield, earning a Bachelor’s Degree in Wildlife Conservation Management and a Master’s Degree in Environmental Science.

He worked for the U.S. Army Corps of Engineers first in Fort Worth, Texas before moving to the Department of the Interior and a small facility in Alton, Ill., overseeing surface mining.

Kale came back to the Corps of Engineers when he joined the St. Louis Engineer District’s Regulatory Office in 2007. There he works with applicants for permits to conduct activities in what are termed the “Waters of the United States,” seeking to ensure that all such activity is accomplished in compliance with applicable laws

and regulations and in an environmentally sensitive manner.

Kale’s principle motivations for deploying to Afghanistan are a combination of the adventure and that of working with Afghani people trying to build their country, and an opportunity to see work progress rapidly. “We recently hosted the commander of the Afghanistan Engineer District and he captured my interest when he told how people can get in on the start of truly great projects and see them through to completion in only a matter of months. That’s got to be very satisfying,” he said.

Kale, who has many family members and friends in Perry, currently resides in Eureka, Mo., with his wife Adelle and one year old son Jake. While he will certainly miss his wife and young son, he says that this is for a purpose. “I will be both making a contribution to the U.S. role in Afghanistan and gaining a great deal of knowledge and experience that will serve me well when I return home next fall.”

STREAMBANK, FROM PAGE 5

they develop and take root quickly, providing the roughness necessary to make this project successful.”

He also explained that dogwoods and other similar trees can be used, depending on what’s easily available and affordable. In the case of this project, Pike County officials got the 500 willows locally, costing them nothing but some time.

The willows, dogwoods or whatever is used actually serves several purposes. First, the root structures help provide strength to the bank. Secondly, when the stream’s level is high, like after a significant rain even, the current is stronger, especially along the outside of a bend. This vegetation provides roughness, slowing down

the velocity of the rushing water, reducing the amount of erosion.

The next step was to place the willows and add the soil. According to Derrick, within a few months, they will have a good root structure and will have grown substantially.

In addition to the willow plantings, Derrick was able to demonstrate how bendway weirs can be used on small streams like this one. Although significantly smaller than the type typically used on the larger, navigable waterways, these perform a similar function. During times of high flow in the stream, as mentioned before, the strongest part of the current is on the outside of the bend. By strategically placing

the small rock weirs in the bend, the stream’s current is directed away from the outside edge, away from the bank, and towards the center of the stream.

While this stream is not large enough to support a large fish population, Derrick has used this technique on larger rivers and creeks where the weirs not only helped protect the stream bank, but also enhanced the aquatic habitat as well.

Upon completion of these tasks, this particular project is nearly complete. All that remained are a few aesthetic items like cleaning up and leaving it alone to let Mother Nature do her work.

“We were really fortunate to get Dave Derrick out here for this,”



In addition to water testing, Bush and Lutz will also educate the public about the importance of clean water, in particular the dangers of pollutant runoff and the benefits of rain gardens and pervious pavement.

Education and outreach is another area that will provide opportunity for collaboration with the Corps staff at the Rivers Project. McGinnis says, "Having the Riverkeepers organization directly involved in our special events and outreach activities will strengthen the water message we are conveying in all of our outreach programs for school-aged audiences as well as adults."

On the Mississippi River, Riverkeepers will perform regular monitoring from the confluence of the Meramec River up (river mile 160), downstream of St. Louis, to

river mile 228.5, where the Golden Eagle Ferry makes its crossing between Illinois and Missouri. On the Illinois River, the area includes from the mouth of the river, up to Hardin, Ill. (river mile 21.5). On the Missouri River, they watch from the mouth to the City of St. Charles, Mo., (approximately river mile 27). All together, this, along with side channels and chutes, adds up to 150 miles of river in 9 counties.

Bush and Lutz became inspired to set up a Riverkeepers chapter while completing the Great Loop, which is the circumnavigation of the eastern third of the United States by water via the Great Lakes, down the Illinois Waterway to the Mississippi River, on to the Ohio River to the Tennessee Tom Bigbee waterway to the Gulf Intercoastal Waterway in Mobile, Ala., east along the Gulf Coast to Key West

and then up the country's eastern seaboard to the Hudson River and Lake Champlain.

Bush summed it up by saying, "We saw a lot of water. Some of it was pretty good, and some of it was pretty bad."

In July 2008, the St. Louis Confluence Riverkeepers became licensed with the Waterkeeper Alliance which includes 185 Waterkeepers worldwide. Not all Waterkeepers are Riverkeepers; there are also Lakekeepers, Canalkeepers, and Baykeepers, to name a few. The only other Riverkeeper currently working on the Mississippi River is located in Baton Rouge, La.

If you are interested in becoming a Riverkeeper, or learning more about the organization, Mr. Bush can be reached at 877-567-3955 or [stlriverkeeper@sbcglobal.net](mailto:stlriverkeeper@sbcglobal.net).

## Consolidating, making space for Security



Very soon the District Security Office will occupy space that used to be at the back end of the library. To make way, hundreds of out of date books and magazines were discarded, while thousands were placed on the floor at various times to enable shelves to be relocated. (Right) Librarian Phyllis Thomas surveys just a few of the displaced volumes to plan the way ahead for replacing them on the shelves under the Library of Congress filing system. (Above) Spc. Larry Payne, currently recovering from injuries sustained in Iraq, played a key role in helping restore order to the library collection.



# Enjoy the Water... SAFELY

STORY AND PHOTO BY **MARTY WERDEBAUGH**, SAFETY OFFICE

It's that time again: the smell of freshly cut grass, the sight of a steak being grilled to perfection, and the thundering sound of fireworks at Busch Stadium after another Cardinals' home run. Summer has arrived once again, and with it comes its own set of safety issues. Three in particular are water safety, heat stress and fireworks safety. All three are synonymous with this time of year; all three tend to be an ongoing challenge year after year. The St. Louis area offers ample selections of outings to be outdoors during the summer. As such, below are some tips to handle these types of hazards.



**Fact #1:** Nine out ten people who die in boating accident didn't wear life jackets. Above all else, this one simple act can make up for a number of mistakes. For example, four football players went missing during a fishing trip off of the Gulf of Mexico February 28, 2009. One of the players was found by the Coast Guard two days later. His interview revealed that all four had life jackets after their boat capsized, but the other three eventually removed their life jackets over the next 48 hours. The survivor, Nick Schuyler, survived because he kept his life jacket on until help arrived.

**Bottom line:** Wear your life jacket if you're out on the water, regardless if it's a river, lake, or ocean.

**Fact #2: Alcohol use is involved in up to half of all adolescent and adult deaths involving water recreation.**

All 48 mainland states now have a legal limit of 0.08 percent BAC (blood alcohol concentration) to be considered "Under the Influence" of alcohol or other impairing substances. The US Coast Guard says a boat operator whose BAC exceeds that amount is 10 times more likely to be killed in a boating accident than a boater with zero BAC.

Alcohol affects balance, vision, coordination and judgment. Environmental factors that come with boating - such as wind, sun, noise and motion - can magnify the effects of alcohol and accelerate impairment.

Research shows that as little as four hours of exposure to sun, wind, glare, vibration and other motion on the water produces "boater's hypnosis," a kind of fatigue that slows reaction time almost as much as if a person were drunk. Ever spend several hours on a boat and feel like your balance was off when you come back to shore? Imagine also having alcohol in your system!

Most boaters think of collisions as the greatest threat when drinking on the water. However, according to BOAT/U.S. Foundation for Boating Safety, an estimated 75 percent of alcohol-related boating accidents and injuries do not involve collisions. The greatest threats when drinking while boating include falls on board or overboard and missteps at the dock or when getting into a dinghy.

Alcohol makes it harder to control the gasping reflex that occurs involuntarily when the face or upper body is suddenly immersed in cold water. An intoxicated person is more likely to inhale water into the lungs when plunged suddenly into cold water.

**Bottom Line:** Wait until you're out of the water to have a drink!



— SEE *WATER SAFETY*, PAGE 15



congress to the President's desk.

Finally, levees must be recognized as parts of a system. Raising a levee may add frontal protection to the area behind it. But if the flank levees connecting it to higher ground are not raised as well, water may flow around and behind the raised levee. In another concern, raising one levee and excluding flooding from one area may also induce flooding in an adjacent area that does not receive increased protection.

In the end, raising levees or otherwise enhancing them may not be the only or best answer.

One answer is raising flood-threatened structures or otherwise protecting them. Another possible measure might be buyouts to remove people and structures from areas of risk, relocating them to a safer place. This was done after the 1993 flood and has been implemented or looked into in several areas in the St. Louis District.

Others would recommend that we may want to degrade levees and restore flood plain connectivity. But first, existing property interests need to be taken into account.

In that line of thinking, we can continue activity such as farming



Missouri National Guard and volunteers floodfight a sandboil in the Pin Oaks Levee June 18, 2008. *courtesy photo*

behind a levee. A levee might provide a level of protection that enables farmers to work rich fields in most years. Occasionally they would endure floods. Those same floods that might destroy a crop might also renourish the soil with natural fertilizers and silt, increasing crop yields in the years that follow. In fact, many farmers will confirm that they can take an occasional flood if they don't have droughts.

That latter possibility might be further enhanced by determining where an existing levee is likely to be overtopped, or where energy at

the outside of a bend might assault it more severely.

Then instead of valiantly flood fighting the levee, rock or other armoring could have been installed that would prevent scour erosion when the levee would be overtopped. Perhaps gates to more quickly drain the land could be added. Farming would still proceed but perhaps expensive and sometimes risky flood fighting would be reduced or eliminated. Some structures might have to be vacated permanently, but in the end the gains would outweigh the costs.

— SEE LOP ACHIEVED, NEXT PAGE

## WHY DID IT FLOOD?

*National Weather Service long range experts have mercifully said that they don't again see the precursor conditions that set off last summer's flood in 2009.*

*Mississippi River floods usually begin the fall before they arrive. In fall 2007 the valley was pelted by heavy rainfalls. An early freeze was quickly covered by near record snow falls in the northern portion of the Valley.*

*Then, as spring started and snow melted, areas north of St. Louis, up into Minnesota, Wisconsin, northern Iowa and Illinois, were pounded with record setting rain. Cities in southern Minnesota that had never seen*

*10 inches of rain in 24 hours received 15 inches in that time. Mississippi River tributaries discharged flows that broke records from 1993 and thousands of acres of farmland and then communities went under water.*

*As the rain swollen Mississippi ran south, diminishing, though significant rains allowed it to start to drop until by the time it reached St. Louis it was a much less significant flood with a 38.67 foot crest, as opposed to 1993, 49.58 feet. But even in St. Louis, at the end of 2008, a record total rainfall had entered the books.*

**Fact #3:** Most young children who drown in pools are out of sight less than five minutes and in the care of one or both parents at the time. Babies under a year old most often drown in bathtubs, buckets or toilets, and kids 1 to 4 most often drown in residential swimming pools.

There are a number of tips in keeping children safe, but one of the best skills we can learn as parents is CPR. Brain damage can set in as early as five minutes without oxygen, regardless of age. Although 9-1-1 response times vary greatly depending on geography, we can all do our part in “buying time” for any child facing a life-threatening situation like drowning.

Other tips include:

- Adults should keep a child under age 5 within arm’s length at all times in the water.
- Never leave standing water where small children can fall in. In addition to pools and lakes, water can pose a hazard in bathtubs, buckets and pails, ice chests with melted ice, toilets, hot tubs, irrigation ditches, wells, ponds and fountains.
- Never rely on swimming aids and inflatable toys as a substitute for life vests.

**Bottom Line:** Prepare for the “doomsday scenario” with skills such as CPR; you never know when you may have to use it.

**Fact #4:** Males are four times more likely than females to die from unintentional drownings in the United States. Sorry guys – we don’t stand a chance on this one.



**Why are we seeing more floods in recent years?**

There are allegations that increased flooding is caused by levees and other engineered structures in and alongside rivers.

Before those causes can be accepted without question, we must review other issues.

We may be seeing long term climate or weather pattern changes. What we do know for certain is that St. Louis has experienced five of its rainiest years since 1876, in the last 25 years. But flooding last summer was preceded by five or more years of drought and very low water.

We are also more certain that we are seeing long term changes in land uses and lifestyles in North America.

In 1900, there were 76 million

people in the United States. Vast stretches of northern forests were still populated by virgin timber. Parts of the prairies of the Midwest had yet to be broken by a plow. This population of only one-quarter of America’s 2000 census mostly lived in small homes.

Today the forests are thinned. Prairies are farm fields or rural communities or suburbs. Dirt and gravel roads and parking are replaced by pavement. Houses are larger. Lawns are groomed for appearance versus water absorbing capabilities. It has even been suggested that the growth in the numbers of golf courses has been paralleled by increased flooding.

Another certainty is that we simply don’t understand some things that possibly affect flooding. Some areas are more complex than others. Some efforts are stymied by

our own endeavors. For example, while few scientists or hydraulic engineers would argue against studying the confluence region of the Missouri and Mississippi rivers in a comprehensive manner, a study of the post-1993 Mississippi River basin to make recommendations for the future, specifically disregarded the flow from the Missouri River which, in some flood situations, contributes more than half of the water that flows past St. Louis.

Rain causes floods. Before risks can be taken into account they must be better understood and then conveyed accurately to the people at risk. With all of the information they can then make informed decisions based on facts versus emotion and conjecture.

But in the meantime, LOP was restored February 27, 2009 – a day ahead of schedule.





# GET CAUGHT AT CARLYLE

This summer, Corps of Engineers Park Rangers at Carlyle Lake will be rewarding kids who wear lifejackets while on the lake with a special treat donated by the Carlyle Dairy Queen and an "I got caught wearing my life jacket at Carlyle Lake" t-shirt. The t-shirts were sponsored by Carlyle IGA, The Max 96.7 WCXO, Carlyle Express Care, Carlyle Hardee's, Isaak Insurance of Carlyle, Bretz Wildlife Lodge and Winery of Carlyle, and Henkel's Hook and Arrow of Carlyle. **Get caught wearing your life jacket at Carlyle Lake and you could be next!**

*Photos courtesy of Carlyle Lake staff*



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