



US Army Corps  
of Engineers®  
St. Paul District

# Crosscurrents

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**District, communities  
overcome floods on  
Red River of the North Basin**

Photo by Robert Haynes



Photo by Robert Haynes

**Lisa Lund, channels and harbors unit, Fountain City, Wis., worked flood duty in Fargo, N.D., as a flood engineer. She was on flood duty from March 19 to April 2. Flood engineers deployed throughout the Red River of the North valley for reconnaissance and direct coordination with communities.**

**Command Corner  
By Col. Jon Christensen  
St. Paul District Commander**



Team:

I wanted to take a moment to thank you all for your monumental efforts in response to the recent flooding in the Red River Valley. Your hard work was instrumental in helping protect and alleviate suffering in more than 30 communities and prevented an estimated \$2.99 billion in damages. Working as a team with our federal, state and local partners, we constructed approximately 70 miles of emergency levees, provided more than 130 pumps, 11.3 million sandbags, and supplied other materials and services that significantly contributed to flood fighting success. Whether you deployed or remained at home station to shoulder the load for someone who deployed, you made a difference to the citizens in the valley. At the recent Senior Leader Conference in Orlando, your work was praised by numerous speakers – all the way up to Assistant Secretary of the Army level. I thank each of you for your heroic response – you have added another great chapter to the history of our district.

We are now dealing with a flood of a different sort – and victory in this fight is just as important as our recent successes in the Red River Valley. We have become inundated with American Recovery and Reinvestment Act, or ARRA, projects that have essentially doubled our workload with shovel-ready projects that we have been trying to push forward for a number of years. The Recovery Act was signed into law by President Obama on Feb. 17, 2009. It is an unprecedented effort to jump start our economy, create or save millions of jobs and put a down payment on addressing long-neglected challenges so our country can thrive in the 21st century. The act is an extraordinary response to a crisis, unlike any since the Great Depression, and includes measures to modernize our nation’s infrastructure, enhance energy independence, expand educational opportunities, preserve and improve affordable health care, provide tax relief and protect those in greatest need. ARRA funds must be spent quickly to save and create jobs and, at the same time, must be invested wisely in activities that will benefit the nation. As you contribute to the success of these projects, know that you are taking part in something historic in nature.

Based upon what I have seen over the last two years, I have no doubt that our talented and dedicated work force will rise to the challenge and lead the way to the successful execution of our ARRA program. Your individual efforts will have a profound effect on how the Corps is perceived and how it will operate in the years to come. I know you will give it your all.

Thanks for all you do.



US Army Corps of Engineers®  
St. Paul District

**Crosscurrents**

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# District wins in record-breaking flood fight in Red River of the North basin

By Shannon Bauer

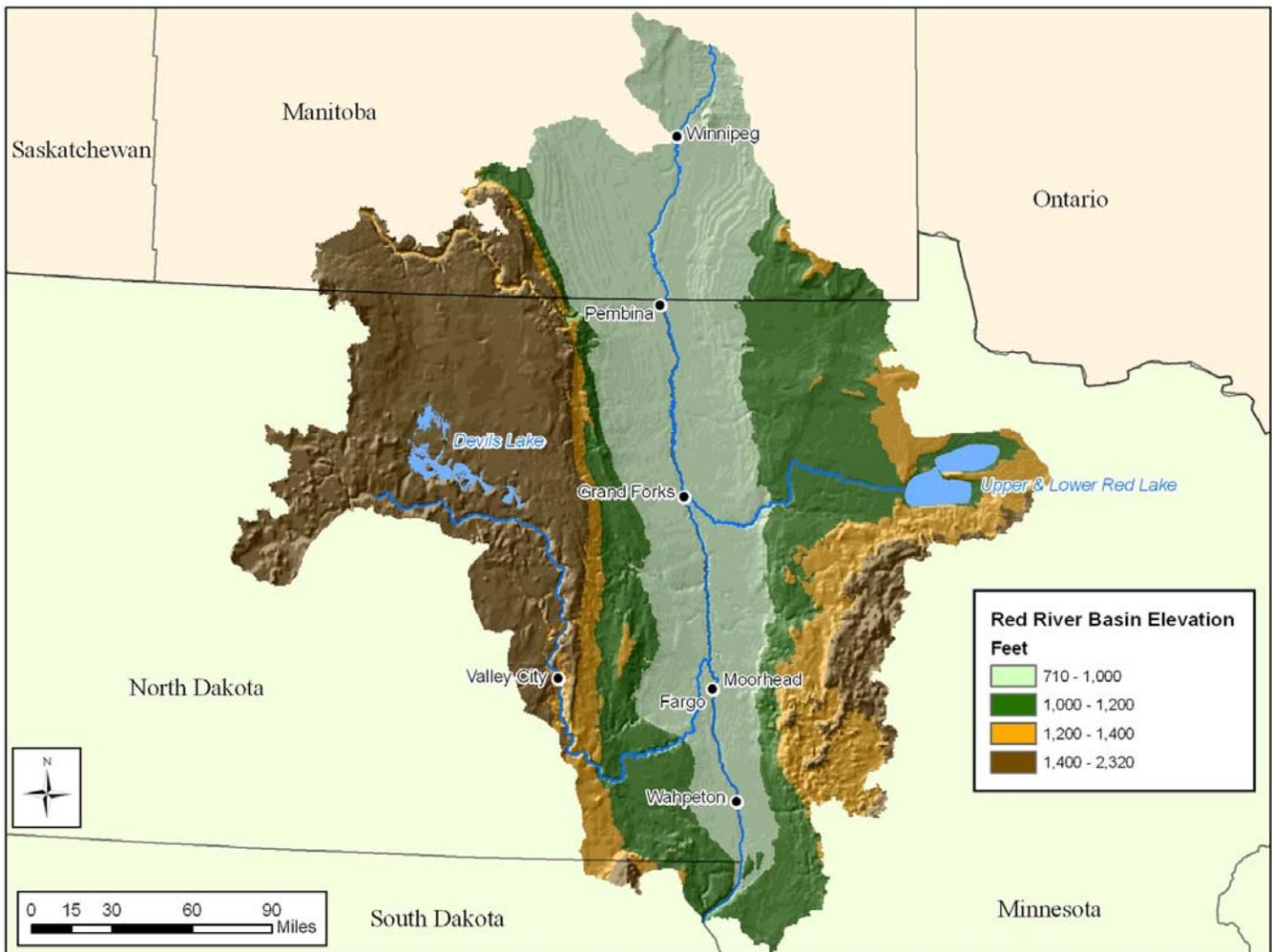
The U.S. Army Corps of Engineers, St. Paul District, declared a victory late April after facing massive flooding in the Red River of the North river valley for more than a month-and-a-half. By the end of the fight, the district had distributed 11.3 million sandbags, 4,201 rolls of plastic and 136 pumps, as well as let 50 contracts, built approximately 70 miles of emergency levee and spent more than \$32 million.

Six basin cities, including Abercrombie, Fargo,

Lisbon and Valley City in North Dakota and Moorhead and Oakport Township in Minnesota, faced floods of record, yet no city lost more than a few homes. The Corps was part of a large force made up of local, state and federal responders and thousands of volunteers that worked together to make this happen.

The Red River Valley covers 45,000 square miles and occupies substantial portions of North Dakota, western Minnesota and a small portion of northeastern

*Flood fight, continued on Page 5*



St. Paul District GIS

Red River of the North Valley sits between North Dakota and Minnesota and drains north into Manitoba, Canada. The valley was created when Glacial Lake Agassiz drained about 9,200 years ago.

*Flood fight, continued from Page 4*

South Dakota. The area is prone to flooding mainly because of geography – the land is exceptionally flat. Additionally, the water flows north. As temperatures in southern portions of the basin warm in the spring, and the snow begins to melt, more and more water accumulates. When the snow melts in the north, even more water is added to the peak as the flow journeys north.

The National Weather Service predicted significant flooding for the basin early in the year after it snowed 23 days there in December, leaving a water content in the snowpack of 170 to 300 percent above normal. Of particular concern was Fargo, N.D., a city of around 100,000, which had a 98 percent of chance of exceeding major flood stage at 30 feet and a 6 percent chance of exceeding the last major flood stage, 39.57 feet, in 1997.

Shelly Shafer, the St. Paul District’s emergency manager,



Photo by Robert Haynes

**Steve Odegaard, Orwell Lake, Fergus Falls, Minn., worked flood duty for a couple weeks in Fargo, N.D., mainly in the downtown area on quality assurance. He then moved to Valley City for another couple weeks as office coordinator, taking calls regarding levee concerns and referring them to the geotechnical engineers to address.**

said the district began its flood preparations early by hosting flood preparedness workshops with local communities throughout Minnesota and North Dakota, as well as

conducted in house training for flood engineers and other responders. Additionally, flood engineers began meeting one-on-one with local emergency managers. The district’s water control section began drawing down valley reservoirs around this time to ensure additional storage would be available for spring runoff.

The flood fight sprang into action early, though, when the NWS both raised its crest predictions and moved the projected crest date forward. The district sent engineers and support staff to its field office in Fargo, N.D., the week of March 15, and its contractors began building emergency levees throughout the basin. In Fargo, where forecasters upped the prediction to levels more



Photo by Robert Haynes

**Flood workers constructed 1,680 linear feet of Portadam® in Fargo, N.D. The dams supplemented emergency levees. This view is from the wet side of a levee, March 26.**

*Flood fight, continued on Page 6*

*Flood fight, continued from Page 5*

in line with the 1997 flood, the Corps began to build levees to 40 feet.

A little more than a week later, the NWS again raised the projected crests and moved the projected date forward. For Fargo, they predicted a crest of around 40 feet, so engineers began raising the levees to 42 feet. Before they could finish, however, the NWS, once again, raised their prediction to between 40 and 43 feet. With less than two days before the predicted crest, engineers built up all the levees in Fargo and Moorhead, which is directly across the river from Fargo, to 44 feet. This included raising 31 miles of clay and secondary levees, 10 miles of HESCO Bastion

Concertainer® secondary levees, and 6.3 miles of sandbag levees. In Moorhead, this included 15.5 miles of clay and secondary levee and 9.2 miles of sandbag levees.

To raise the levees in such a short amount of time, Tim Bertschi, the St. Paul District’s western area flood engineer, said the flood fighters used a variety of nontraditional flood fighting methods to include not only the HESCO Bastion levees but also Portadam® coffer system. “If we had not used all those methods all at once, we might not have finished in time,” he said. “These methods certainly helped provide flood protection, and we will be reviewing their performance before we make any real solid judgments on them.”

The river experienced its first

crest at 40.82 feet March 28, seven-tenths of a foot higher than the previous flood of record in 1897. The levees didn’t come down, however, since the Red was expected to crest again in a few weeks, Corps engineers and Army National Guardsmen continued to monitor the levees 24 and seven. Then, the NWS predicted a possible second crest of 41 to 43 feet and engineers began building the levees even wider and higher, to a height of 44 feet.

At the same time, the NWS predicted record flooding for the Sheyenne River, a tributary of the Red in North Dakota. They began building emergency levees in cities along this river to include Valley City and Lisbon.

Although the second crest for Fargo on April 17 ended up being only 33 feet, the Sheyenne crested higher than originally predicted, and Corps’ engineers were raising emergency levees in Valley City and Lisbon up until the crest.

Throughout the flood fight, levee cracks and pipe breakages caused potential emergencies. The spillway of a small, non-federal dam, Clauson Dam, on a tributary of the Sheyenne began to erode, and the Corps was called upon to assist in preventing the dam from failing and taking out the city of Kathryn, N.D., directly downstream from it. “The local engineers for the dam had pretty much given up on getting heavy equipment in to fix the problem, but our guys went in there and immediately began to bring in the heavy stuff,” said Bertschi.

“The district enhanced its reputation for engineering on the



Photo by Frank Worley

**Kurt Heckendorf, design branch; Joe Shoemaker, Two Harbors Regulatory Office; and Alex Nelson, engineering and construction, survey an emergency levee at Fargo, N.D., March 30.**

*Flood fight, continued on Page 7*

*Flood fight, continued from Page 6*

go during this flood fight,” he said. “The red shirts bring a lot of respect, at least in the Red River basin. We have done pretty good things here over the years.”

As to the overall effort, Bertschi said, “We did better than I thought we’d do. We had to do a tremendous amount of work – a lot more work than we had to do in 1997 [when Fargo was also vicariously close to flooding] – and in a lot less time. There was one night there when I thought we for sure had lost Fargo and another night when I thought we’d lost Valley City.”

Besides the ever changing forecasts, the large workload and frantic pace, another challenge included the extreme weather conditions. “We were fighting the flood in a blizzard,” said Bertschi. “Ice and the snow make it extremely hard to work with dirt and sandbags. Then, too, it also makes access to the sites difficult.”

Logistics was another issue. “There was one point where we ran out of equipment,” said Bertschi. “We pretty much were utilizing all the available equipment within 200 miles of the river basin.

“We had to bring in some contractors from several hundred miles away; and then there were road closures [due to flooding], so we had trouble getting them here,” he said. “I had to work with the governor’s office to get them through the road blocks.”

He added he was very impressed with the efforts of the Corps contractors. “The

*Flood fight, continued on Page 8*



Photo by Shannon Bauer

**Ryan Price, engineering and construction division, consults with a contractor from Industrial Builders, Inc., West Fargo, N.D., March 21. They were in Cass County, just outside the Fargo city limit.**



Photo by Shannon Bauer

**Kevin Baumgard, assistant chief, operations, supervised construction of a ring dike in Lisbon, N.D., after a sewer pipe burst, April 15.**

*Flood fight, continued from Page 7*

contractors in this area are second to none,” he said. “They have tremendous skills, and they put themselves in some precarious situations to get the job done.”

Overall, 222 Corps’ employees

from around the Corps participated in the flood fight. “We had a great bunch of skilled people that came out to help,” said Bertschi. “They were putting forth as much effort as if this was their own hometown.”

“It was also a great mixture of experienced people and highly

skilled inexperienced people,” he added. “It was a million dollar investment for the district in that some of the younger people in the district got a lot of flood fighting experience. I could confidently turn this over to them right now.”



Photo by Karl Berg

**Mike Dahlquist, engineering and construction, coordinates a sandbag drop with the North Dakota National Guard on sandbag placement at Clausen Springs Dam, April 16. The sandbags reduced spillway erosion during flooding. Clausen Springs Dam, a non-federal dam, is located on the Sheyenne River upstream of Kathryn, N.D.**

## Corps employees help save Fargo's Oak Grove School

By Diana Fredlund, Portland District Public Affairs Office

After days of helping the residents of Fargo, N.D., and Moorhead, Minn., prepare for what would be a record-setting flood, U.S. Army Corps of Engineers flood fighters could only wait and monitor the levees they'd built as the water rose.

"There's only so much we can do before the flood event begins," said Tim Bertschi, area engineer for the Fargo office. "After that we just have to monitor the levees and be ready if anything happens."

In the early hours of March 29, 2009, something *did* happen at the Oak Grove Lutheran School, just north of downtown Fargo: the river found its way through a permanent flood wall constructed after previous floods.

Joe Piranio, a quality assurance representative from St. Paul District who usually works as a lock and dam operator at Lower St. Anthony Falls, was making the rounds of levees in his area. During a flood event, Corps employees travel the protection zone looking for problem areas. If he found trouble he would call the North Dakota National Guard's rapid response team, who was ready to move at a moment's notice.

"I had just stopped by the school and found some folks evaluating a leak that formed under a floodwall behind one of the school's buildings. Just after I got there, water started pouring in. Within two minutes we were in water up

to our knees."

There was no time to think, Piranio said, just to react. "They started trying to stuff sandbags into the leak, but the water pressure was so strong it just blew them

off," he added.

At 1:35 a.m., Piranio called Randy Urich, a fellow Corps QA out making his own rounds and asked him to make the appropriate

*Oak Grove, continued on Page 10*



Photo by Shannon Bauer

**The North Dakota National Guard brought one-ton sandbags by helicopter to close a levee breach at the Oak Grove School in Fargo, N.D., on March 29. Corps engineers Andrew Goodall, Rock Island District, and Darrell Morey, St. Paul District engineering and construction, supervised the drops. Several drops were needed to seal the breach.**

**Oak Grove**, continued from Page 9 calls requesting immediate assistance. “Within 10 minutes we had police, fire fighters and five dump trucks filled with clay ready to help,” Piranio said. “The response was tremendous.”

When the call came in, Urich was talking with a contractor who had his dump trucks filled with clay, waiting on standby for just such an emergency. The trucks immediately headed toward Oak Grove. His first call was to the emergency field center, which activated an entire emergency team.

Within minutes, Corps flood engineers Capt. Adam Rasmussen and Luke Schmidt were on their way. “By the time I got there, emergency vehicles and the dump trucks were waiting just outside the contingency dike,” Urich said. When not fighting floods, Rasmussen works in project management and Schmidt can be found in the engineering and

construction division in St. Paul District.

While the school had permanent floodwalls and sandbag levees in place, the church property lies next to a bend in the river that frequently floods. The Corps had built additional earthen levees that met the floodwall and encircled the school and an adjacent neighborhood. As a second line of defense, the school had built a sandbag levee between its buildings and the neighborhood. The Corps’ contingency dike was a third level of protection for the rest of the neighborhood, in case the water overflowed the floodwall and the sandbag levee.

The breach occurred in “the pit,” an area directly behind one of the school’s buildings where sump pumps were installed. The bottom of the pit was level with the basement. “Within 30 minutes, the water was flooding the basement,” Piranio said. “I’ve fought floods before; I know water and how to

keep it back. We could tell this was different – we weren’t going to be able to stop this breach.”

While Piranio and the staff tried to stop the water flow, others were doing what they could in the courtyard.

The school was still ringed by the sandbag levee, which meant no trucks or heavy equipment could enter. “When I arrived, people outside the levee were handing sandbags over it. People on the inside were carrying them by hand to the courtyard,” Urich said.

With so many people helping out, someone needed to manage the flood fight. Fargo police Lt. Joel Vittel stepped up, gathering representatives from the Corps, the city, police, fire, the National Guard and school staffers to develop a command and control team. “Lt. Vittel took charge with a calm authority that was exactly what the situation needed,” Urich said. “We began devising a strategy for keeping the water contained.”

Piranio led the efforts to sandbag around the basement stairs to keep the water from flooding the first floor. School staffers reported water rising in a second nearby building, and then a third.

A priority for the command team was opening the sandbag dike so equipment could enter the courtyard, to bring sandbags closer to the fight and position levee materials. It wasn’t long before reports came in water was rising in all three buildings. Water could be seen flowing out the front door in the first building. Without more aggressive



Photo by Robert Haynes

**Darrell Morey, engineering and construction, on site at Oak Grove School, Fargo, N.D., March 29.**

*Oak Grove*, continued on Page 11

*Oak Grove*, continued from Page 10 measures, the school buildings would be lost and the neighborhood could be in danger.

Rasmussen placed a call to the National Guard, which had a helicopter fitted with one-ton sandbags ready to fly. “There was a lot of discussion about whether to call in the helo [helicopter],” Urich said. “The Fargo city engineer was concerned about the safety of everyone involved if we tried to place that sandbag in the dark.” The command team decided to wait on the helo and evacuate everyone from the school buildings so the levees could be resealed.

“It wasn’t a flash flood, but there’s always a risk when water is flowing where it shouldn’t be,” Urich said. “The emergency crews evacuated everyone and what equipment we could before sealing the levee back up.”

Although flood fighters went door-to-door in the neighborhood homes, Fargo police and city engineers determined it was not necessary to evacuate the area just yet. In the meantime, National Guard Soldiers walked the levees surrounding the school to make sure they were still sound and found no other problem areas.

With the emergency under control, the Corps employees left the school property and continued their duty of checking levees around Fargo and Moorhead. Just about the time he was leaving, Urich received a call that the National Guard had noticed a crack in a clay levee near downtown Fargo. The crack didn’t grow that night and Corps employees were able to set up a way to monitor the crack until it



Photo by Robert Haynes

**Randy Urich, natural resources office, LaCrescent, Minn., on flood duty at Oak Grove School, Fargo, N.D., March 27.**

could be repaired.

The following morning, the National Guard brought one-ton sandbags by helicopter and lowered them into the pit. Corps engineers Andrew Goodall, from Rock Island District’s engineering and design section and Darrell Morey from St. Paul’s engineering and design section, supervised the drops. The

first one slowed the water flow but didn’t stop it – several more had to be lowered before the breach was sealed. Finally, sump pumps began to move the water back to the other side of the levee where it belonged. Only then could school officials begin the task of cleaning up the three flooded buildings and prepare for another high water crest of the Red River of the North, scheduled to occur about two weeks later.

The good news for the school was although the first building was lost to the flood, the other two received minimal flood damage. The principal and teachers look forward to getting their students back to school as quickly as possible after the clean up. The students – well, after nearly a month away from school, even they may be happy to get back into their normal routine.



Photo by Robert Haynes

**Paul Madison, engineering and construction, and Capt. Adam Rasmussen, project management, examine the Portadam® constructed to protect Oak Grove School, Fargo, N.D., March 29.**

## Corps finds there's no small potatoes in a flood fight

By Diana Fredlund  
Portland District Public Affairs Office

When it comes to protecting residents from rising flood waters, Corps engineers use every tool available to them, including potatoes.

Not long after the Red River of the North crested March 29, 2009, at 40.82 ft., the National Weather Service posted a severe weather warning for Fargo, N.D., and Moorhead, Minn., calling for wind gusts up to 45 mph and upwards of 14 inches of snow.

Residents and city officials may have breathed a sigh of relief when the river crested with limited damage to local homes, but Corps flood fighters knew that blizzard-force winds were a danger to levees still working hard to hold back more than 30 feet of flood waters.

“We don't usually worry too much about wave action on rivers, because they're not often wide enough to generate many waves,” said Tim Bertschi, area engineer for the Fargo office. “Strong winds can push the water even in a narrow river, creating waves that could damage the levees.”

In order to protect the levees in places where the winds would blow directly against the river side, engineers decided to lay rolls of polyethylene, or poly, which is already used to control seepage, to help protect from saturation and hold the levee's shape.

“We believed the poly would limit the damage from wave action by keeping the waves from directly hitting the levee,” Bertschi said.

With the water still high against the levees, engineers knew they had to anchor the poly with

*Potatoes, continued on Page 13*



Photo by Frank Worley

The Corps and members of the North Dakota National Guard protected levees with polyethylene sheets in Fargo, N.D., March 30.

*Potatoes, continued from Page 12*

sandbags, but how to attach the sandbags without damaging the poly?

“We couldn’t poke holes in the poly to tie off the sandbags, because that would create a weakness the river would find right away and tear through it,” said Drew Savage, a quality assurance representative now from Los Angeles District who, when not fighting floods, works in project management.

That’s when potatoes, one of North Dakota’s major crops, joined the flood fight. “We knew other districts had used poly like this before, but there wasn’t time to call around and ask how they’d done it,” Savage said. “That’s when I suggested knotting the poly around potatoes. They were the right size and we knew you can find them at any grocery store.”

Farmers in North Dakota and Minnesota grow more than 40 million hundred-weight of potatoes per year, so finding around 100 bags of home-grown spuds was easy.

“At first someone suggested using tennis balls, but they’re expensive,” said Alex Nelson, a St. Paul civil engineer with the hydraulics and hydrology section. “We got the potatoes and practiced knotting them into the poly a few times, then showed the National Guard

Soldiers how to do it.” The poly was wrapped around each potato near the end of the sheet and a rope attached to a sandbag was tied around the potato, providing an anchor the river couldn’t tear through, Nelson said.

The North Dakota National Guard had deployed their citizen Soldiers to aid in the flood fight; and throughout the first crest, they’d had the primary responsibility for monitoring the levees for leaks.

“They were pretty tickled about tying potatoes, but we found the idea worked really well,” Nelson said.

After the first sheet was prepared, the National Guard unfurled the poly, complete with potatoes and sandbags, over the river side of the levee, which settled easily into place. The sandbags kept the sheets of poly directly against the levees.

“It was an on-the-fly, low-tech solution that worked very well,” Bertschi said. “We were able to deploy the poly to all the areas we were concerned about before the storm hit.”

The spirit of cooperation in Red River valley communities has been well documented – that spirit helped the residents fight this record-breaking flood.

Now there’s one more member to include in that cooperative team – one that proves in flood fighting, no tool is small potatoes.



Photo by Frank Worley

**Drew Savage, now a study manager with Los Angeles District, suggested a successful technique to wrap potatoes to sheets of poly and attach to sandbags. The technique served to protect levees from wind-generated wave action during a late March blizzard.**

# News and Notes

## First tow of season breaks ice on Lake Pepin March 23

The first up-bound tow boat and barges opened the 2009 navigation season when they broke through about 10 inches of ice on Lake Pepin on the Mississippi River, March 23.

The Motor Vessel Deana Ann, a tow operated by Marquette Transportation Company, Inc., Paducah, Ky., locked through Lock and Dam 4 in Alma, Wis., earlier that morning. The tow pushed 15 barges, 12 with agricultural commodities and three empties.

Lock and Dam 4 is the first lock and dam south of Lake Pepin. Lake Pepin is the last part of the river to break up because the river is wider and subsequently the current is slower there than at other reaches of the river. If a tow can make it through Lake Pepin, it can make it to St. Paul.

The average opening date of the navigation season for the last 30 years has been March 20.

**Photo at right: Scott Dummer, hydrologist in charge at the North Central River Forecast Center, National Weather Service, presented its Special Service Award to Dan Reinartz (left), engineering and construction, in June for his work as a liaison embedded with the Service for the 2009 flooding, Red River of the North.**



Photo courtesy Sherri Komrosky

**The Small Business Administration awarded Tom Koopmeiners (center), St. Paul District small business program manager, the Minnesota Veterans Small Business Champion of the Year Award at a Procurement Technical Assistance Awards reception in Brooklyn Center, Minn., April 30. From left: Randy Czaia, assistant director, Minnesota District Office, Small Business Administration, Minneapolis; Koopmeiners; and Col. Jon Christensen, St. Paul District commander.**



National Weather Service photo



## Postcard from Afghanistan



Kurt Reppe (left) with  
Lt. Col. Nicholas Rich

I have currently been in country 15 months and my tour ends the second week of November 2009. I've worked as real estate team leader in Bagram, May 2008 to Jan. 15, 2009; now chief, real estate, in Kandahar, Jan. 16 to present. Our #1 goal is to support the U.S. Forces. Currently supervise four realty specialists, one administrative support specialist and one more on the way. I intend to open and staff up a satellite office in western Afghanistan in support of the troops. My tour was to end in May 2009; however, in November 2008, the commander of AED approached me and asked if I would move to Kandahar, to be a part of standing up the new district office and become the chief of real estate for the real estate office at AED-South. That is why I extended my tour another six months. On August 3 we have an activation ceremony and will officially become a new district, Afghanistan Engineering District-South.

Kurt J. Reppe  
Chief, Real Estate Office  
Afghanistan Engineering District-South

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Kabul

Kazakhstan

Uzbekistan

Tajikistan

Tashkent

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