

On April 17, the Senate Environment and Public Works Committee held a field hearing in Glenwood, Iowa on March 2019 flooding in the lower Missouri River basin. Major General Scott Spellmon, Deputy Commanding General for Civil Works and Emergency Operations for the U.S. Army Corps of Engineers (Corps) testified. He was accompanied by John Remus, Chief of the Missouri River Basin Water Management Division. The following are excerpts from his written testimony.

“On the Missouri River, the flood event that began on March 13 was triggered by a bombogenesis, or ‘bomb cyclone’ rain event, which brought a significant amount of precipitation and warmer temperatures to a large area in central and western Nebraska, southeastern South Dakota, and western Iowa, and a portion of northern Missouri and Kansas. The combination of rainfall and warmer temperatures quickly melted the plains snowpack, and thawed its frozen soils, resulting in rapid runoff and ice jams. This led to record discharges on a number of tributaries of the Missouri River, particularly the lower Platte, Elkhorn, and Niobrara Rivers, and in portions of the main stem of the Missouri River downstream of these tributaries. These rivers rose quickly to flood stage, in some cases within the first 24 hours to 48 hours.

“Generally, the Corps operates the Missouri River Mainstem Reservoir System consistent with eight authorized project purposes – flood control, navigation, hydropower, water supply, water quality, irrigation, recreation, and fish and wildlife. However, flood control is the highest operational priority of the Corps during periods of significant runoff, when loss of life or property from flooding could occur. The Mainstem System includes six large dams: Fort Peck in northeastern Montana; Garrison in central North Dakota; Oahe, Big Bend, and Fort Randall in South Dakota; and Gavins Point along the Nebraska and South Dakota border. Together they comprise the largest reservoir System by storage volume in North America. Nearly all of the storage volume of the system (roughly 99 percent) is in the upper five of these dams. Together, these five upper dams can capture runoff from approximately half of the Missouri River drainage basin. However, they cannot hold back runoff from the rain that falls in the Missouri River watershed below these five dams. That is where most of the rain from the March 2019 storm, which flooded the lower Missouri River basin, fell.

“The Corps designed this system of the six main stem reservoirs to capture runoff from mountain and plains snowpack, and rainfall in the upper basin that could otherwise (in the absence of the reservoirs) result in flooding, and then release that water gradually over the year to serve the other seven authorized project purposes. However, the intent is to do this in a way that will also provide the greatest amount of flood risk reduction. The Corps achieves this objective by evacuating all of the water in the flood storage space before the beginning of the next year’s runoff season to create the flood storage space need for that next year. The Corps did not design the System to carry over flood water from one year to the next. We operate the six main stem dams as a system, governed by the Missouri River Master Water Control Manual, which is the water control plan that guides how much water we will release, and when, and for how long we will release it from the six reservoirs, consistent with the authorized purposes while maintaining compliance with all Federal laws....

“During last month’s flood event, the Niobrara River, one of the tributary rivers that enters the Missouri River just above the Gavins Point Reservoir, delivered record setting inflows into the Gavins Point reservoir. To provide a sense of scale, at its peak, the Corps estimates that the Niobrara River and its tributaries were sending more than 180,000 cubic feet per second of water into the Gavins Point reservoir – while the typical daily inflow during March is only 4,000 cubic feet per second.

“Gavins Point, the southernmost of the six dams of the System, contains less than one percent of the total System flood control storage. Gavins Point has some flood storage space, but is operated primarily as a re-regulation dam to smooth out the power peaking flows from the upstream reservoirs. We estimate that during this flood event the inflows into Gavins Point were over five times the dam’s designed flood storage capacity, so these large inflows quickly exceeded the ability to store the runoff, necessitating increased releases to prevent water from spilling over the spillway gates.

“We were, however, able to use the storage from the other five dams to mitigate some of this flood event. On March 13, during the time that the Niobrara River basin was peaking, the Corps shut down releases from Fort Randall Dam, which is the main stem dam that is immediately upstream of Gavins Point. By essentially impounding all of the water from the upper Missouri River basin during the worst of the flood, we were able to use all of the available space in Gavins Point reservoir to reduce the releases from Gavins Point dam to downstream areas at the peak of the flood.

“During the March 2019 flood, several of the tributary rivers that join the Missouri River below Gavins Point Dam, including the James (in South Dakota), Vermillion, Big Sioux, Floyd, Elkhorn, Papillion, and Platte Rivers, contributed

significantly to downstream Missouri River stages. Gage data show that many of the levees, in portions of Iowa, Nebraska, Missouri, and Kansas, overtopped before any of the increased releases from Gavins Point Dam reached these levees. These levees were overwhelmed by the record inflows, caused solely from runoff from these tributaries, which flow into the Missouri River below Gavins Point Dam....

“The day after the storm, we dispatched liaison teams to local levee districts to assist with the flood fight. These teams shared technical expertise and provided supplies such as sandbags, water pumps, and flood barriers. The ability of these teams to provide assistance during the flood reflects the strong working relationships that the Corps has developed across the country with local levee districts, county, state, and local emergency managers. Fortunately, over one hundred of these Corps partners were participating in Corps-led flood fight training the day before the disaster unfolded. The damage to levees in the region is extensive. Across a large area, extending roughly from near Omaha, Nebraska, to near Kansas City, Missouri, many levees overtopped during the flood. At least 32 levee systems were overtopped or completely under water and, at last count, the Corps had discovered 114 breach sites in these systems. Many other levees were damaged, some of them severely. It appears that many of the levees held firm until flood waters rose above the levee crests. In other cases, it is more difficult to say when the failures occurred, since the flood waters themselves often prevented inspectors from witnessing levee failures.”

He also said, “In North Dakota, the Red River of the North is currently in flood stage downstream of Fargo. In Colorado, we are seeing near record amounts of snow pack in the mountains. In California, snowpack exceeds 160% of average in portions of the Sierra Nevada Mountains. Additionally, significant weather systems have been coming onshore on the west coast causing major flooding along the Russian River north of San Francisco, as well as in the Willamette and Rogue River basins in Oregon. In many of these watersheds, Corps dams and reservoirs have been able to hold back enough water to prevent significant flooding downstream.”

Spellmon concluded, “In summary, the number one priority of the Corps in its operations is life and public safety. Our current focus remains to protect life, and work with the other Federal agencies and state and local authorities to help these communities recover from this flood.”

Also testifying at the hearing were: Cathy Crain, Mayor, City of Hamburg, Iowa; Leo Ettleman, Fremont County, Iowa farmer and community advocate; Joel Euler, Doniphan County, Kansas attorney; and Blake Hurst, Executive Director, Coalition to Protect the Missouri River.

Mayor Crain painted a picture of destruction with some eleven feet of water inundating two thirds of the town. “We had evacuated our lowest elevations. But this time the devastation went where flood water had never been.... It was 3:00 am when our senior housing was evacuated.... Our volunteer firemen carried them out in their nightgowns and pajamas, leaving their walkers, scooters, wheelchairs and treasures.... We had no water. We lost the water plant, wells, lift station, natural gas and City equipment.... No restaurant, gas station, hair salon, barbershop, parts store, drug store, grain elevator, insurance office, bank, motel or farm implement dealership can open. There are no dry buildings for our businesses to move too. They’re underwater and City Hall is housed at the grade school with laptops and cell phones.... We want our future in our town with our businesses back and everybody home again. We belong together. These people. This Community.” She noted that a 5-foot federal levee 5 miles away was inadequate for protection from the Missouri, while the town had been required to tear down a levee that in 2011 had held back 12 feet of water for 120 days and kept the town dry, because they couldn’t raise the \$5.6 million needed to bring the levee up to federal certification requirements. “The system is in desperate need of practicality. When we asked in 2012 to keep our levee, there was no funding for prevention, just emergency. Make prevention an option. Give small towns a chance.”

Mr. Euler from Troy, Kansas represents six drainage districts located in Kansas and Missouri beginning at the Kansas-Nebraska line to just north of Atchison, Kansas. He has assisted with regulatory, operation and maintenance, flooding and related activities since the “great flood of 1993 and including the events of 1998, 2009, 2011 and 2019.” These are primarily agricultural districts, but two also cover industrial/commercial and residential interests. Recent estimates of the value of the assets protected by district structures is in excess of \$2.7 billion, with an annual estimated input to the local economy of \$100 million. He addressed issues related to the Missouri River Mainstem Reservoir System Master Control Manual, the Missouri River Recovery Program, policies and procedures relating to the repair and improvement of existing levees, and the Corps involvement in the 2019 flooding.

Euler noted that without prioritization of purposes in the manual, “there is question among the downstream stakeholders as to the motives for operation of the system.” He emphasized the need for flood control, suggesting that the resources that would be saved from recovery efforts could be directed to the remaining seven purposes. He also questioned whether habitat work for species recovery “causes a degradation in the foreshore area [between the levees and river bank] which acts to impede the flow of water during a flood event. When the levees were initially designed the goal was to move the water downstream as quickly as possible....” He noted that in 1993 the Elwood Gladden Drainage District levee was overtopped and failed. At the district’s request, in 1995, the Corps conducted

a reconnaissance study of federal and local interests in improving the structure which led to a project management plan in 2014, and final cost estimate of \$70.7 million in 2017. A period of 22 years elapsed, slowed by inadequate federal funding for its share of the project and resulting in about a 50% cost increase.

Euler added: "The process for the repair or upgrade of an existing flood control project is the same process used to determine whether or not a new flood control project should be constructed.... Part of this process includes a cost-benefit analysis to determine whether or not the project has enough benefit to the affected area to justify the expenditure of funds to construct the project. This along with other environmental and comment requirements extend the time between a decision is made to repair or upgrade an existing structure and the time that the repair can be made. It would seem that if a project already exists it would be feasible to do away with a number of the prerequisites for construction." He commended the Corps on its efforts during the March 2019 flooding as a working partner in both the flood fighting activities, as well as flood repair and improvement activities, comparing it to his experience with the 1993 flood when the Corps was "difficult to reach and offered little or no assistance with regard to flood fighting efforts, levee monitoring or river level determination."

Mr. Ettlmann, a life-long farmer in and around Percival, Iowa, provided another view. "This flooding event happened quickly and essentially without warning from the Omaha District [which]...provided little communication with local levee sponsors and officials. Moreover, the information that was received from the Omaha District...was outdated by up to 24 hours and was not reliable. As a result, Basin residents were not able to make timely and informed decisions to protect human life and property such that millions of dollars of equipment and stored grain were lost as well as other private property. The Corps must do a better job of communication with Basin stakeholders.... Also the [U.S. Geological Survey] USGS stream gauge readings and National Weather Service [NWS] data was not current or accurate. Actual river crest levels were two, and in some locations, three feet higher than the information relayed on the NWS website.... This inaccurate information gave stakeholders a false sense of security as to evacuation, relocation, etc. Levee sponsors and stakeholders watch these websites numerous times daily during flood events and rely heavily on them."

A member of the Missouri River Recovery Implementation Committee (Mr. RIC), he also testified regarding significant changes to the Corps long-term risk management adopted in collaboration with the U.S. Fish and Wildlife Service in 2004 to protect endangered and threatened species, under the Missouri River Recovery Program (MRRP). These changes "...as mandated by Congress pursuant to the Endangered Species Act (ESA) and other acts such as the National Environmental Protection Act...played a major role in causing all the flooding since 2004, including 2019, flooding that would not have been as frequent and severe but for those changes.... While Mother Nature plays a role in providing water for flooding, the fact is that the manner in which that water is managed by the Corps plays a major role in whether that water ultimately results in the type of flooding that has been devastating the Midwest since the adoption and implement of the MRRP in 2004."

Hurst, a family farmer from Tarkio, is President of the Missouri Farm Bureau. His family raises row crops and operates a commercial greenhouse. Their farm had not been flooded, but an estimated "...187,000 acres have been flooded in four counties in northwest Missouri. As you know, this is extremely productive farmland with yields normally far above the state average. Most, if not all, of these acres will not be planted this growing season and we estimate the value of lost production of corn and soybeans alone at slightly over \$100 million, not including crops that were stored in bins and lost to the flood waters. Much has been said about this event, including criticism directed toward the U.S. Army Corps of Engineers (Corps). While there will be plenty of time to analyze if anything could've been done better, we're thankful for the Corps' efforts on several fronts, including positioning flood control gates at Gavins Point Dam to allow it to hold over two feet of extra water at Lewis and Clark Lake, and stopping releases from reservoirs in Kansas, the Osage River and Fort Randall Dam. These extraordinary measures undoubtedly prevented further damage."

He concluded: "Going forward, government agencies and stakeholders should engage in renewed discussion on how to enhance flood control throughout the system. While virtually all the discussion has centered on the mainstem Missouri River regulated by dams, it's worth noting this event primarily originated in the 'unregulated' portion of the basin, which produces just less than half of the average runoff into the Missouri River. Any discussion that ignores this important fact misses the mark. It's time to redouble our efforts on providing lower Missouri River residents with an improved flood control system that can better withstand events of the magnitude we're seeing in 2019.... Serious consideration must be given to increased upstream flood control storage, whether that be in the mainstem dams or on tributary projects. Any proposed change in flood control storage must also keep an eye toward times of drought, which the Missouri River system is just as prone to.

See: <https://www.epw.senate.gov/public/index.cfm/hearings?ID=298FB2A9-A163-4238-92EA-C020221C797A>.