

**DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS**

COMPLETE STATEMENT OF

**MAJOR GENERAL SCOTT A. SPELLMON,
DEPUTY COMMANDING GENERAL FOR CIVIL AND EMERGENCY
OPERATIONS**

AND

**JOHN I. REMUS II,
CHIEF OF MISSOURI RIVER BASIN WATER MANAGEMENT**

BEFORE

**COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE**

ON

**THE U.S. ARMY CORPS OF ENGINEERS MANAGEMENT OF THE 2019
MISSOURI RIVER BASIN FLOODING**

APRIL 17, 2019

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to speak with you today about the March 2019 flooding of the lower Missouri River basin. I am Major General Scott Spellmon, Deputy Commanding General for Civil Works and Emergency Operations for the U.S. Army Corps of Engineers (USACE). I am joined by Mr. John Remus, the Chief of our Missouri River Water Management Branch from the USACE Northwestern Division. We would like to discuss how the Corps operated the Missouri River Mainstem Reservoir System during this runoff event, and to provide an initial assessment of the extensive damage that the flooding caused to the area's levee systems.

The Corps works with other Federal agencies and with state and local authorities to help affected communities in advance of and during a major flood. During this period, the number one priority of the Corps is to help the affected communities reduce their flood risk, with emphasis on public safety. After the floodwaters have begun to subside, the Corps also is involved in the repair of damage to levee systems.

The Corps would first like to acknowledge the widespread devastation and serious impacts this spring's Missouri River flooding has created for many people throughout the region. The Assistant Secretary of the Army for Civil Works and Corps leadership, have witnessed these impacts firsthand during numerous visits to the basin. Our Corps personnel have been working tirelessly to help reduce the effects of this flood, and to provide assistance to states and local communities.

Beyond the Missouri River basin, this year's flood season has challenged Federal and State agencies and local communities across the Nation. At one point, over 300 river gauges indicated a flood stage somewhere in the Nation, and there were over 183 reported ice jams on rivers across the northern portions of the country. In the Ohio River valley, this past fall and winter were the wettest on record in the past 124 years and we have seen record reservoir levels in our Cumberland River Projects. Our Lakes and River Division has been in flood operations for over 100 days. Our New Orleans, Vicksburg and Memphis Districts have been flood fighting on the Lower Mississippi for the past 160 days. 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.

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.

In large runoff years, such as 2018, or during an extreme hydrologic event, such as last month's bomb cyclone, the flood control objective drives our operational decisions. During average and in below average runoff years, we generally operate the system for flood control and to meet flow targets in the lower river, such as navigation.

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.

As I have said, because of hydrologic conditions in the lower Missouri River basin since March of 2018, our operational decisions on the six main stem dams have been driven by life safety and loss of property concerns. During this critical period, our principal and

sole focus has been on the flood control purpose of the system. For example, considerations related to the endangered and threatened fish and birds of the main stem did not influence our reservoir operations during this flood event.

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.

As the flood waters recede, the Corps has begun to implement temporary measures under our Public Law 84-99 program authority. For example, the Corps is working to close two breaches upstream of the city of Hamburg, Iowa. It will require nearly one million cubic yards of material to complete emergency, initial closures. This is equivalent to 100,000 dump truck loads of material. The Corps is also providing emergency assistance to the community of Peru, Nebraska, by constructing a berm around a sewage treatment facility in the floodplain; and to the communities of Pacific Junction and Glenwood, Iowa, by providing protection to a water treatment facility in the floodplain.

The Corps took specific actions to ensure effective communication with those affected by the flood in an open and transparent manner through a variety of forums. Starting on March 14, the Omaha and Kansas City District Commanders personally engaged daily the local levee districts, the state and local governments, and tribal governments to provide updates on flood conditions. Our Liaison officers are also embedded with the FEMA Region Joint Field Offices in Nebraska and Iowa. Daily press releases kept the public informed of changes in risk forecasts, including information on any changes in releases from Gavins Point Dam. Social media platforms including Facebook and Twitter were used to provide the latest updates to the public as well.

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.