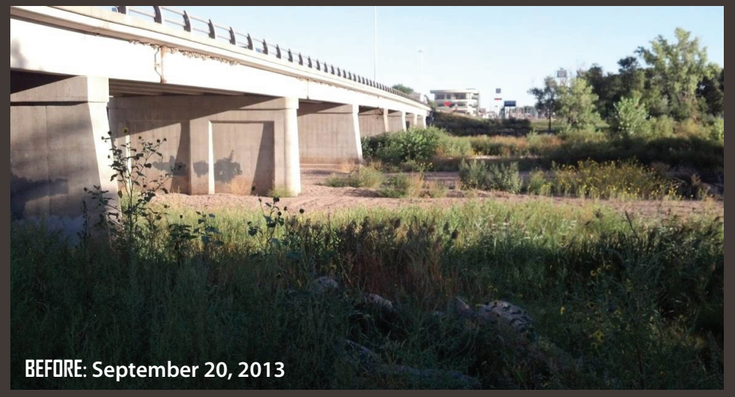
BEFORE & AFTER: SOUTH PLATTE BRIDGE IN NORTH PLATTE, NE



BEFORE: September 20, 2013

Record flood stages were noted at North Platte, Nebraska, on September 23, 2013. A crest of 14.4 feet was recorded with an approximate flow of 19,200 cfs.

AFTER: September 21, 2013

COORDINATION WITH LOCAL, STATE AND NATIONAL ORGANIZATIONS ENSURES SUCCESSFUL RESULTS

The protection and safety of communities along the South Platte River and the successful diversion of water and recharge to the river were possible because agencies and organizations at all levels worked together to establish and implement protocols.

Organizations that coordinated with the DNR include:

- Colorado Division of Water Resources
- Colorado Highway Patrol
- Irrigation Districts
- Local fire departments
- Local governments
- Local sheriffs
- National Weather Service
- Natural Resources Districts
- Nebraska Department of Environmental Quality
- Nebraska Department of Roads
- Nebraska Emergency Management Agency
- Nebraska State Patrol
- United States Army Corps of Engineers
- United States Geological Survey

DNR'S COORDINATED EFFORTS IN

MANAGING FLOOD FLOWS

LASTING BENEFITS

The DNR's actions resulted in many positive outcomes; most notably, the Department:

- Accurately assessed river levels to within a half foot at all times, ensuring appropriate public safety measures.
- Effectively employed a feedback loop with emergency responders, fostering future reliability.
- Successfully implemented integrated management plan practices.

The benefits of diverting and recharging the water include:

- Attenuating peak flows to prevent flooding.
- Contributing to steady water supply in the river for years to come.
- Supporting sustainability of endangered wildlife that includes the Whooping Crane, Interior Least Tern and Piping Plover.

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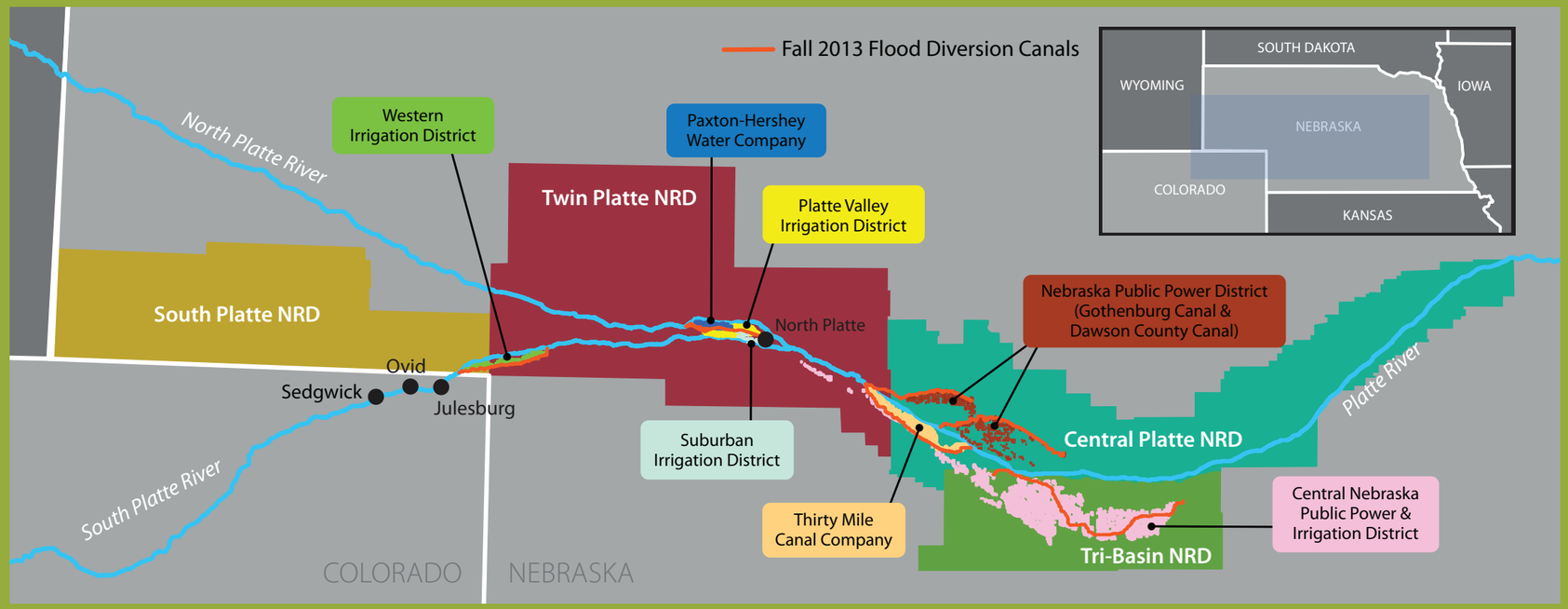
SEPTEMBER 9–16, 2013

In September of 2013, a week-long rain event in the Rocky Mountain Front Range led to unprecedented floodwaters in Colorado. Anticipating that those waters would inundate the South Platte River in Nebraska, the Department of Natural Resources organized and executed a coordinated effort to ensure the safety and protection of impacted communities and to divert the flood flow and recharge the aquifers, ultimately resulting in long-lasting benefits to Nebraska.

"The expeditious work by all parties in developing and implementing these agreements is a wonderful demonstration of what can be achieved when all parties are able to work in close collaboration toward the same goal."

– Brian Dunnigan
Director of the Department of Natural Resources



LAYING THE GROUNDWORK

Although state authorities historically have worked with irrigation districts to divert water and mitigate flood situations, there previously was not an organized process in place to capitalize on the aquifer recharge and environmental benefits these diversions can offer. In 2008, when the Natural Resources Districts (NRDs) and the DNR began to develop Integrated Management Plans (IMPs) for the current and future management of water in the districts, a key component of each plan was the pursuit of ground water recharge. The finalized IMPs stipulated that, when there were excess flows like those produced by the flood, the DNR, NRDs and irrigation districts would work together to take advantage of it.

In 2011, the DNR, NRDs and irrigation districts conducted a controlled pilot project to test the ability to divert flows for the benefit of ground water recharge. Flood flows from snow melt were forecasted early enough to provide a two-month window in which the DNR could address administrative issues, obtain the necessary permits and create a template contract that satisfied the needs of all the parties involved. The result was a coordinated plan that had earned the buy-in and support of the NRDs and the irrigation districts.

Having a vetted, coordinated process already in place in 2013 allowed the DNR to act quickly, organizing the efforts to capture and recharge September's flood waters in less than two days.

DIVERSION PARTNERS

NRDs:

- Central Platte NRD
- South Platte NRD
- Tri-Basin NRD
- Twin Platte NRD

Irrigation Districts:

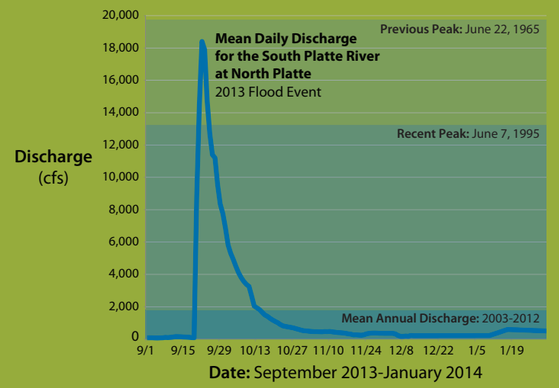
- Central Nebraska Public Power and Irrigation District
- Nebraska Public Power District
- Paxton-Hershey Water Company
- Platte Valley Irrigation District
- Suburban Irrigation District
- Thirty Mile Canal Company
- Western Irrigation District

DNR TEAMS

BRIDGEPORT FIELD OFFICE – Administers surface water to users, operates stream gaging stations and computes stream flow records for the panhandle and North Central Nebraska.

FLOODPLAIN MANAGEMENT – Provides technical assistance to state agencies, federal agencies and the public to include identifying and delineating floodplains and floodways.

INTEGRATED WATER MANAGEMENT – Provides technical expertise, planning and coordination to ensure the successful implementation of the integrated management process.



Values from October 1, 2012 to present are considered provisional and subject to revision upon further review.

SEPTEMBER 2013 FLOOD EVENT TIMELINE

SEPT 9-13

Colorado has record-breaking rainfall of 15 to 18 inches. Initial flood measurements vary widely, from 20,000 to 60,000 cubic feet per second (cfs), due to loss of stream-gaging equipment.

SEPT 12-19

Bridgeport Field Office personnel head to Sedgwick, CO, working up and down the river to assess what magnitude of flood Nebraska needs to prepare for. The field office remains in constant contact with the **Floodplain Management** team to provide them accurate stream gage readings for the preparation of floodplain maps.

SEPT 13

Floodplain Management notifies the Nebraska Emergency Management Agency (NEMA) of the potential for floodwaters to come into the South Platte River by September 17th. Early notification allows NEMA several days to mobilize emergency management efforts and notify the public, ensuring public safety and protection of infrastructure.

SEPT 13-17

Integrated Water Management notifies Natural Resources Districts (NRDs) and the irrigation districts of the situation. Using the established Integrated Management Plans (IMPs) and templates from the 2011 ground water recharge agreements as a framework, contracts are established to manage the diversion of the floodwaters.

SEPT 16

Floodplain Management organizes its engineers and geographic information system (GIS) experts and within hours creates initial potential flood inundation maps, showing potential extents of the flooding and depths of waters. Because early readings of the floodwaters are so varied, **Floodplain Management** creates a tiered series of flood maps and continually updates their assessments based on the constant stream of information coming from the **Bridgeport Field Office**.

SEPT 16-23

Information gathered in the field by the **Bridgeport Field Office** and the maps developed by **Floodplain Management** are provided to the National Weather Service's Missouri River Flood Forecast Center at regular intervals to assist them in forecasting when the river will peak and the resulting crest stage.

SEPT 17-19

Based on its measurements at Sedgwick, Ovid and Julesburg, CO, the **Bridgeport Field Office** assesses that the flood flow is approximately 20,000 cfs as it enters Nebraska. **Floodplain Management**, based on its knowledge of the current river levels and existing vegetation in the river bed, concurs with this assessment.

SEPT 17-23

Integrated Water Management, the **Bridgeport Field Office,** the NRDs and the irrigation districts coordinate the timing of diversions to attenuate the peak flood flows. The diversions recharge the aquifer, allowing water to seep into the ground beneath the canals and lakes along the South Platte and Platte Rivers. Estimates show that recharge from the diversions will positively impact water supplies for the next 50 years.

SEPT 25

As water levels recede, a review of the previous week's events shows the coordinated efforts of the DNR and several national, state and local organizations has proved highly effective, with very minimal damage to homes, businesses, roads and other infrastructure throughout the region.