



Grand Forks Water Treatment Plant

Full Mitigation Best Practice Story

Grand Forks County, North Dakota

Grand Forks, ND - The City of Grand Forks experienced a devastating flood in 1997. Structures, personal property, and infrastructure, including the Grand Forks Water Treatment Plant (GFWTP), sustained extensive damage. Once the City's water reserve was depleted, the distribution system depressurized and became contaminated.



The only viable solution was to get the GFWTP back on line to provide water and fire protection to 50,000 residents, various industries, and the U.S. Air Force Base. The GFWTP was producing water 13 days after being inundated, using only emergency repairs. Extensive flushing and testing of the distribution system was necessary to ensure that potable water was in the system.

To limit the effects of future flooding events of similar or greater magnitude, city officials embraced the concept of mitigation and protection planning. With 406 Mitigation funds, the City developed two flood protection plans to provide two levels of protection. The large, flat drainage basin of the Red River Valley, results in a relatively slow, stable rise of the Red River during the spring snow melt, which makes a two-level, flood protection plan feasible.

The first-level plan uses a series of strategically positioned slide gates, valves, and flood shields to protect the plant to the 100-year flood elevation with one foot of freeboard. The second-level plan assumes an extreme 250-year event and provides a ring dike and additional gates to protect the plant.

With Hazard Mitigation Grant Program (HMGP) funds, mitigation of electrical equipment consisted of elevating components or changing to submersible components. The transformers and a primary feed structure were relocated, elevated, and altered. The alterations will allow an inundated transformer to be bypassed, which will prevent the shorting out of the rest of the electrical system.

The equipment mitigation and the two flood protection plans are incorporated into an overall Flood Protection Plan, which will also guide City staff in flood preparedness and response. The GFWTP Flood Protection Plan is an excellent example of flood emergency response, mitigation, and protection planning that will minimize future potential flood impacts.

Activity/Project Location

Geographical Area: **Single County in a State**

FEMA Region: **Region VIII**

State: **North Dakota**

County: **Grand Forks County**

City/Community: **Grand Forks**

Key Activity/Project Information

Sector: **Public**
Hazard Type: **Flooding**
Activity/Project Type: **Flood-proofing; Utility Protective Measures**
Activity/Project Start Date: **04/1997**
Activity/Project End Date: **Ongoing**
Funding Source: **Hazard Mitigation Grant Program (HMGP); Other FEMA funds/ US Department of Homeland Security**
Funding Recipient: **Lifelines - Water/Sewer**
Funding Recipient Name: **Grand Forks Water Treatment Plant**

Activity/Project Economic Analysis

Cost: **\$1,596,725.00 (Estimated)**

Activity/Project Disaster Information

Mitigation Resulted From Federal Disaster? **Yes**
Federal Disaster #: **1174 , 04/07/1997**
Value Tested By Disaster? **No**
Repetitive Loss Property? **Unknown**

Reference URLs

Reference URL 1: <http://www.floodsmart.gov/>

Reference URL 2: <http://www.fema.gov/>

Main Points

- Once the City's water reserve was depleted, the distribution system depressurized and became contaminated.
- The City developed two flood protection plans to provide two levels of protection: 1) a series of slide gates, valves, and flood shields, and 2) a ring dike and additional gates to protect the plant.
- The alterations will allow an inundated transformer to be bypassed, which will prevent the shorting out of the rest of the electrical system.