

City of Minot – Public Works



Overview of 2011 Flood Damage and Flood Infrastructure Mitigation Efforts

July 16, 2012



Disaster Overview

- Flood Peak June 25, 2011
- Topped 130 year-old high water record by 4 feet
- 450 year flood
- 4,100 structures damaged
- 64 City of Minot project worksheets established requesting FEMA funding



Operations

- Over 750,000 CY Clay hauled to levees
- 200+ trucks
- 100+ Dozers, loaders, backhoes, skidsteers
- 40+ pumps
- 2 million+ sandbags
- 1 ton bags – blackhawk helicopter placement
- 100+ PW personnel
- 800 National guard soldiers



Summary of Flood Damage and Response

City of Minot

- 4,100 homes were flooded
- 3,100 homes extensively damaged or lost
- 1 in 10 homes with flood insurance
- 11,000+ individuals displaced
- 6 Minot PS severely damaged
 - 2 schools complete losses
- 1,200 students displaced
- 200+ businesses damaged
- 51 park buildings damaged
- 5 baseball fields damaged
- 29 zoo buildings damaged
- Roosevelt pool and bathhouse lost
- Oakpark splash pad and mechanical building lost
- 9 playgrounds damaged
- 12 churches damaged
- 20 + water system breaks
- 12 of 27 sanitary lift stations inundated with water
- 13 (all) water wells inundated with water
- 6 river pump stations damaged
- 30 to 40 sink holes from ground water
- 3 pedestrian bridges damaged
- 2 highway/street bridges damaged
- 277 street lights damaged
- 16 electrical feed points damaged
- 1,000 traffic signs damaged
- 51 miles of roads, sewer and water lines damaged
- 33 miles of storm sewers damaged

Landfill Operating Challenges

- Average inert debris coming into Minot Landfill – 15,000 – 25,000 tons per year
- Average inert debris post flood – 2,500 tons per day.
- 7 day a week operations
- Total Inert Debris – 2011 – 120,000 tons
- Debris pickup cost \$10,000,000
- Operation cost for flood debris - \$1,400,000

Hazard Mitigation Status

Hazard mitigation request process

- Complete a NEMIS State Project Application for each project
- Goal is to demonstrate to FEMA that the value of project benefits exceed construction costs



Hazard Mitigation Project Applications in Progress

- 6th Street SW Underpass Pump Station & Storm Drain Improvements
 - Upgrade pumps and sewer to drain underpass
- Water treatment plant flood mitigation
 - Construct flood walls / levees at the plant
 - Repairs to the 16th street bridge
 - Relocate raw water intake
 - Drainage repairs at the 16th street underpass

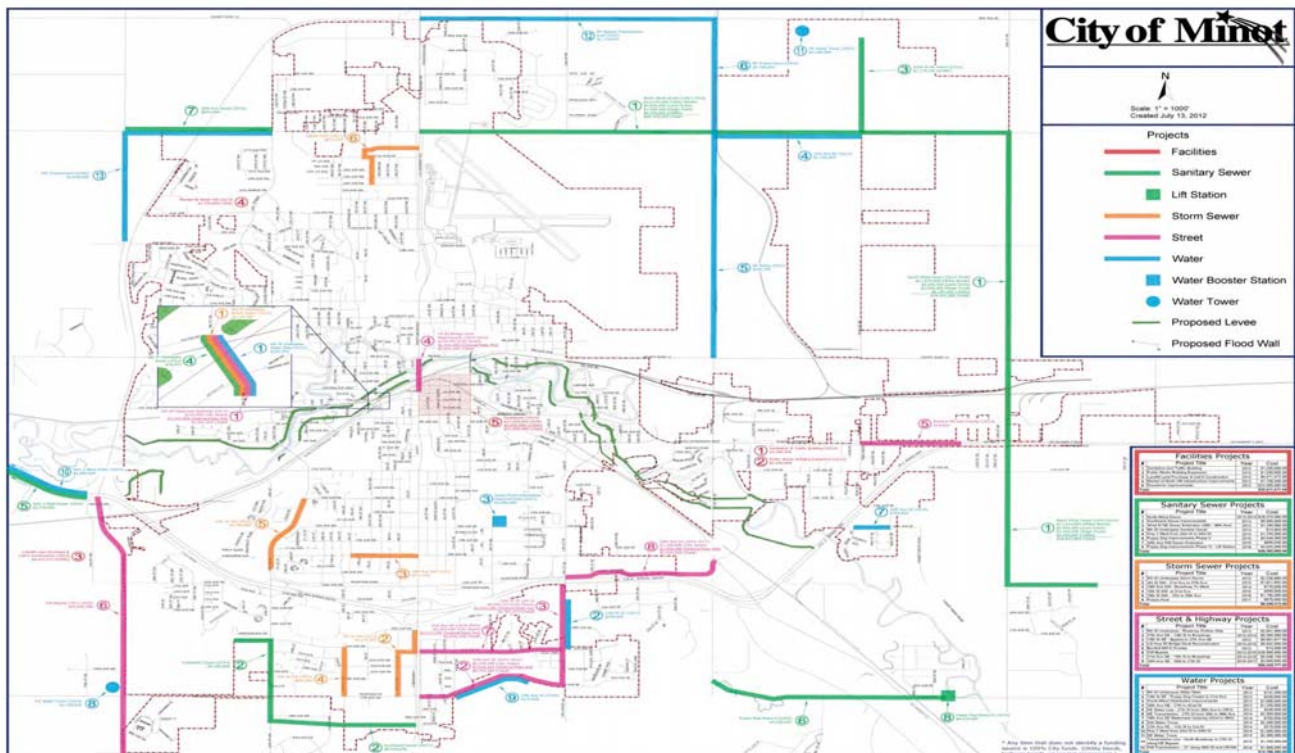


Hazard Mitigation Project Applications in Progress

- Eliminate gravity sewer river crossings
- Consolidate storm sewer outfalls.
 - 3rd St NE Storm drain
 - 3rd St SW Storm drain
 - Storm water lift station generators
- Improve communications network
- Upgrade six lift stations with emergency generators – USACE pump stations



City of Minot Project Map



Mouse River Enhanced Flood Protection Project: Preliminary Engineer's Report: Minot Reach

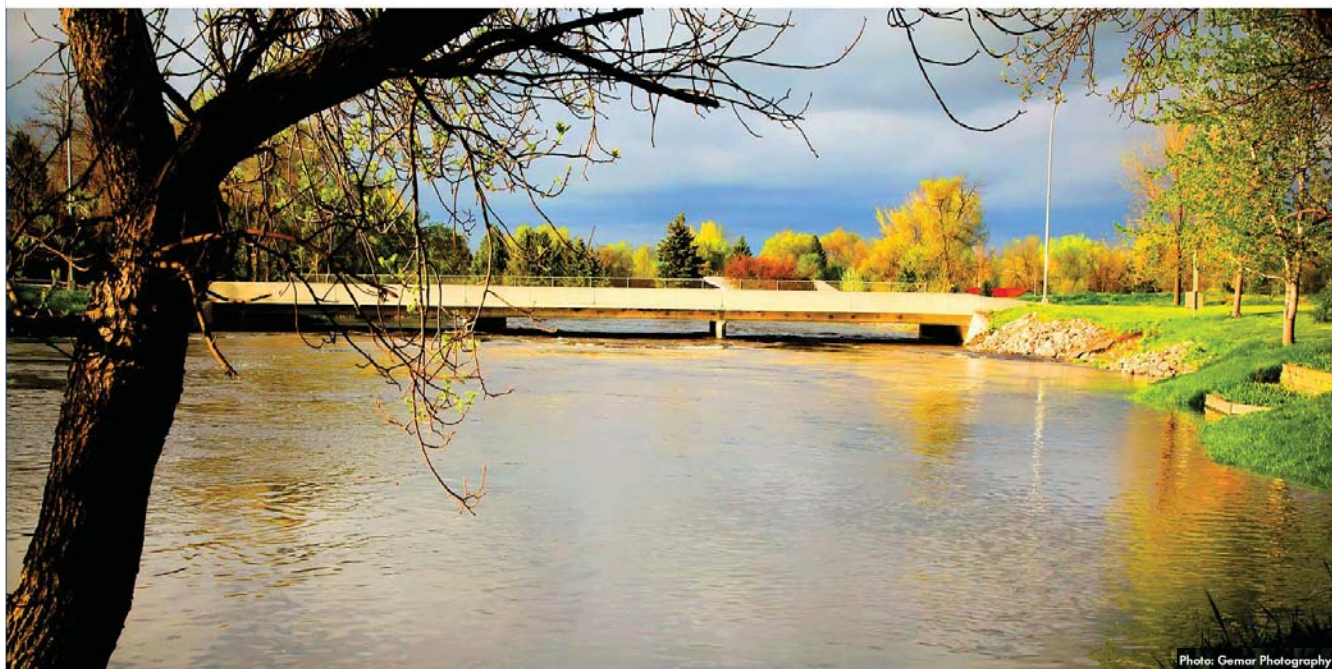


Photo: Gemar Photography



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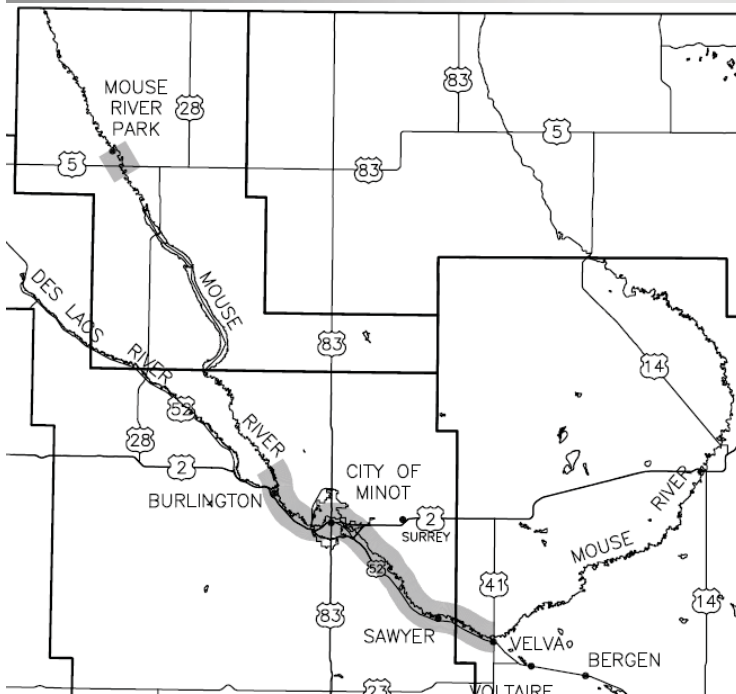
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Study Timeline

Schedule Overview—Major Milestones

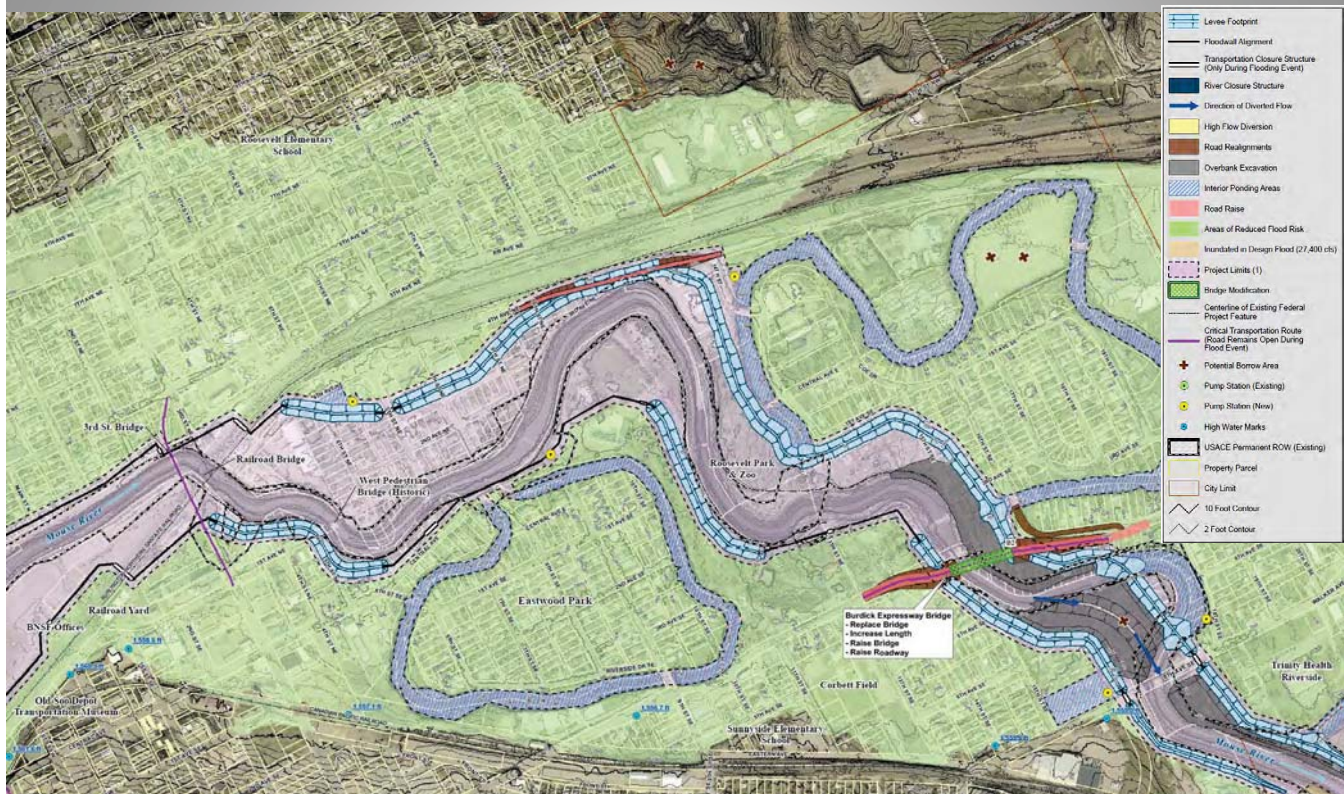
- ◆ Sept. 26 — Contract Award
- ◆ Oct. 5–7 — Three-Day Working Meeting
- ◆ Nov. 3 — First Draft of Preliminary Alignment
- ◆ Nov. 30 — Preliminary Alignment Available for Public Review
- ◆ Feb. 29, 2012 — Preliminary Engineering Report Completed

Current Study Scope and Objectives



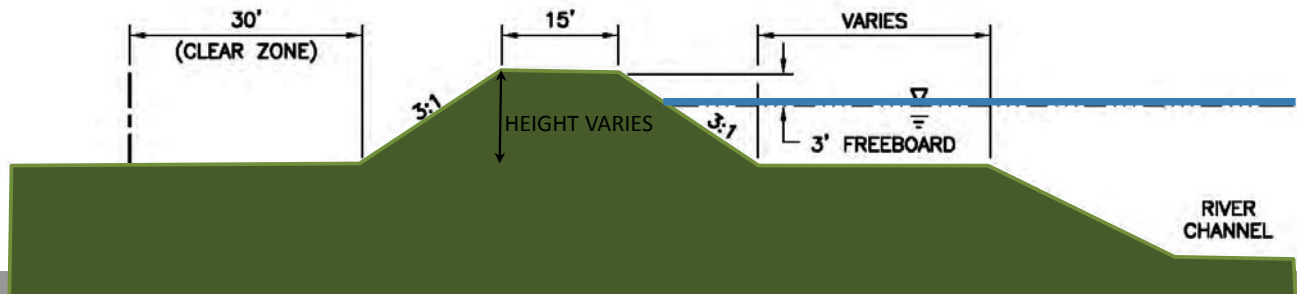
- Scope
 - Design a flood risk reduction project from Burlington to Velva and Mouse River Park for the June 2011 flood of record
- Objectives were established by stakeholders at October workshop (not a comprehensive list)
 - Design for 27,400 cfs
 - Incorporate 3 feet of freeboard
 - Reduce the flooding risk for as many homes as possible
 - Maintain critical transportation routes (e.g. Highway 83 Bypass, Broadway Bridge, Burdick, Highway 2 Bypass, and Highway 52)

Alignment features



Preliminarily alignment contains 8 $\frac{3}{4}$ Miles of levees in Minot

Item	Units	Reaches Upstream of Minot	Reaches Through Minot	Reaches Downstream of Minot	All Project Reaches
Length of Levee	feet	38,200	46,300	29,500	114,000

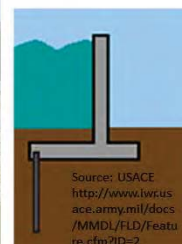


Preliminarily alignment contains 2 $\frac{1}{4}$ Miles of floodwalls in Minot

Item	Units	Reaches Upstream of Minot	Reaches Through Minot	Reaches Downstream of Minot	All Project Reaches
Length of Levee	feet	1,100	11,800	2,000	14,900



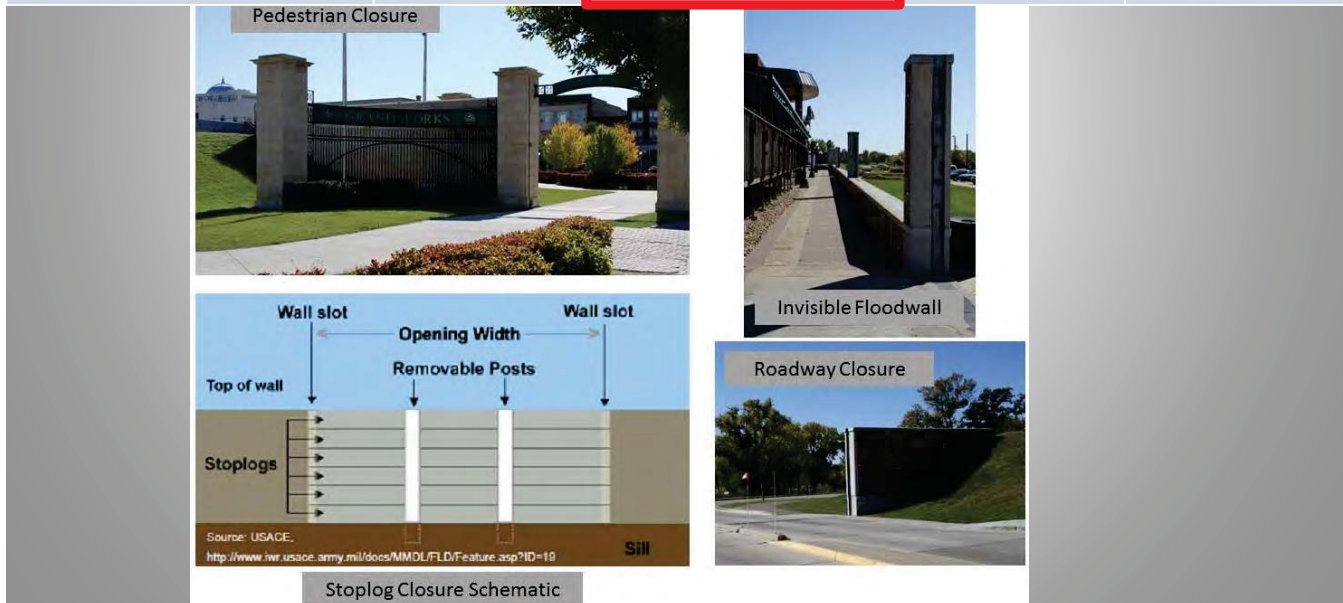
Floodwall Examples



Floodwall Schematics

Preliminarily alignment contains 20 Transportation Closures in Minot

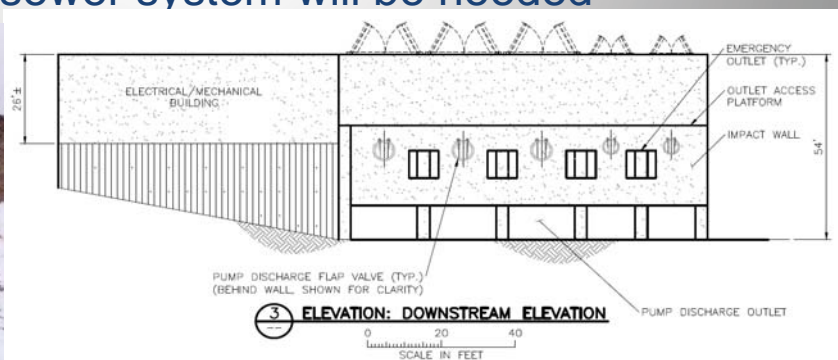
Item	Reaches Upstream of Minot	Reaches Through Minot	Reaches Downstream of Minot	All Project Reaches
Transportation Closures	2 (1 road & 1 RR)	20 (16 road & 4 RR)	8 (2 road & 6 RR)	30 (19 road & 11 RR)



Preliminarily alignment contains 16 pump stations in Minot

Item	Reaches Upstream of Minot	Reaches Through Minot	Reaches Downstream of Minot	All Project Reaches
Pumping Stations	8	16	9	33

- Pump stations in Minot range in size from 2000 gpm to 360,000 gpm
- Largest pump station is sized to handle Livingston Coulee flows
- Upgrades to storm sewer system will be needed



Preliminarily alignment contains 2 high flow diversions in Minot – Maple Street and 27th St



Summary of affected parcels in Minot

Estimated Number of Properties in Minot to be Acquired for the Preliminary Alignment Project

Zoning	Number of Parcels Affected
Commercial	21
Industrial	74
Residential with Building	278
Residential without Building	92
Public/Park	7
Undeveloped	4
TOTAL	478

Summary of Parcels in Minot Partially Impacted by the Preliminary Alignment Project

Number of Parcels	273
Total Acreage	192

NAWS Status



- Currently working on filter reconstruction at Water Treatment Plant
- Water service to MAFB, Glenburn and Lansford in 2012
- Begin design work on Northern Tier Facilities
- Supplemental EIS – Fall 2012
- ROD Spring/Summer 2013

Thank You

Questions?