

Fargo-Moorhead Metropolitan Feasibility Study

Presentation for downstream stakeholders

June 16, 2010



US Army Corps of Engineers
BUILDING STRONG®



Presentation Overview:

- ✓ Why We are Here
- ✓ Purpose and Scope
- ✓ Alternatives Considered
- ✓ Screening Results
- ✓ Tentatively Selected Plan
- ✓ Downstream Impacts
- ✓ Schedule

Why we are here:

- ✓ To present the findings and information contained in the Draft Fargo-Moorhead Metropolitan Feasibility Report and Environmental Impact Statement
- ✓ Gather public comments on the Draft report and its contents
- ✓ Discuss the downstream impacts and what could be done to offset the impacts



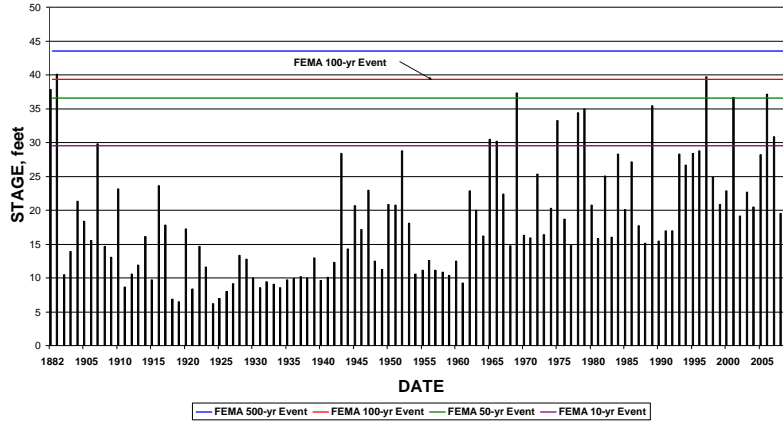
Fargo-Moorhead Flood 2009

Purpose and Scope:

- ✓ Reduce flood risk and flood damages in the Fargo-Moorhead metropolitan area.
- ✓ Restore or improve degraded riverine and riparian habitat in and along the Red River of the North, Wild Rice River (North Dakota), Sheyenne River (North Dakota), and Buffalo River (Minnesota) in conjunction with other flood risk management features.
- ✓ Provide additional wetland habitat in conjunction with other flood risk management features.
- ✓ Provide recreational opportunities in conjunction with other flood risk management features.

Existing Conditions

Annual Peak Stages
U.S.G.S Station - 05054000



*Hydrologic record shows two periods: wet and dry

Alternatives Considered:

- ✓ No Action: Continue Emergency Measures
- ✓ Nonstructural Measures
 - ✓ Buyouts, Relocations and Elevate
- ✓ Increase Conveyance
 - ✓ Diversion Channels
- ✓ Flood Barriers
 - ✓ Levees/Floodwalls
- ✓ Flood Storage
 - ✓ Large/Small



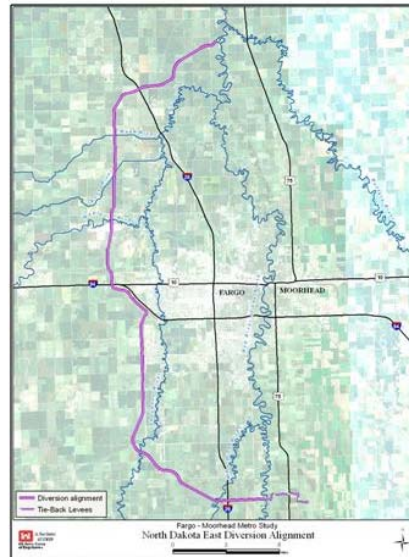
Screening Results:

- ✓ Diversion channels with tie back levees
 - ✓ Minnesota
 - ✓ North Dakota



North Dakota alignment:

- ✓ 30K and 35K cfs
- ✓ 36 mile-long channel
- ✓ 3.3 miles of tie back levee
- ✓ 8.5 years construction
- ✓ Structures needed
 - ✓ 2 Control structures
 - ✓ 2 River aqueducts
 - ✓ 2 Tributary drop structures
 - ✓ 3 Drop structures
 - ✓ 18 Highway bridges
 - ✓ 4 Railroad bridges



Screening Results:

Screened Alternatives Ranked by Net Benefits with Cost and Schedule Risk Assessment

Alternative	Cost ¹	Avg Annual Net Benefits ¹	Avg Annual Benefits ¹	Residual Damages ¹	B/C Ratio	Local Share ^{1, 3}	Federal Share
MN Short Diversion 20K	\$1,032	\$87.0	\$140.0	\$55.9	2.64	\$403	\$629
MN Short Diversion 25K	\$1,121	\$98.8	\$156.4	\$39.5	2.71	\$392	\$728
MN Short Diversion 30K	\$1,194	\$101.7	\$163.1	\$32.8	2.66	\$420	\$774
MN Short Diversion 35K	\$1,286	\$104.9	\$171.0	\$24.9	2.59	\$450	\$836
MN Short Diversion 40K ²	\$1,367	\$105.6	\$175.9	\$20.0	2.50	\$480	\$886
MN Short Diversion 45K ²	\$1,450	\$104.9	\$179.5	\$16.4	2.41	\$564	\$886
ND East Diversion 35K	\$1,462	\$95.4	\$171.1	\$24.8	2.26	\$626	\$836

1. In millions of dollars with interest during construction and discounting included
 2. Estimate based on linear extrapolation
 3. Calculations based on assumption that cost share for ND35k is based on MN35k others on NED of MN40k
 Expected average annual damages without a project are \$195.9 million.

Effectiveness of Diversions:

	Stage at Fargo Gage (ft)	
	1% Chance (100- year)	0.2% Chance (500- year)
Existing Condition (Stage)	42.4	46.7
Existing Condition (CFS)	34,700	61,700
Work Group Goal	30	36
20K MN Diversion Channel	36.9	43.7
25K MN Diversion Channel	34.8	42.4
30K MN Diversion Channel	33.6	41.9
35K ND Diversion Channel	30.6	40
35K MN Diversion Channel	31.9	39.6
40K MN Diversion Channel	31.9	37.6
45K MN Diversion Channel	31.9	35.3



Fargo, N.D., March 26, 2009

Stage	Impacts
27	Fargo Elm Street closed
30	Fargo 2nd Street Dike installed
31	Moorhead 1st Ave. North closed
32	First homes in Moorhead threatened
35	First homes in Fargo threatened
40.8	2009 Flood Record Stage



Locally Preferred Plan :

- ✓ Identification of Locally Preferred Plan (LPP)
 - ✓ The Local sponsor identified the ND 35k diversion channel as the LPP, and reaffirmed their commitment on May 26, 2010.
 - ✓ Waiver obtained from Assistant Secretary of the Army for Civil Works

Tentatively Selected Plan:

- ✓ The North Dakota 35k diversion channel is the tentatively selected plan.

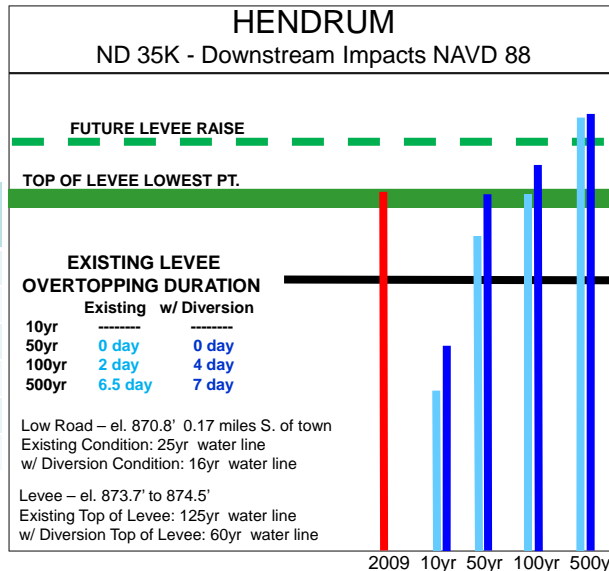
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- HWY 75
- LEVEE
- EXISTING CONDITION
- w/ DIVERSION CONDITION

	Existing Elev.	w/ Diversion Elev.
10 yr	867'	868.4'
50 yr	872'	873.4'
100 yr	873.5'	874.4'
500 yr	875.9'	876.0'
2009	873.55'	
NGVD 29 = NAVD 88 - 1.12'		



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Downstream Effects:
Based on 35K diversions and 100-year event

Location	Stage increase (inches)
Minnesota Short 35K - 100 Year	
Halstad Gage	6.7
Peak	7.2
Hendrum	6.8
Perley	4.8
Georgetown	4.7
North Dakota 35K - 100 Year	
Halstad Gage	10.7
Peak	11.6
Hendrum	10.7
Perley	6.6
Georgetown	7.1

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Downstream Effects:
Based on 35K diversions for 10 and 50-year event

Location	Stage increase (inches)
Minnesota Short 35K - 10 Year	
Halstad Gage	6.5
Hendrum	4.9
Perley	4.4
Georgetown	3.7
North Dakota 35K - 10 Year	
Halstad Gage	20.6
Hendrum	16.6
Perley	12.8
Georgetown	10.8

Location	Stage increase (inches)
Minnesota Short 35K - 50 Year	
Halstad Gage	9.2
Peak	11.6
Hendrum	11.9
Perley	7.4
Georgetown	5.6
North Dakota 35K - 50 Year	
Halstad Gage	14.4
Hendrum	16.8
Peak	17.0
Perley	9.8
Georgetown	8.2

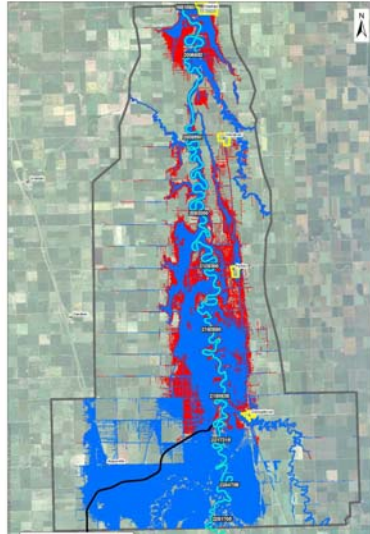
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Downstream effects:

Based on ND35K diversion and 10-year event



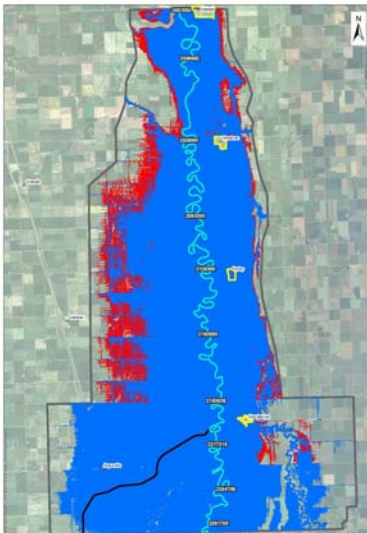
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Downstream effects:

Based on ND 35K diversion and 50-year event



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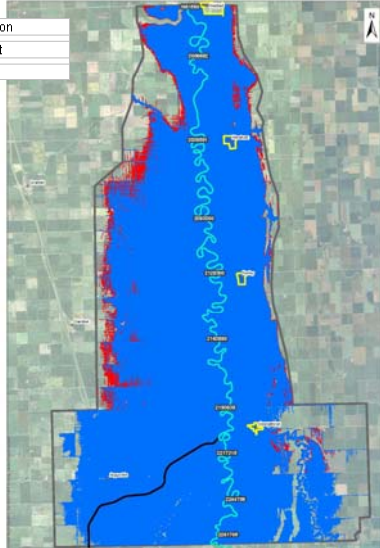
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Downstream effects:

Based on ND 35K diversion and 100-year event

- 100 Year Event Existing Condition
- 100 Year Event with 35K Project
- Protection



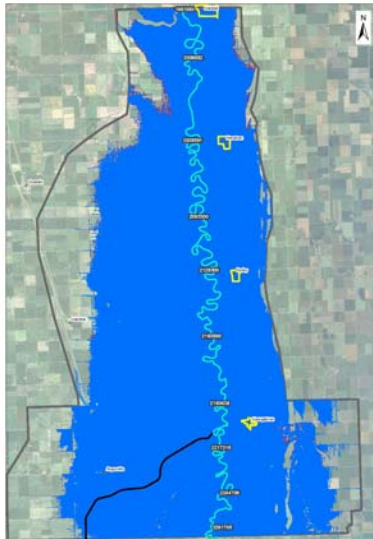
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Downstream effects:

Based on ND 35K diversion and 500-year event



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What is being done downstream?

- ✓ Additional analysis on extent of downstream impacts.
- ✓ Analysis of downstream communities/farmsteads to determine if federal participation is justified.
- ✓ Efforts from state and local agencies to assist in offsetting the impacts.



Red River of the North

F-M Metro Study Timeline:

- ✓ Jul 2010: Independent External Peer Review Complete
- ✓ Jul 26, 2010: Public Review Period Complete
- ✓ Sep 2010: Civil Works Review Board Briefing in Washington DC
- ✓ Sep 2010: Finalize feasibility report/EIS
- ✓ Oct 2010: Public Meetings
- ✓ Dec 2010: Transmit recommendation to Congress
- ✓ Jan 2011: Begin plans and specifications
- ✓ Apr 2012: Begin construction



***Provide Formal Comments on the Draft
Feasibility Report and Environmental Impact
Statement:***

- ✓ Comment period ends on July 26, 2010.

- ✓ Web site: <http://www.internationalwaterinstitute.org/feasibility>

- ✓ Mail:
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