

aquatic habitat, but effects are expected to be minor. Connectivity and access to various habitats is important to fulfill seasonal and life stage-specific habitat needs for river fish. The project features are designed to minimize impacts to connectivity and to facilitate fish passage on the Red River up to a 2-percent chance (50-year) event. Approximately 43 acres of river bed and 140 acres of riparian forest would be directly affected by project features. The project would include appropriate mitigation for unavoidable environmental impacts.

The project would require relocation of approximately six residences or farmsteads and would remove approximately 5,400 acres of prime and unique farmland from operation. Owners would be compensated for the loss of property in accordance with applicable federal and state laws and policies.

Project Costs:

ND 35,000 cfs Diversion First Costs			
Item	Federal (\$)	Non-Federal (\$)	Total (\$)
Flood Risk Management	693.3	544.1	1,237.4
Recreation	17.4	17.4	34.8
Total Project	710.7	561.5	1,272.2
All costs in millions (\$1,000,000)			

The estimated total fully-funded cost escalated to the midpoint of construction is \$1.45 billion.

Schedule:

- Jun 2010: Landowner and Downstream Meetings
- Jul 2010: Public review period complete
- Sep 2010: Finalize feasibility report
- Dec 2010: Transmit recommendation to Congress
- Jan 2011: Begin plans and specifications
- Apr 2012: Begin construction

Read and Comment on the Draft EIS:

Visit the study website at: <http://www.internationalwaterinstitute.org/feasibility/>

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Fargo-Moorhead Metropolitan Area Feasibility Study

Overview:

The Fargo-Moorhead Metropolitan Area Feasibility Study is a cooperative effort between the communities of Fargo, N.D., and Moorhead, Minn., with the U.S. Army Corps of Engineers, St. Paul District. This handout is designed to give a summary of the study, its tentative recommendations and the timeline for completion.

Study goals:

- Understand the flood problems in the greater Fargo-Moorhead metropolitan area.
- Develop a regional system to reduce flood risk.
- Determine the federal government’s role in implementing flood risk reduction measures.
- Document study findings in a Feasibility Report and a National Environmental Policy Act (NEPA) Environmental Impact Statement.
- If appropriate, recommend implementation of a federal project to the U.S. Congress.

Problems and opportunities:

The primary problem identified in the study area is a high risk of flood damage to urban infrastructure from the Red River of the North, the Wild Rice River (ND), the Buffalo River, the Sheyenne River and its tributaries. Flooding also causes damage to rural infrastructure and agricultural crop land and disrupts transportation and access to properties within the study area. There are opportunities to increase and improve wildlife habitat and to increase recreation in conjunction with measures to reduce flood risk.

Flooding history:

The Fargo-Moorhead metropolitan area has a relatively high risk of flooding. The Red River exceeded the National Weather Service flood stage of 18 feet in 47 of the past 108 years, and every year from 1993 through 2010. The study area includes the Wild Rice, Sheyenne, Maple, Lower Rush and Rush rivers and the Red River of the North. Inter basin flows complicate the hydrology of the region and contribute to extensive flooding. The flood of record was the 2009 flood with a peak stage of 40.82 feet on the Fargo gage. Average annual flood damages in the Fargo-Moorhead metropolitan area are currently estimated at nearly \$196 million. Most communities in the region avoided major flood damages in the historic floods of 1997 and 2009 by either raising existing levees or building temporary barriers. Although emergency measures have been very successful, they may also contribute to an unwarranted sense of security that does not reflect the true flood risk in the area.

Planning process:

This feasibility study began in September 2008. A wide array of potential measures was identified early in the study and expanded with input from the public. From September 2008 through May 2009, the study team gathered information to assess existing conditions in the study area and worked to understand the potential for economic justification of a large regional flood risk management project. In the wake of the 2009 flood, local, state and Congressional officials requested an aggressive schedule to complete the study by December 2010.

From June 2009 through October 2009, the study team performed cursory technical analysis of all proposed measures. The team also developed screening criteria to be used in selecting a plan. Using the preliminary

technical information, the team applied professional judgment in order to assess the measures against the screening criteria. Several different scales of flood storage, nonstructural measures, flood barriers and diversion channels were evaluated in more detail during this phase of study. Using all of the information developed, the team compared the alternatives to identify the best plans for further study. The preliminary screening results, released in October 2009, indicated that the most cost-effective plan would likely be a diversion on the Minnesota side but further study was needed to determine the optimal capacity. The non-federal sponsors requested that two North Dakota diversion plans (30,000 and 35,000 cfs) and a 35,000 cfs Minnesota diversion plan be retained as potential locally preferred plans. The “no action alternative,” the Minnesota short diversion channel and the North Dakota east diversion channel were retained for further analysis, and all other concepts were dropped from consideration as stand-alone plans. Non-structural measures (raising, relocating or buying out structures) were considered for portions of the study area not benefited by the diversions.

In March 2010, the cities of Fargo and Moorhead identified the North Dakota 35,000 cfs diversion channel as the locally preferred plan. In April 2010, the U.S Army Corps of Engineers, St. Paul District, received a waiver from the Assistant Secretary of the Army for Civil Works allowing the Corps to recommend the North Dakota 35,000 cfs diversion channel as the locally preferred plan in the draft feasibility report. In May 2010, the Corps identified a Minnesota 40,000 cfs diversion as the National Economic Development plan and a Minnesota 35,000 cfs diversion as the “federally comparable plan” for purposes of calculating federal and non-federal costs to implement the locally preferred plan.

Alternative	Cost ¹	Avg Annual Net Benefits ¹	Avg Annual Benefits ¹	Residual Damages ¹	B/C Ratio
FCP - MN35K	\$1,286	\$104.9	\$171.0	\$24.9	2.59
NED - MN40K ²	\$1,367	\$105.6	\$175.9	\$20.0	2.50
LPP - ND35K	\$1,462	\$95.4	\$171.1	\$24.8	2.26

1. In millions of dollars with interest during construction and discounting included
 2. Estimate based on linear extrapolation
 Expected average annual damages without a project are \$195.9 million.

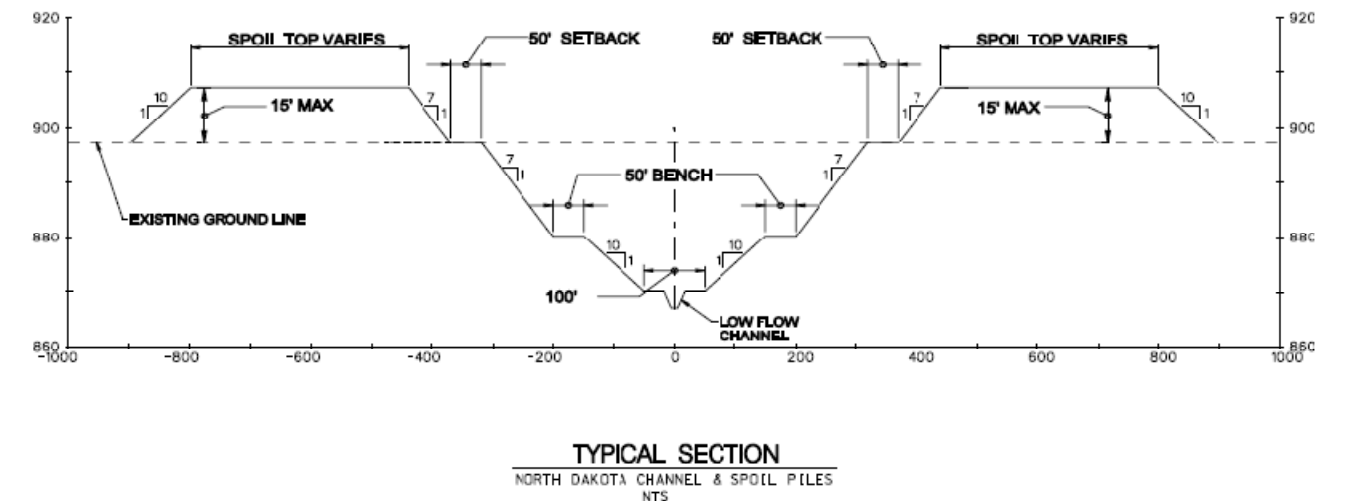
The Corps identified the North Dakota 35,000 cfs diversion channel as the locally preferred and tentatively selected plan in its integrated draft Feasibility Report and Environmental Impact Statement. The Corps will accept public comments in accordance with NEPA for a period of 45 days following official notice in the *Federal Register*. (The public comment period is expected to end on July 26, 2010).

Following public review, the St. Paul District will submit the report to Corps Headquarters for policy review and to support a draft report of the Chief of Engineers. The Chief’s report will be sent to other federal agencies and the concerned states for final NEPA review. Providing there are no major comments from the NEPA review, the final Chief’s report will be sent to the Assistant Secretary of the Army for Civil Works, then to the Office of Management and Budget and then to Congress for possible project authorization.

Description of the tentatively selected plan:

The North Dakota 35,000 cfs diversion channel is the tentatively selected and locally preferred plan. The project would be a 36 mile long diversion channel, starting approximately four miles south of the confluence of the Red and Wild Rice rivers and re-entering the Red River north of the confluence of the Red and Sheyenne rivers. The project would incorporate the existing Horace to West Fargo Sheyenne River diversion channel. The channel bottom width would vary from 100 to 300 feet, and it would have a maximum depth of 29 feet. The plan includes 18 highway bridges and four railroad bridges and would have a construction footprint of approximately 6,560 acres.

Gated control structures on the Red and Wild Rice rivers at the south end of the project would limit flow in the natural Red River channel and direct water to the diversion channel. A connecting channel between the Red and Wild Rice rivers would convey flow from the Red River to the diversion channel inlet on the west side of the Wild Rice River. The diversion would cross the Sheyenne, Maple, Lower Rush, and Rush rivers. At the Sheyenne and Maple river crossings, aqueducts would allow base flows to cross the diversion and follow the natural river channels, but flood flows would be directed into the diversion channel. The Lower Rush and Rush rivers would have drop structures that would drop the entire flow of those rivers into the diversion channel. Recreation features that could be incorporated into the project include multipurpose trails, interpretive signage, benches, trail heads with parking facilities and other related features.



Effects of the plan:

The proposed project would significantly reduce flood stages, flood damages and flood risk in the Fargo-Moorhead metropolitan area, but it would not completely eliminate flood risk. Emergency measures would still be required in Fargo-Moorhead during large infrequent flood events, when the flood stage is expected to exceed about 30 feet on the Fargo gage. For reference, the 2009 flood stage was 40.8 feet on the Fargo gage. The following table shows the expected flood stages for existing and proposed conditions:

	Stage at Fargo Gage (ft)	
	1% Chance (100- year)	0.2% Chance (500- year)
Existing Condition	42.4	46.7
LPP - ND35K Plan	30.6	40.0

The diversion channel would change the peak flow and timing of flood events. Flows in the natural Red River channel through Fargo-Moorhead would be significantly reduced, but peak flood stages downstream would likely increase. Although the potential downstream effects on stage, duration and frequency have not been fully quantified, current modeling shows stage increases downstream up to 12 inches during a 1-percent chance event. The Corps will assess the need to compensate affected landowners based on the final model results.

There are 4,626 acres of wetlands in the project area. The proposed project would directly impact approximately 33 acres of wetlands and could indirectly impact up to 193 acres. The project would have no adverse impacts on significant groundwater resources. The project may affect sediment transport, accretion and erosion in the Red River and the affected tributaries, which are critical forces in shaping and maintaining