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# The Red River Water Management Consortium (RRWMC®)

2006 USDA-CSREES National Water Conference

Dan Stepan  
February 7, 2006



**RRWMC®**



# *Red River of the North Basin*

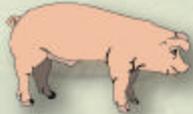
- 49,000-square-mile drainage area
- Population = 1,400,000
- From Lake Traverse to Lake Winnipeg:
  - Air miles = 356
  - Main stem river miles = 565
  - Elevation change = 280 ft
  - Average slope = 9 inches per mile
- Agriculture-based economy

# Red River Water Management Consortium®

- Established in March 1996
- Technology-based program
- Partnership between:
  - U.S. Department of Agriculture
  - Red River Basin stakeholders
    - Municipal
    - Industrial
    - Other interested parties
- Regulatory-based advisory board



**Simplot**



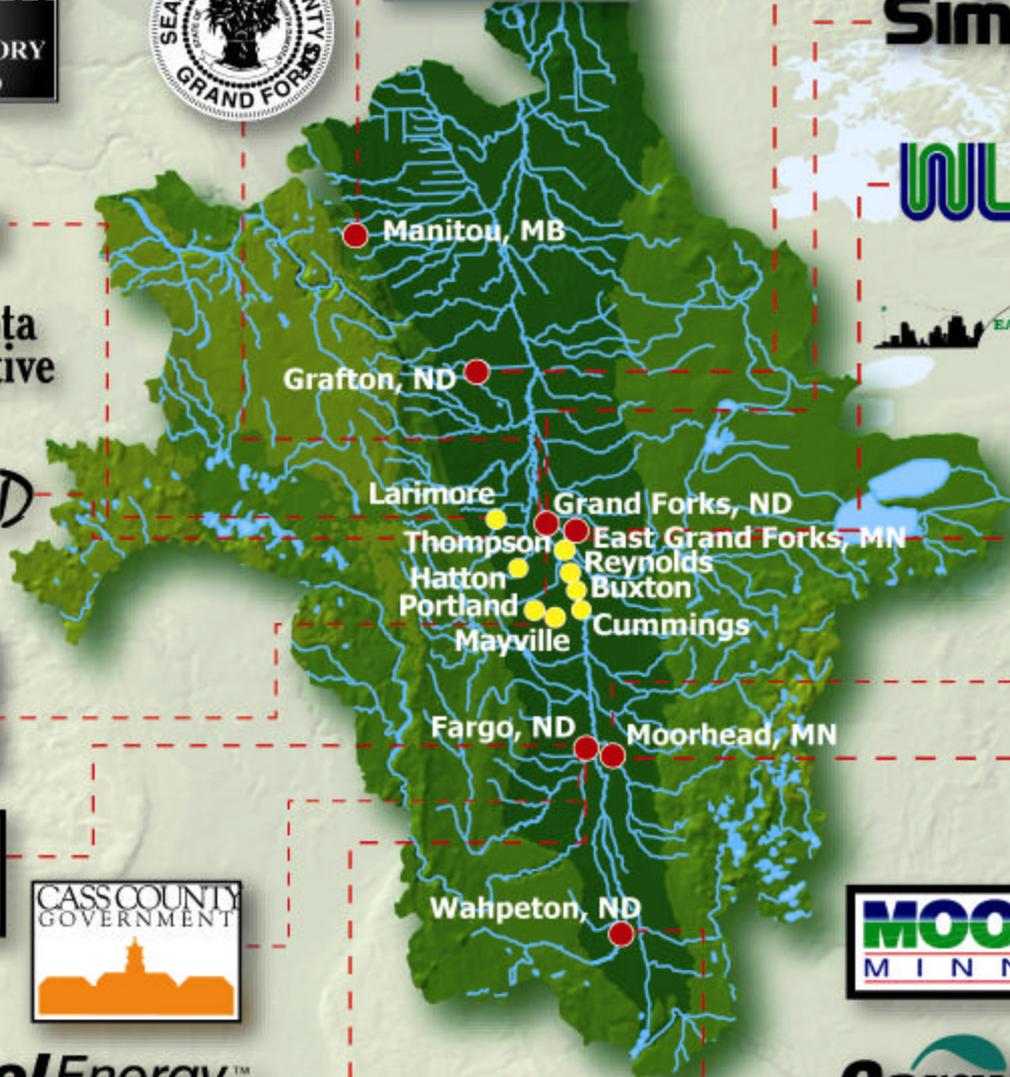
**North Dakota Pig Cooperative**



**GFC WRD**



● Cities Benefiting from Xcel Energy's Consortium Membership



# RRWMC Advisory Board

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- U.S. Department of Agriculture
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- Manitoba Environment
- Minnesota Department of Natural Resources
- Minnesota Pollution Control Agency
- North Dakota Department of Health
- North Dakota State Water Commission
- Red River Basin Commission

# RRWMC Goal

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Provide practical stakeholder-driven technical input for the development of a long-term watershed management strategy focusing on water quantity and quality to ensure continued economic development of the area.

# Task Structure

**Task 1:**  
Technology Assessment,  
Development, and  
Demonstration

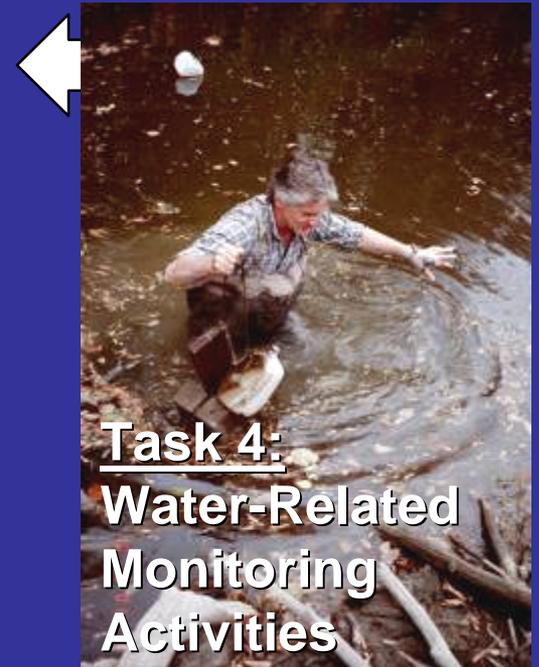
**Task 2:**  
Water Resource  
Assessment and  
Analysis

Watershed  
Management  
Strategies for the  
Red River Basin

**Task 3:**  
Anthropogenic  
Impacts on  
Water Resources

**Task 4:**  
Water-Related  
Monitoring  
Activities

**Task 5:**  
Information Dissemination  
and Stakeholder Education

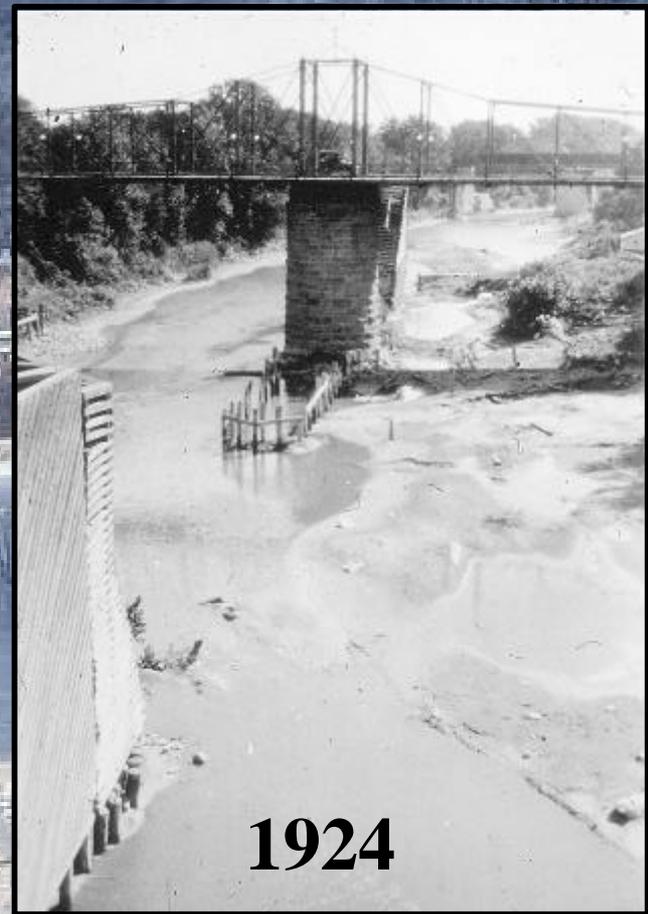


# RRWMC Task Summary

- Task 1 – Technology Assessment, Development, and Demonstration
  - 27 activities
- Task 2 – Water Resource Assessment and Analysis
  - 9 activities
- Task 3 – Anthropogenic Impacts on Water Resources
  - 31 activities
- Task 4 – Water-Related Monitoring Activities
  - 14 activities
- Task 5 – Information Dissemination and Stakeholder Education
  - 20 activities
- Task 6 – Development of Regional Water Management Strategies
  - 5 activities



**1997**



**1924**

# Trends in the Red River Valley

- Increasing population
- Increasing manufacturing and agricultural processing
- Presently in a wet cycle
- Flood protection projects ongoing
- Most underground sources of drinking and irrigation water are fully appropriated
- Storm Water Phase II Rule
- Water quality impairments and TMDLs
- Eutrophication of Lake Winnipeg
- Drought likely to occur in the next 30 years

# RRWMC Drought Management Investigations

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- Water conservation and reuse at agricultural processing facilities
- Industrial wastewater reclamation for nonpotable uses
- Upgrading marginal quality (saline) groundwater resources to potable quality
- Residential and commercial water conservation
- Aquifer storage/recovery
- The Waffle<sup>®</sup> project

# Red River Valley Water Supply Project (RRVWSP)

The background of the slide is a photograph of the North Dakota State Capitol building. The building is a large, white, neoclassical structure with a prominent central dome. The sky is a clear, deep blue. In the foreground, there are some trees and a dark railing, suggesting the photo was taken from an elevated position looking down at the building.

- Dakota Water Resources Act of 2000
  - Secretary of the Interior to conduct a comprehensive study of the water quality and quantity needs of the Red River Valley in North Dakota and possible options for meeting those needs.
  - Secretary and the state of North Dakota shall jointly prepare and complete a draft environmental impact statement concerning all feasible options to meet the comprehensive water quality and quantity needs of the Red River Valley and the options for meeting those needs.

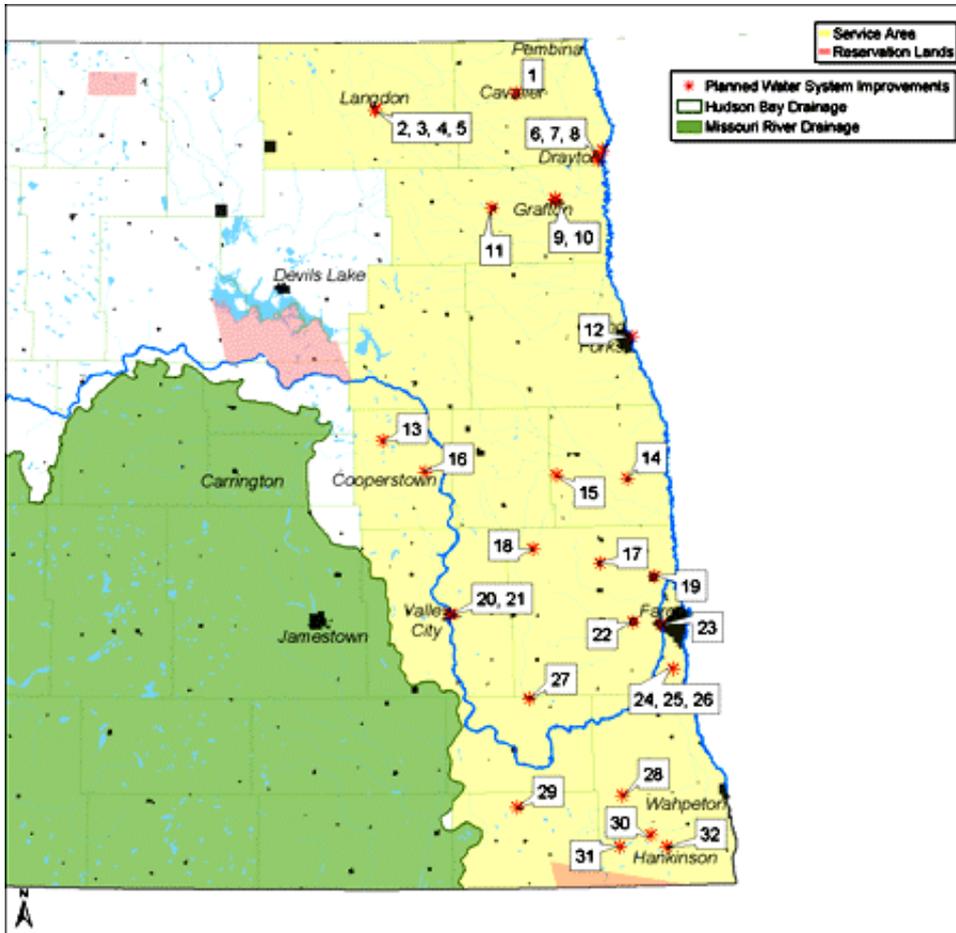
# Red River Valley Water Supply Project

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- Reclamation finalized a Needs and Options Report that estimated future water needs through 2050 and identified options to meet those needs.
- Reclamation and Garrison Diversion Conservancy District (GDCCD) are jointly preparing an environmental impact statement (EIS) for the project.

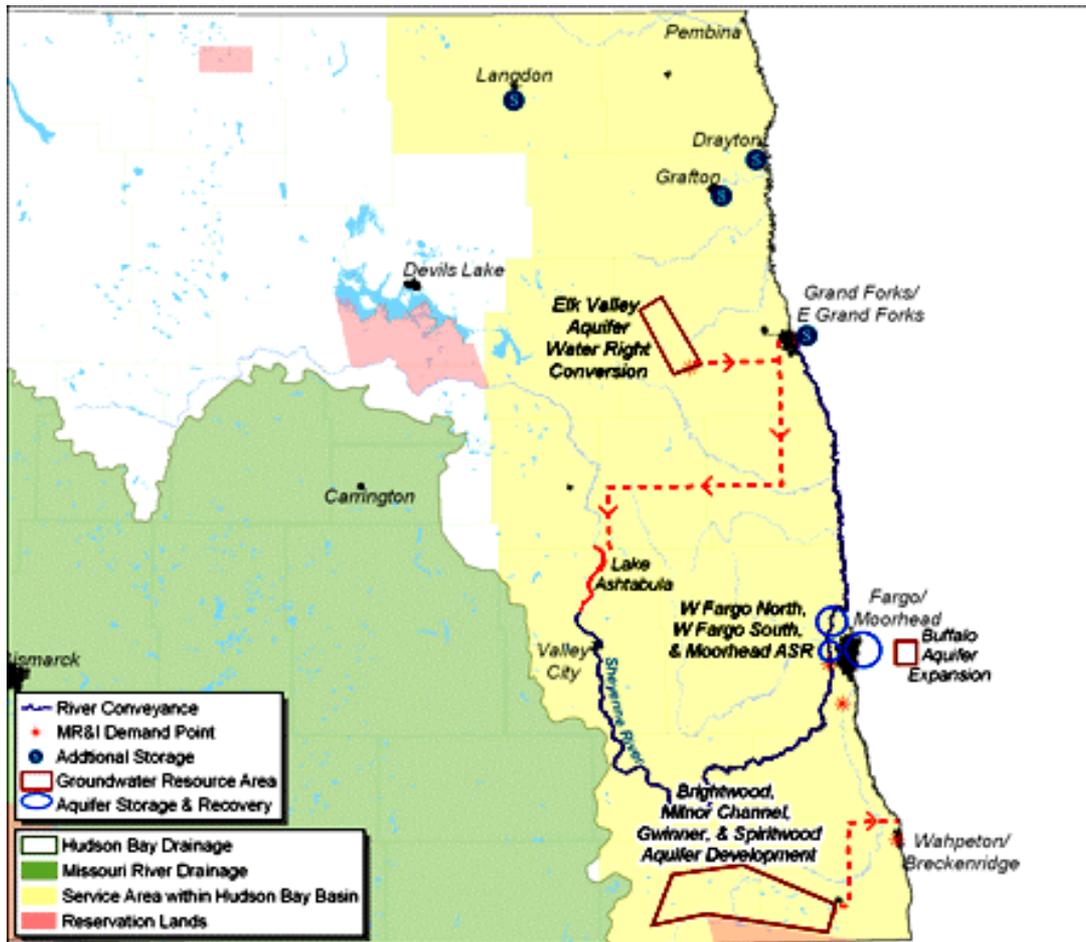


# No Action Option



Municipal and rural water system upgrades and replacement projects still needed.

# North Dakota In-Basin Option

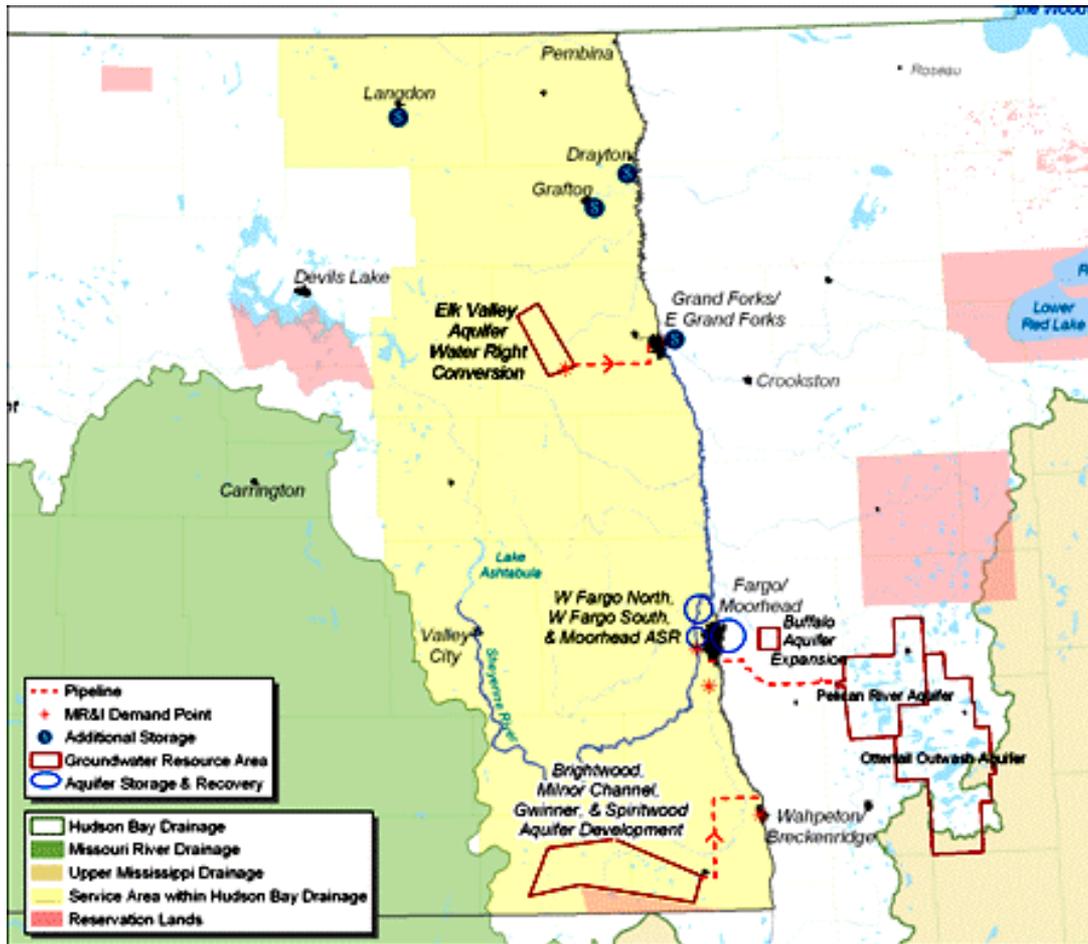


Would use water from the Red River and other North Dakota sources (groundwater) to meet shortages.

## Costs:

Construction: \$560 to \$640 million  
Annual OM&R: \$6.7 to \$7.5 million

# Red River Basin Option

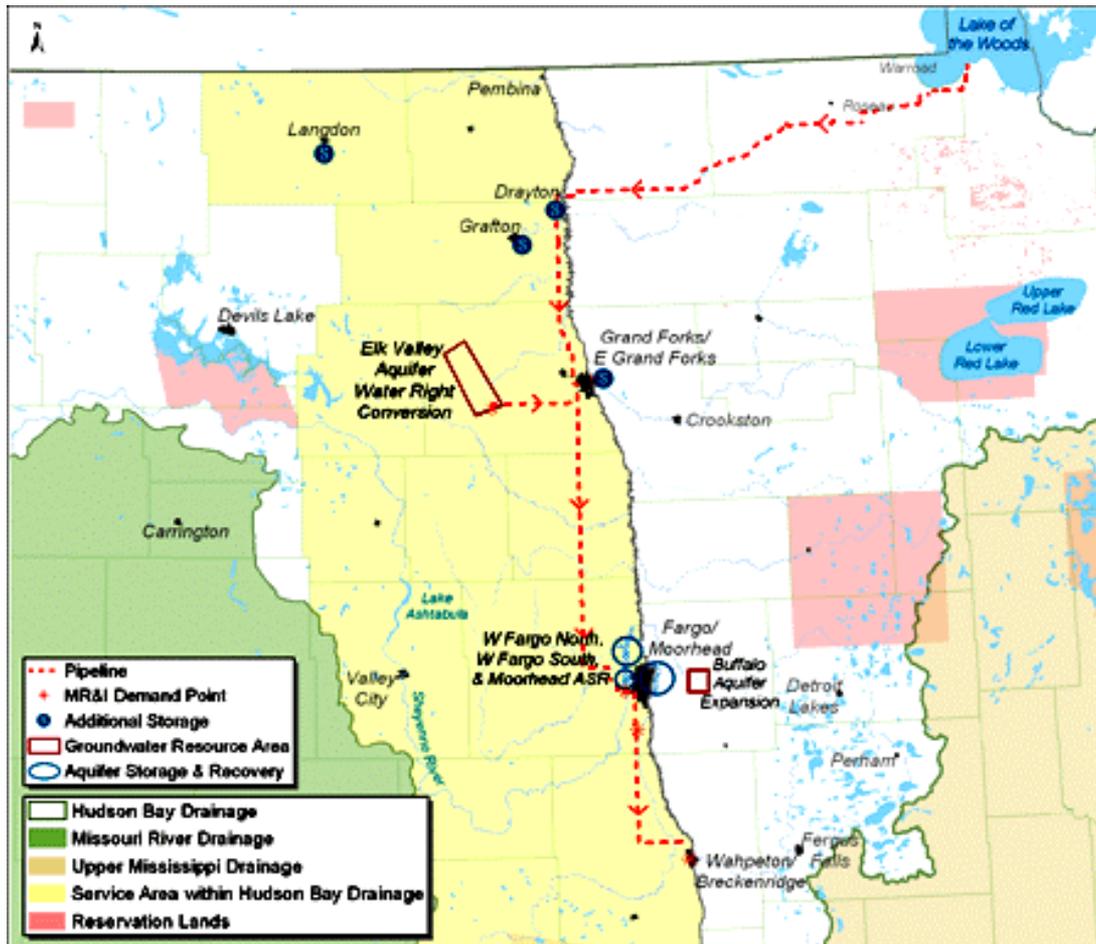


Would use water sources in North Dakota and Minnesota to meet shortages.

## Costs:

Construction: \$550 to \$750 million  
Annual OM&R: \$7.5 to \$8.9 million

# Lake of the Woods Option



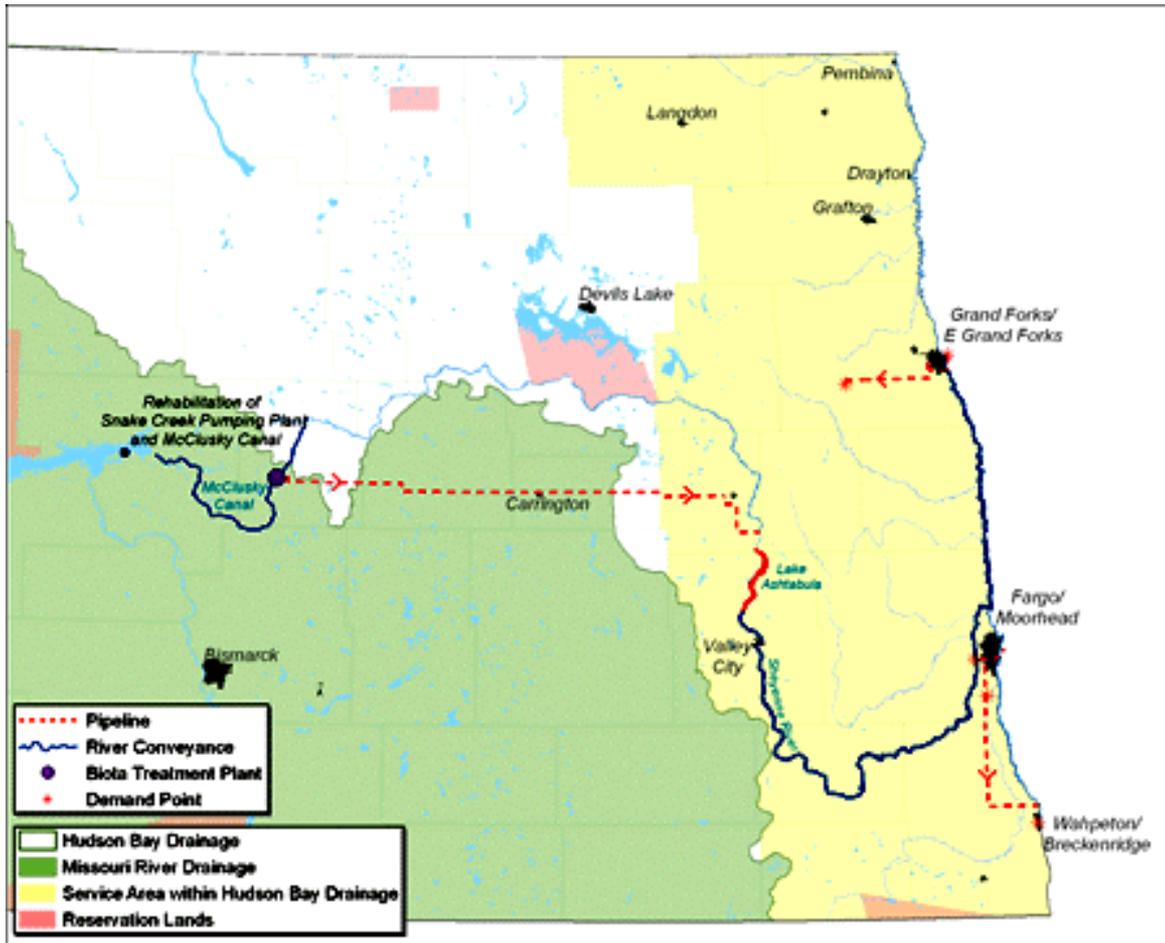
Would convey water through a pipeline from Lake of the Woods to the Red River Valley, along with other in-basin water sources to meet shortages.

## Costs:

Construction: \$940 million to \$1.11 billion

Annual OM&R: \$7.8 to \$8.8 million

# GDU Import to Sheyenne River Option



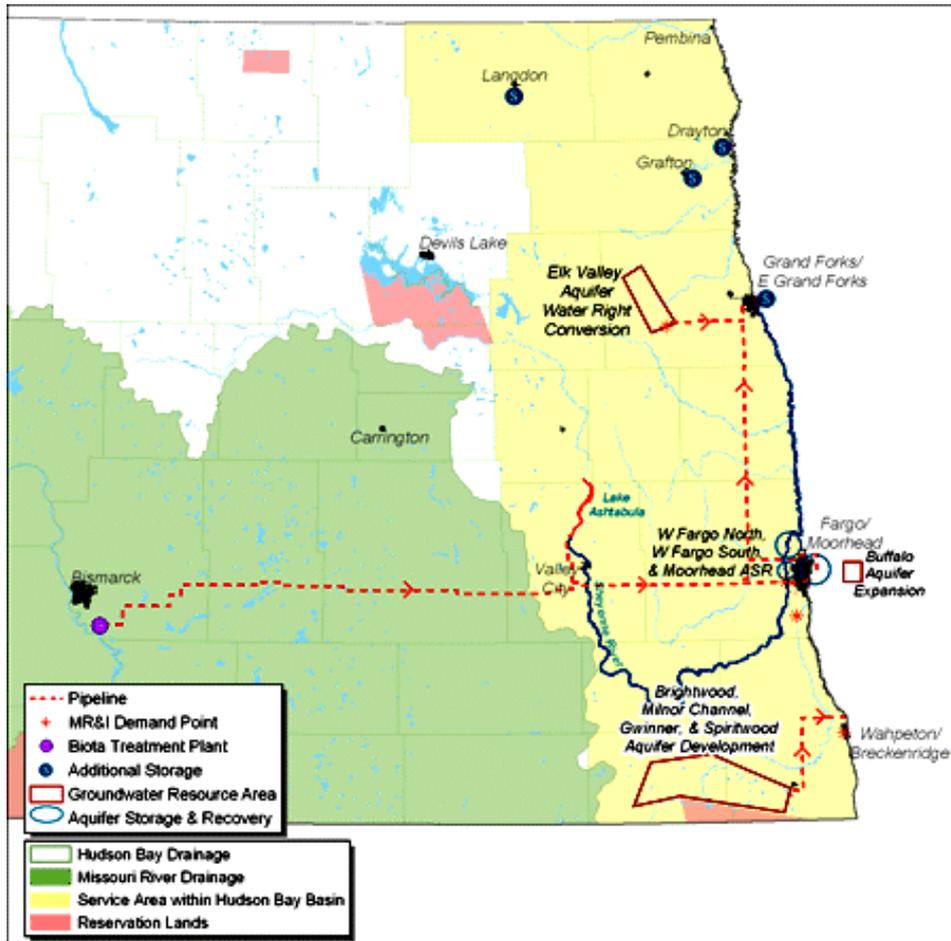
Would be a pipeline to connect the GDU Principal Supply Works to the Sheyenne River to meet shortages.

## Costs:

Construction: \$430 to \$590 million

Annual OM&R: \$3.8 to \$5.0 million

# Missouri River Import Option



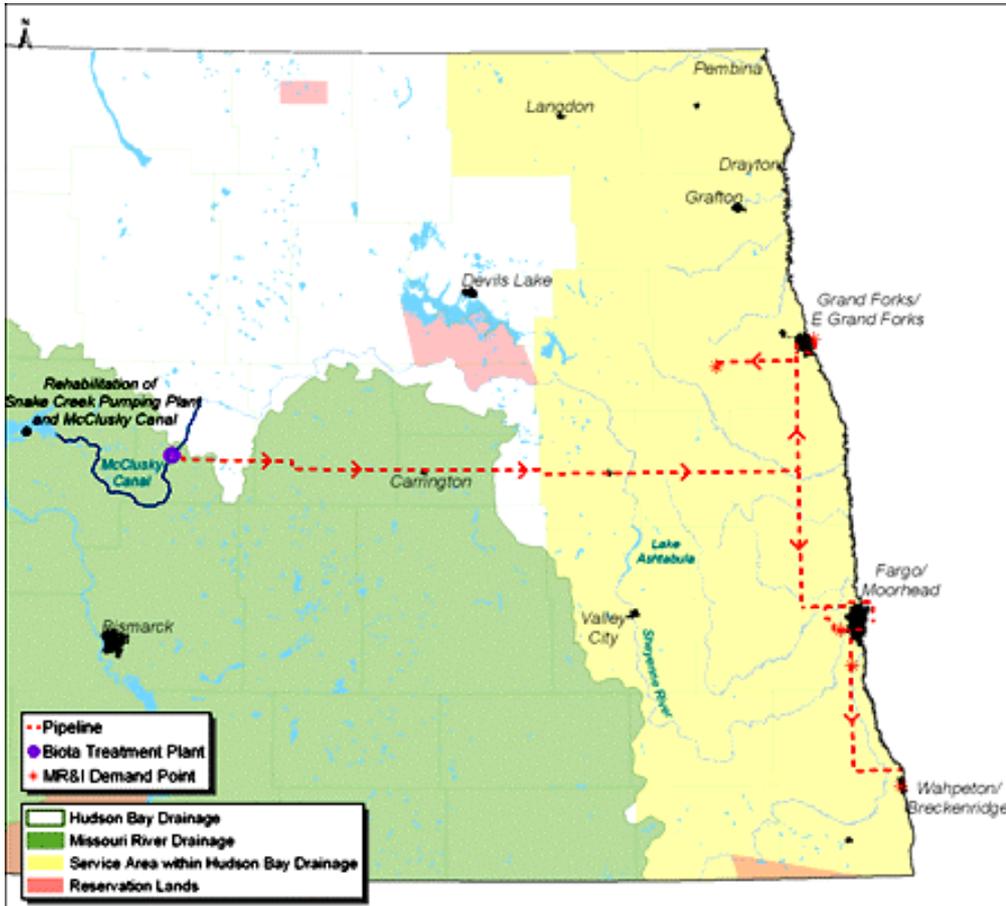
Would use a pipeline from the Missouri River to Fargo and Grand Forks, along with other in-basin sources to meet shortages.

## Costs:

Construction: \$880 million to \$1.01 billion

Annual OM&R: \$9.9 to \$11 million

# GDU Import Pipeline Option

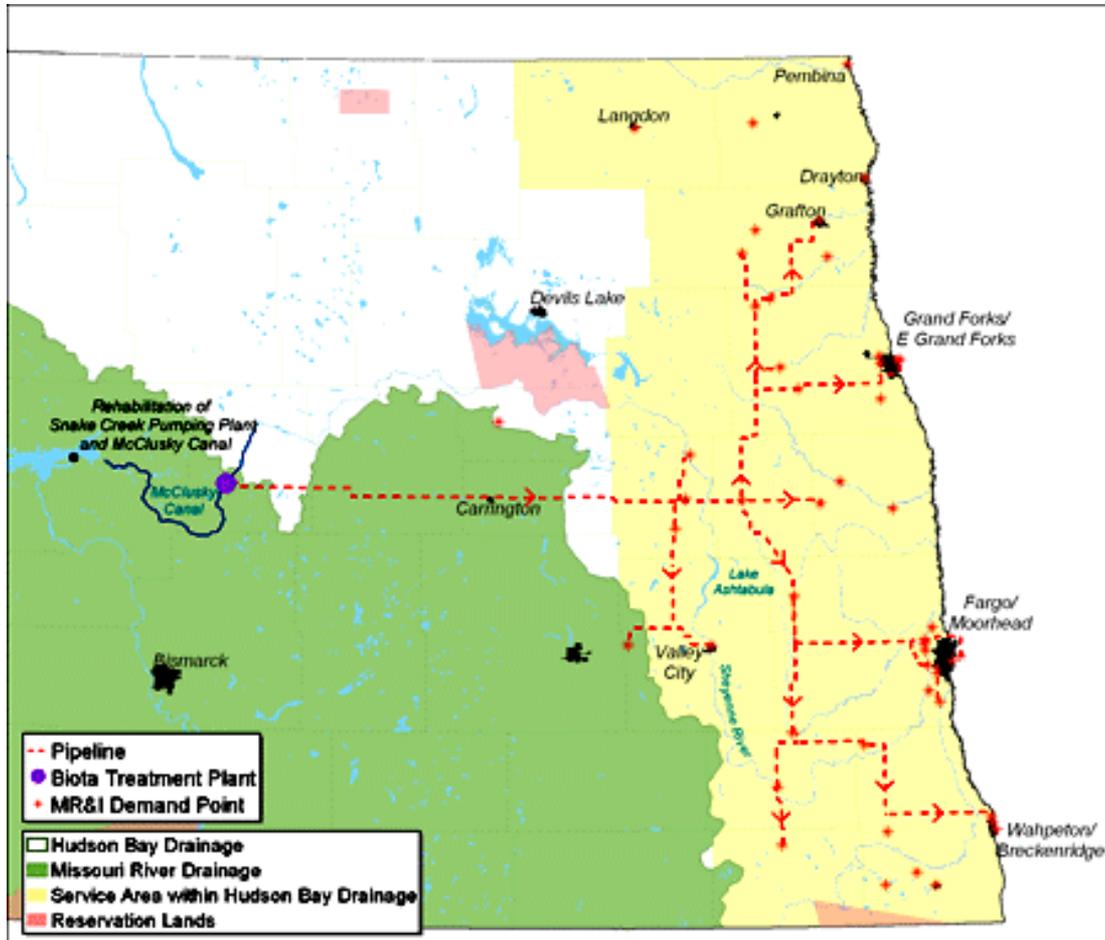


Would use a pipeline from the GDU Principal Supply Works to Grand Forks, Fargo, and Wahpeton to meet shortages.

## Costs:

Construction: \$1.2 to \$1.41 billion  
Annual OM&R: \$5.3 to \$6.3 million

# GDU Replacement Pipeline Option



Would use a pipeline from the GDU Principal Supply Works to meet all the water needs of the Red River Valley.

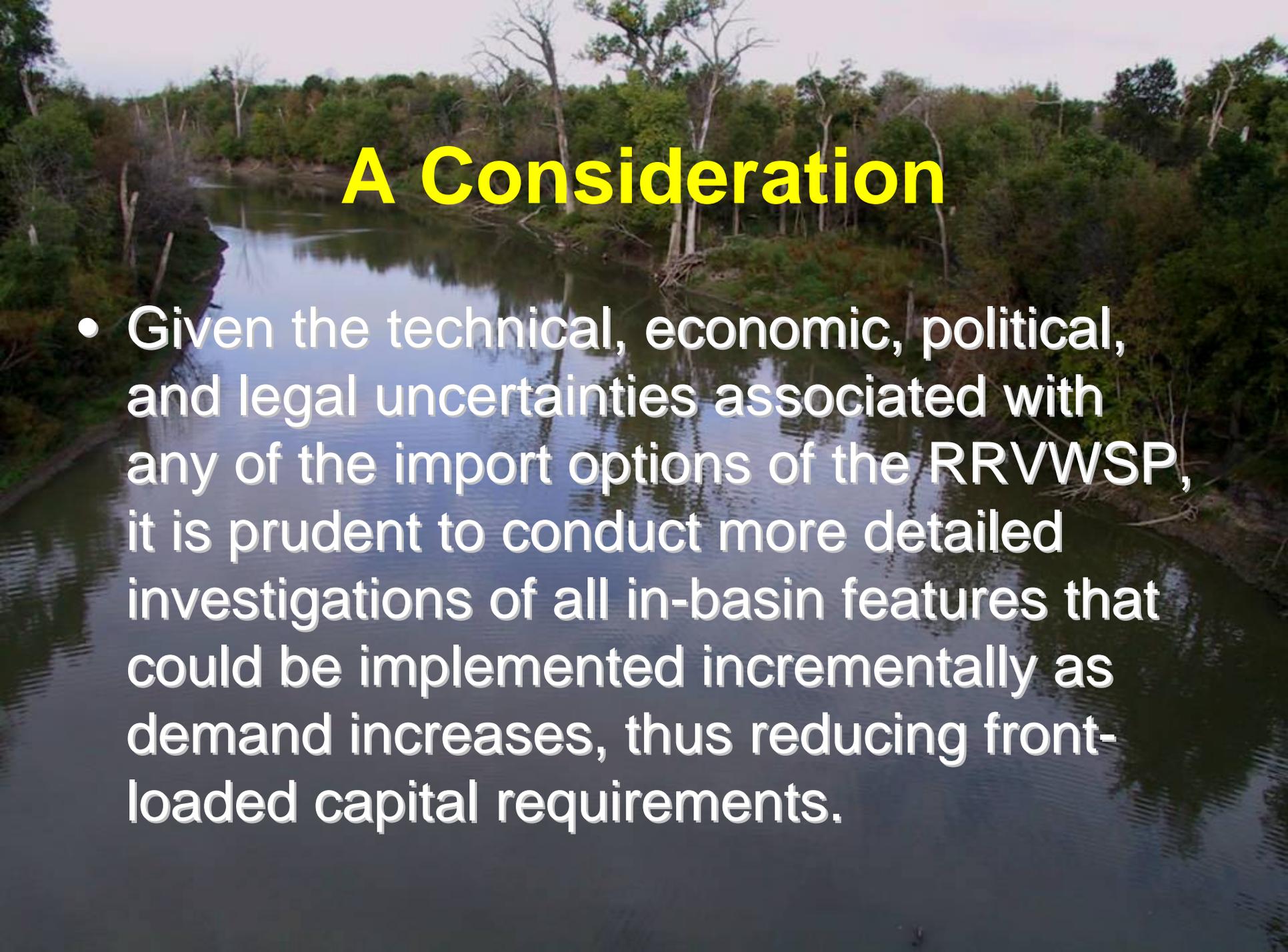
## Costs:

Construction: \$2.23 to \$2.52 billion  
Annual OM&R: \$25.4 to \$31.7 million

# RRVWSP Status

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- Final Report on Red River Valley Needs and Options distributed November 2005.
- State of North Dakota has endorsed the GDU Import to Sheyenne River as its preferred alternative.
  - Ability to meet current and future water needs
  - Provides core infrastructure and greatest flexibility for expansion
  - No documented significant negative environmental impacts
  - Lowest-cost alternative of those considered
- Draft Environmental Impact Statement distributed December 2005 for a 60-day comment period.
  - Currently holding public hearings
  - Final EIS completed early 2006, with ROD expected in mid-2006



# A Consideration

- Given the technical, economic, political, and legal uncertainties associated with any of the import options of the RRVWSP, it is prudent to conduct more detailed investigations of all in-basin features that could be implemented incrementally as demand increases, thus reducing front-loaded capital requirements.



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