Red River Valley Water Supply Project

Presented to:

Water Topics Overview Committee and State Water Commission Joint Meeting

November 4, 2015
Garrison Diversion Conservancy District

Created by ND legislature (Century Code Ch. 62-24)

- Promote the establishment, construction, development, maintenance, and operation of the Garrison Diversion Unit, or any part thereof.

- To make available...waters diverted from the Missouri River for irrigation, domestic, municipal, and industrial needs, and for hydroelectric power, recreation, fish, wildlife, and other beneficial and public uses.

- To study and provide for the water needs of eastern North Dakota communities and water districts and western Minnesota communities through a Red River Valley Water Supply Project.

July 18, 1955 - First meeting of the board of directors held at Harvey, with Governor Norman Brunsdale calling the meeting to order.
Garrison Diversion TODAY
Red River Valley Water Supply Project

Sole purpose - to provide a solution to water supply and quality problems
• **Lake Agassiz Water Authority**
  - Created by the 2003 North Dakota State Legislature
  - Represent local users in RRVWSP
  - Eastern 13 Counties
  - 3 Minnesota Cities
    - Breckenridge
    - East Grand Forks
    - Moorhead
Red River Valley Water Supply Project

- **Lake Agassiz Water Authority**
  - 10 members
    - 5 – city members
    - 5 – rural water system members
  - Chair – Mayor Tim Mahoney
  - Vice-Chair – Ken Vein

Members of the LAWA Board of Directors (Current)
Project Need

- Existing water supplies will be inadequate during drought
- In 1934, five months of zero flow in Red River at Fargo
- Projected 41% maximum annual water shortage during 1930s-type drought
- Expected economic impact ~$2 billion each year (2005$)
Industrial demand exceeds current supply

- The industrial need is becoming more dynamic in North Dakota over time, not less.
Water Demands

**Fargo**
- 2014 Average Day: 11.2 MGD
- 2014 Peak Day: 18.3 MGD
- Historic Peak Day: 21.1 MGD

**West Fargo**
- 2014 Average Day: 2.51 MGD
- 2014 Peak Day: 4.80 MGD
- Historic Peak Day: 4.87 MGD
RED RIVER AT FARGO
2011-2012 River Flow Versus Historical Percentiles Since 1908

River Flow (cubic feet per second)

Very Wet Conditions

Dry Conditions

Above Normal Flow (75-90%)
Normal Flow (25-75%)
Below Normal Flow (10-25%)
River Flow (2011-2012)
Lake Ashtabula Water Allocation

- **Flood Pool (116,500 Acre-feet)**
  - Elev. 1273.2

- **Conservation Pool (70,700 Acre-feet)**
  - Elev. 1266.0

- **Fish and Wildlife Pool (28,000 Acre-feet)**
  - Elev. 1257.0

- **Unallocated - State Engineer Managed (5,584 acre-feet)**
  - Lisbon (373 Acre-feet)
  - Valley City (6,686 Acre-feet)
  - Fargo (35,880 Acre-feet)
  - West Fargo (954 Acre-feet)

- **Grand Forks (20,023 Acre-feet)**

- **Dead Pool (1,200 Acre-feet)**
  - Elev. 1238.0
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**History**

- **Needs & Options Report**
  - Released November 2005

- **Environmental Impact Statement**
  - Final EIS released December 2007

2001 – 2007

$18 million
Preferred Federal RRVWSP

GDU Import to Sheyenne River

Cost: $660 million (2010$)
No Federal Authorization

- No Federal Authorization
- No access to GDU facilities
- Forced consideration of state and local project
Red River Valley Water Supply Project

Objective

Determine State and Local Plan
State & Local Plan
GDCD/NDSWC Studies

• Red River Valley Water Supply Project Plan B Multiple Alternatives

• Bismarck to Lake Ashtabula and Washburn to Baldhill Creek Alternative Comparison

• Washburn to Baldhill Creek and Bismarck to Fargo/Grand Forks (Direct Pipeline Alternative Comparison)

• Alternative Route Value Engineering Study for RRVWSP

• Central ND Water Supply Project Alternative Study

• Missouri River Hydrogeologic Investigation & Intake Conceptual Design Study and Phase II
State & Local Plan
North Route (Washburn to East)

• **Viable Route**
  – Areas identified near Washburn that would support necessary bank filtration capacity
  – Crossing James River near Hwy 200 by boring does not require federal permits

• **Other Benefits**
  – Significant preliminary engineering design complete
  – A large portion of right-of-way options secured
  – Jurisdictional wetland determinations completed along Hwy 200
  – All required permits identified and initiated
  – Future Access to McClusky Canal
Water Supply Infrastructure to Central North Dakota
Horizontal Collector Well
Pipeline: Washburn to Water Treatment Plant

HCW Pump Station

Biota WTP (3 Options)

307’

Ordinary High Water Mark

44.4 Miles
Proposed SDWA Treatment Processes

**PRE-TREATMENT**
- Dissolved Air Flotation
  - Removes Large Particles

**FILTRATION**
- Rapid Sand Filtration
  - Removes Smaller Particles

**DISINFECTION**
- UV and Free Chlorine Disinfection
  - Inactivates Microorganisms

**POTABLE PROCESSES NOT INCLUDED:**
- Softening
- Ozonation
- Fluoridation
Service Provisions Along Pipeline

Typical Tee on Pipe

- Gate Valve
- Blind Flange
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Suggested Schedule

- **Spring 2016 Goal**
  - Conceptual Design
- **Winter 2016 Goal**
  - Preliminary Design
- **Year-End 2017 Goal**
  - Final Design
- **2018-2024 Goals**
  - Phased Bidding
  - Phased Construction
Red River Valley Water Supply Project

2015-2017 Work Plan

Missouri River Intake
$3.3 million

Pump Systems
$1.8 million

Pipeline Alignment
$4.9 million

Land Services & Needs Assessment
$2.4 million
Final Design
- $20.5 million

Phased Bidding/Construction
- $130 million
YOU CAN FIGHT A FLOOD, NOT A DROUGHT
THANK YOU!