

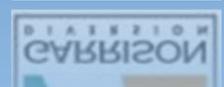


# Garrison Diversion

## Red River Valley Water Supply Project

presentation to the  
Water Topics Overview Committee

August 12, 2015



# Presentation Overview

1. Garrison Diversion Conservancy District
2. Lake Agassiz Water Authority
3. Red River Valley Water Supply Project Work Plan
4. Organizational Collaboration
5. Federal MR&I Program

# Garrison Diversion Conservancy District

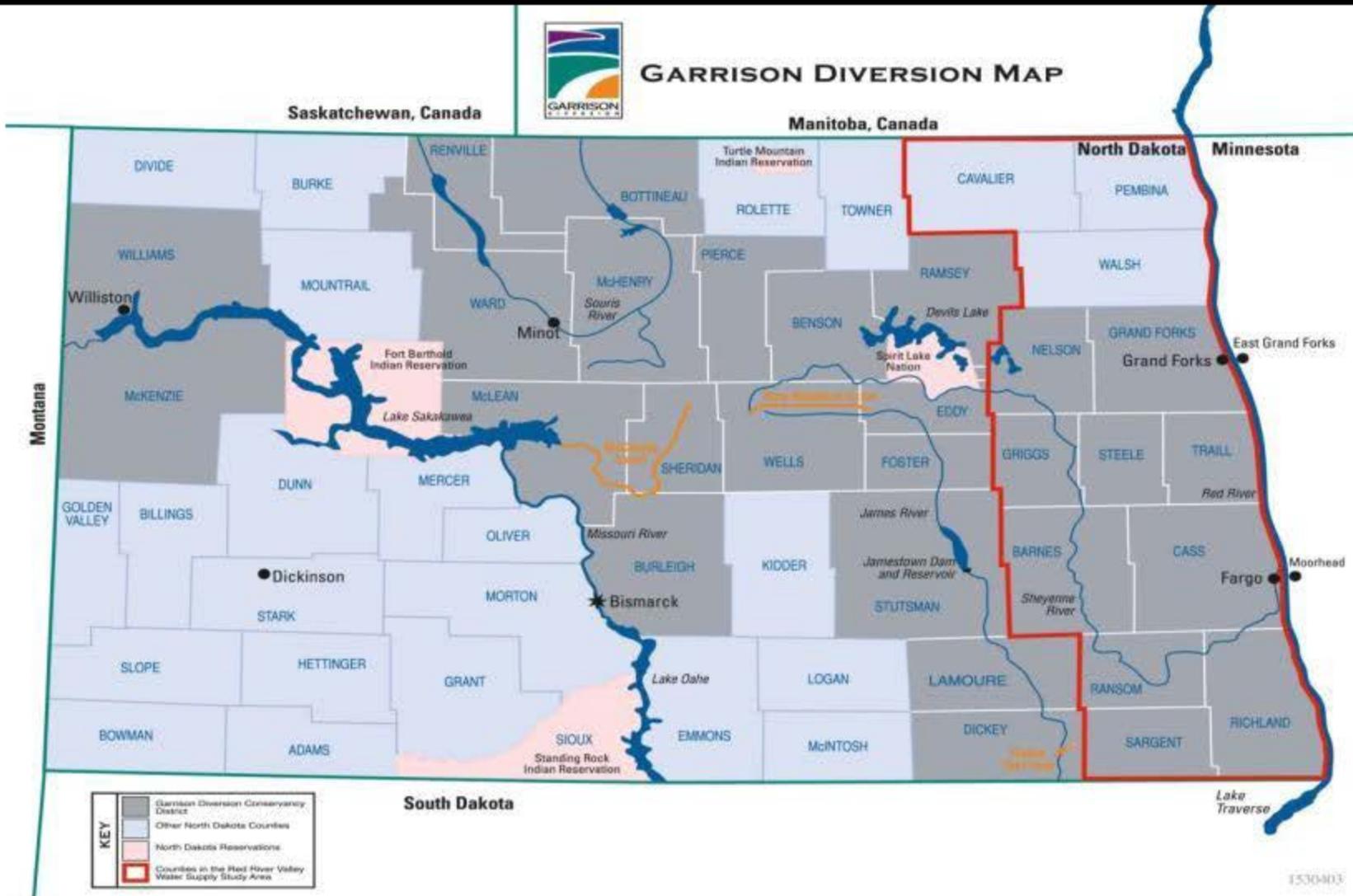


Created by ND legislature (Century Code Ch. 62-24)

- **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 Conservancy District



# Garrison Diversion Conservancy District



## **Our Mission**

To provide a reliable, high quality and affordable water supply to benefit the people of North Dakota

**[www.garrisondiversion.org](http://www.garrisondiversion.org)**

# Garrison Diversion Conservancy District



## Federal Focus

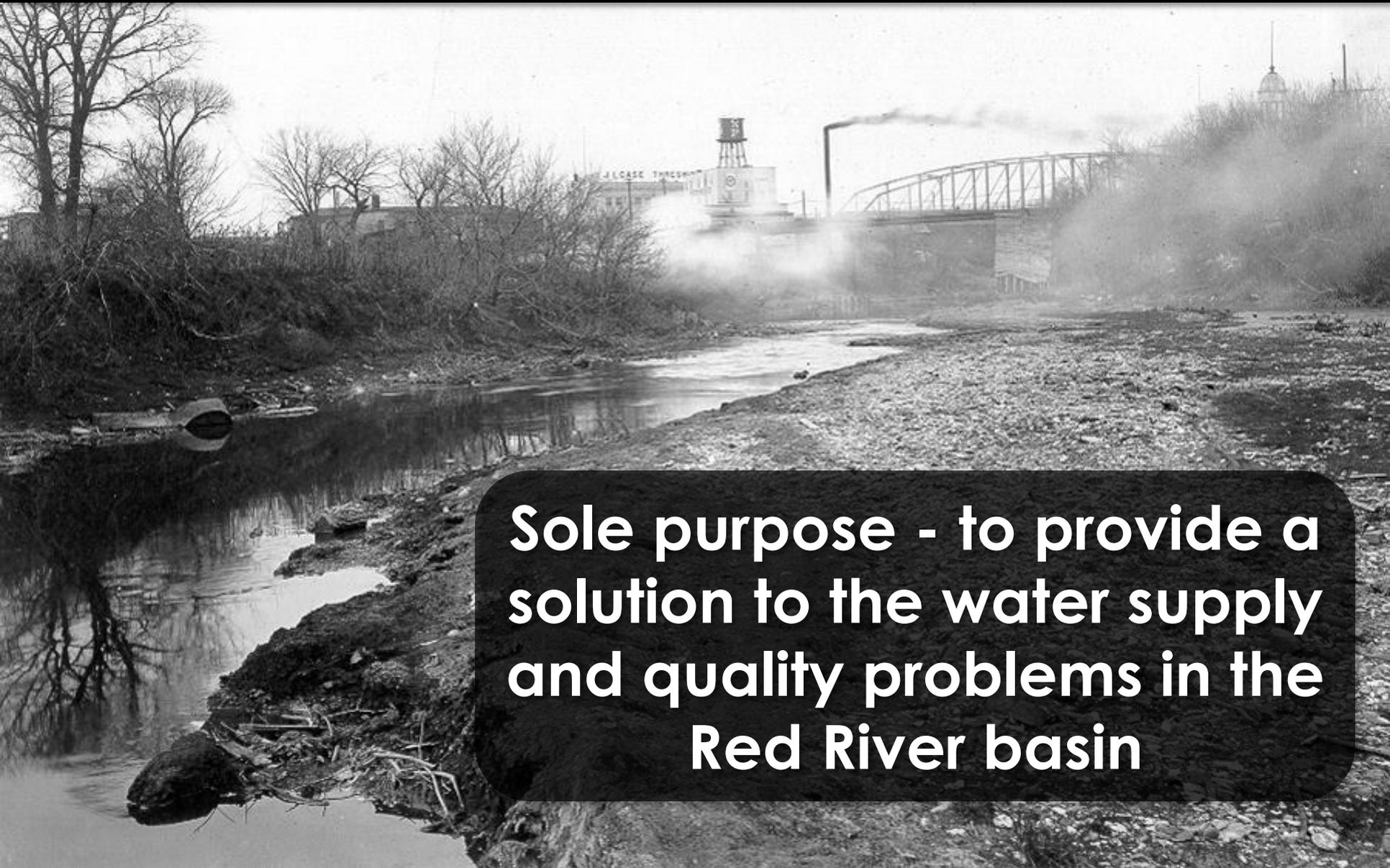
- **Cooperative agreements with Bureau of Reclamation**
  - MR&I
  - O&M of Principal Supply Works



## State Focus

- **Century Code**
  - Garrison Diversion Conservancy District (Ch. 61-24)
  - Lake Agassiz Water Authority Administration (Ch. 61-39)
- **Joint Powers Agreement with State Water Commission**
  - MR&I
  - *Red River Valley Water Supply Project*

# Red River Valley Water Supply Project



**Sole purpose - to provide a solution to the water supply and quality problems in the Red River basin**

# Red River Valley Water Supply Project



# Lake Agassiz Water Authority

- **Purpose of LAWA**

- Created by the 2003 North Dakota State Legislature
- Represents “affected local communities” in selecting project features to meet the comprehensive water quality and quantity needs of the Red River Valley.

# Lake Agassiz Water Authority

## Board of Directors

- Created by state legislature
  - ND Century Code 61-39
- 10 members
  - 5 – city members
  - 5 – rural water system members

★ 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



# Project Need



- **Limited Water Supply in Red River Valley**
  - Groundwater supplies are nearly fully appropriated
  - State law discourages groundwater irrigation to drinking water conversion

■ Existing Freshwater Aquifers

# Project Need



- **Industrial demand exceeds current supply**
  - The industrial need is becoming more dynamic in North Dakota over time, not less.

# Water Demand for Fargo



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

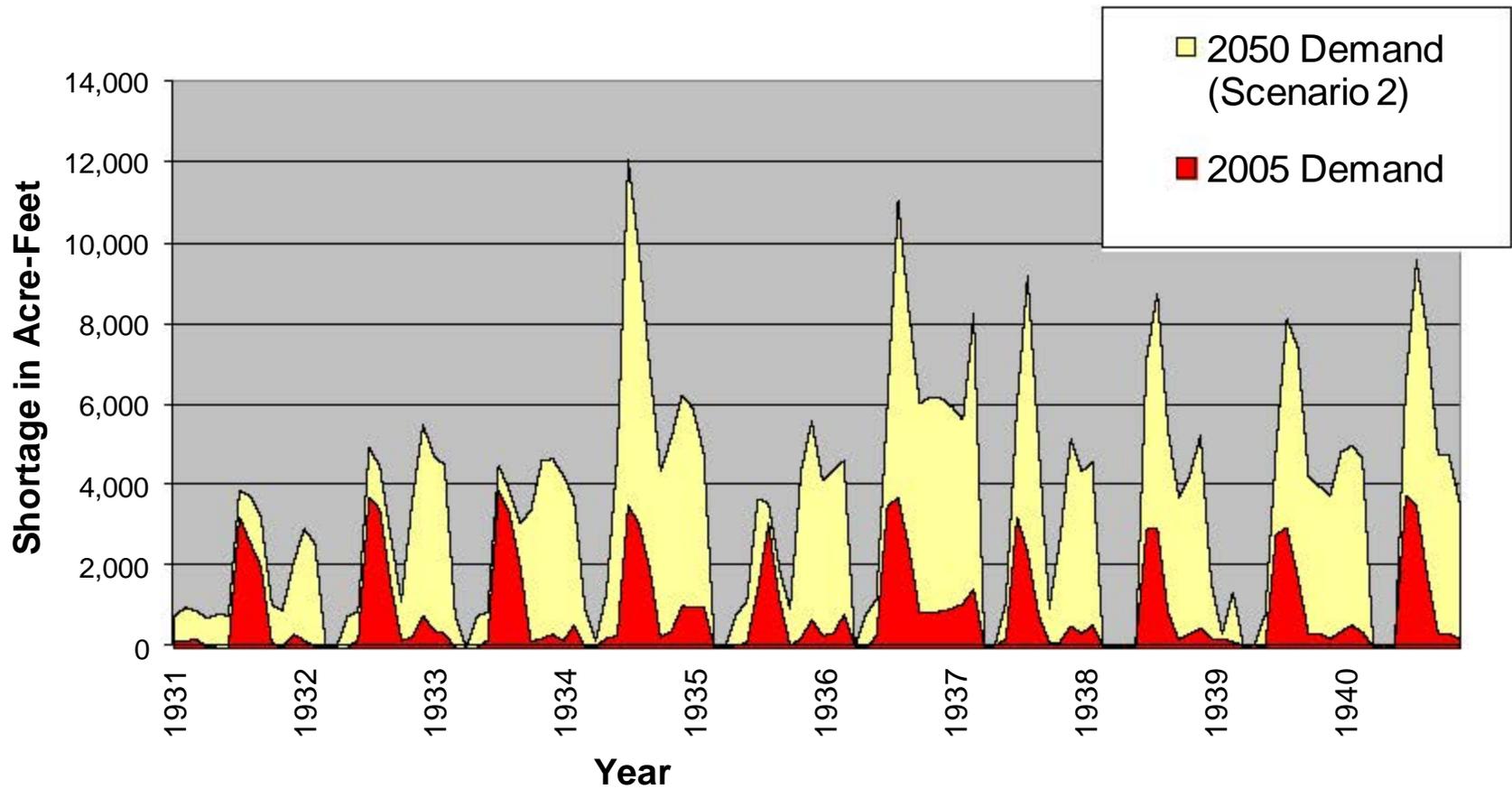
# Water Demand for West Fargo

- **2014 Average Day: 2.51 MGD**
- **2014 Peak Day: 4.80 MGD**
- **Historic Peak Day: 4.87 MGD**



# Project Need

## Project Area Shortages in 1930s Drought



# Red River ~ 1910



# Red River ~ 1936



# Red River ~ 1970

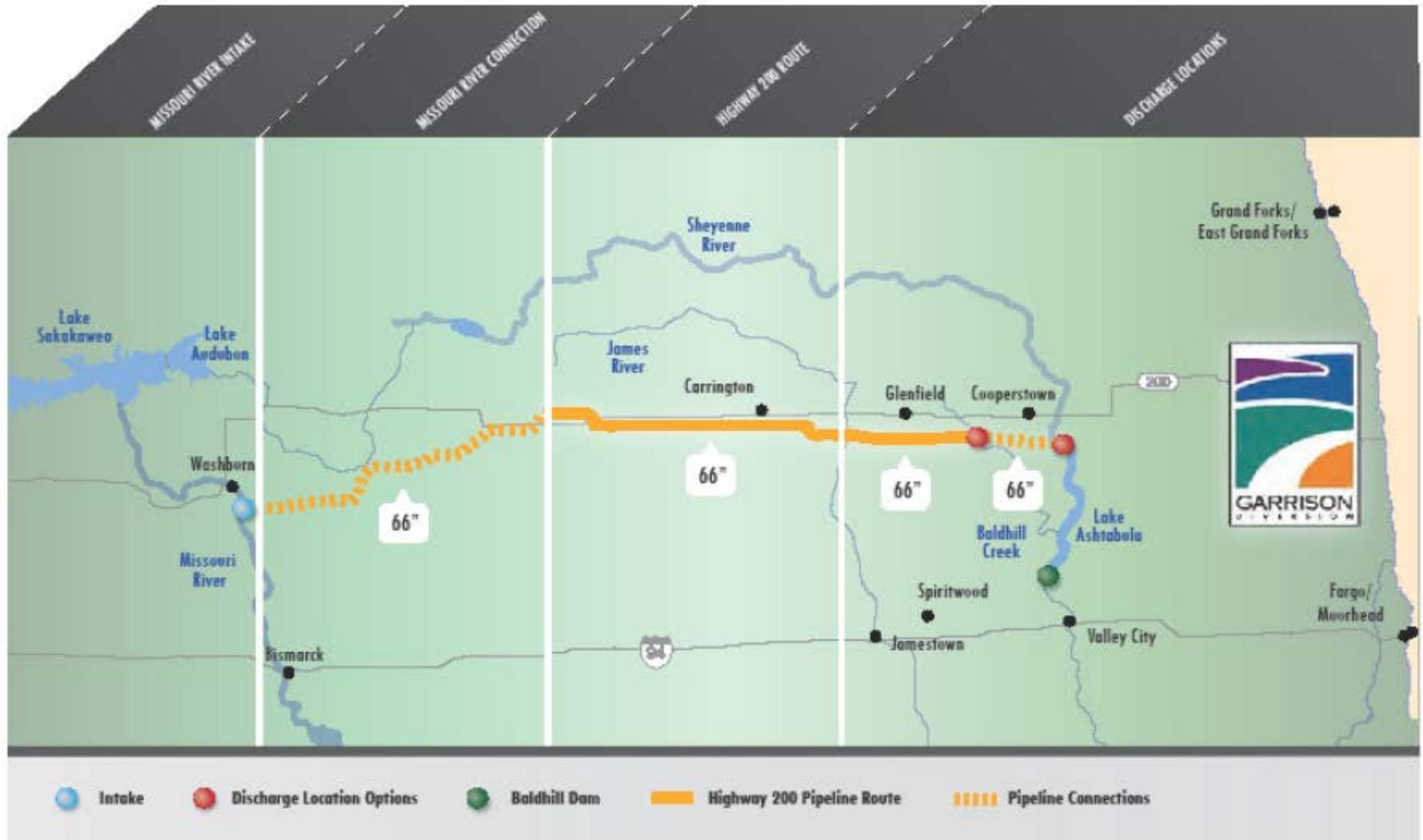


Photo Courtesy of Institute for Regional Studies

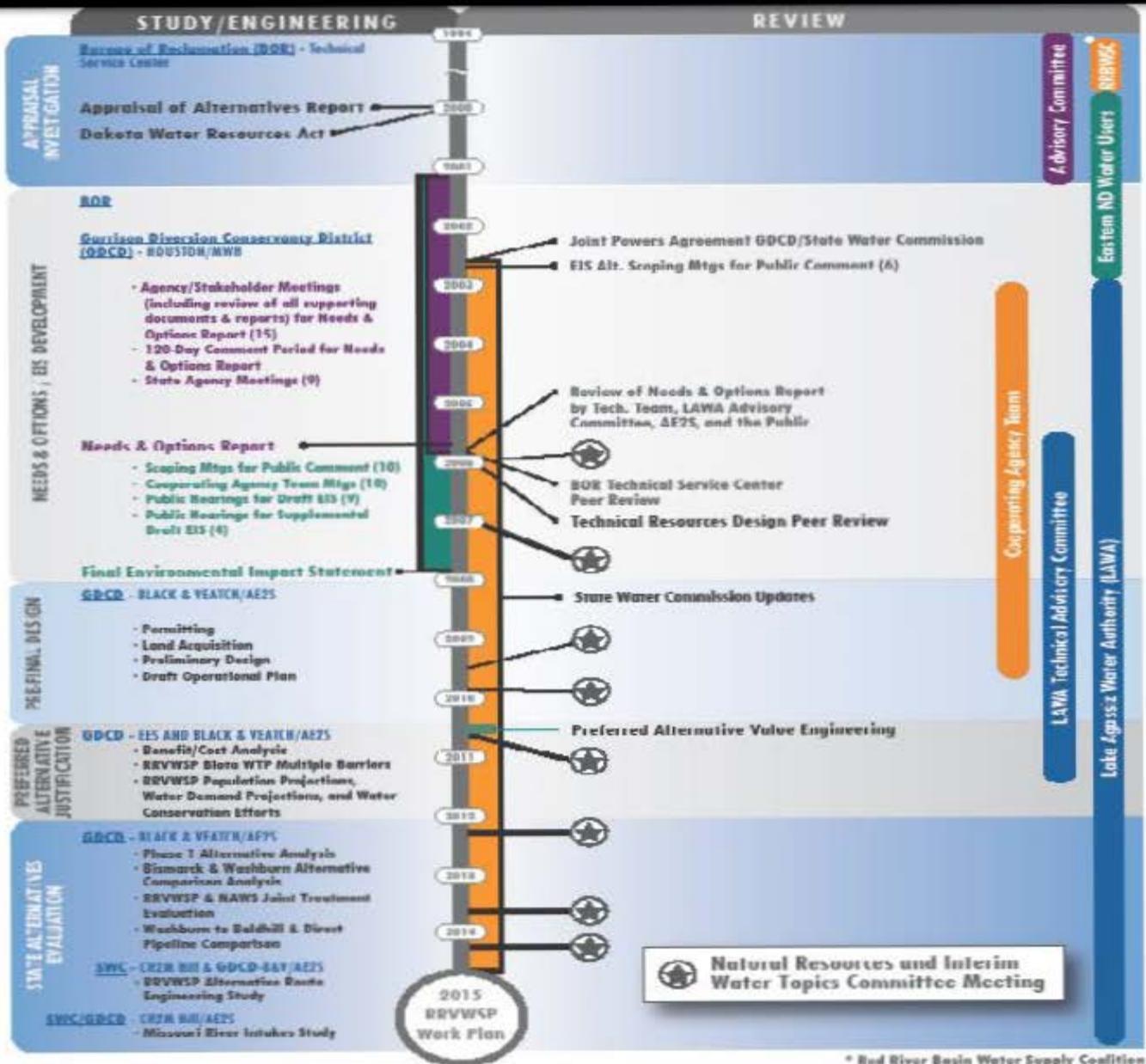
# Red River ~ 1988



# Red River Valley Water Supply Project



# Project Development Summary and Work Plan

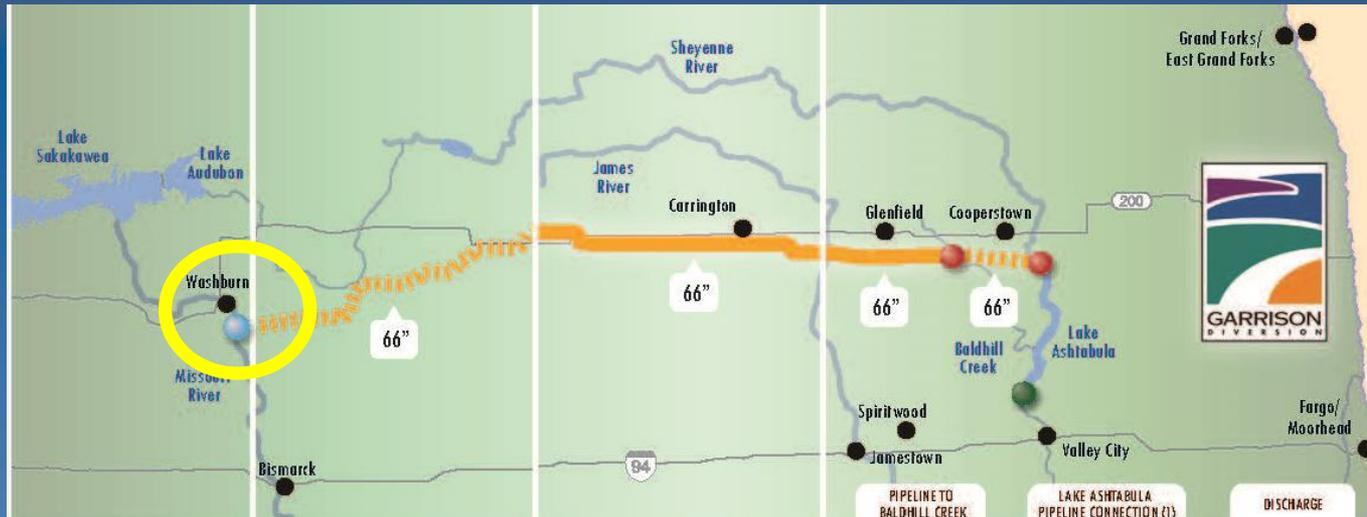


\* Red River Basin Water Supply Coalition

# Work Plan

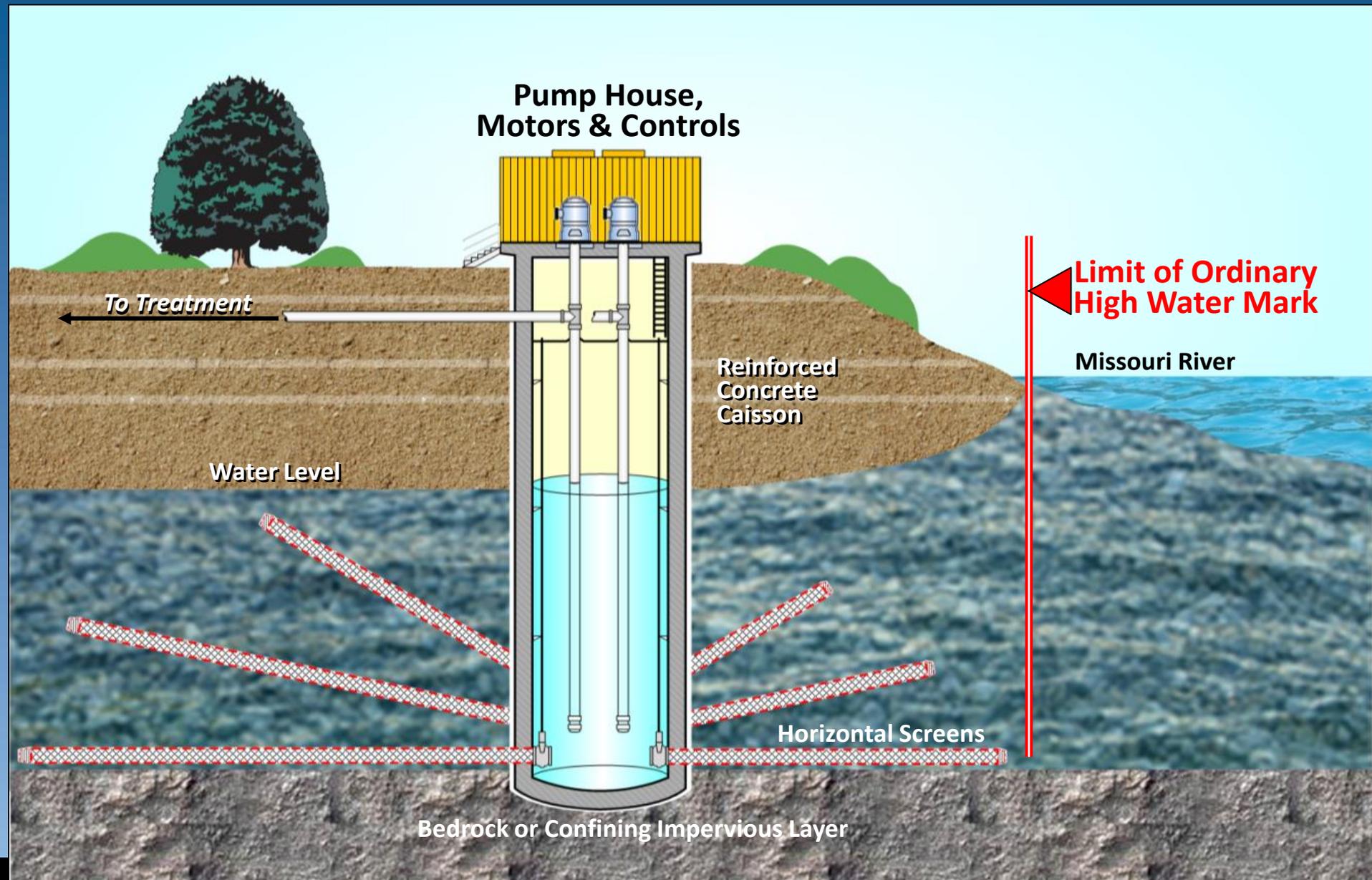
- **Spring 2016 Objective:**
  - Complete Conceptual Design
    - General layout and location of all facilities
  - **Cost - \$5 Million**
- **Spring 2017 Objective:**
  - Complete Preliminary Engineering
    - Final horizontal alignment for pipeline and specific sizing of pumps and other structures
  - **Cost - \$7 Million**

# Source Water Supply Conceptual Design

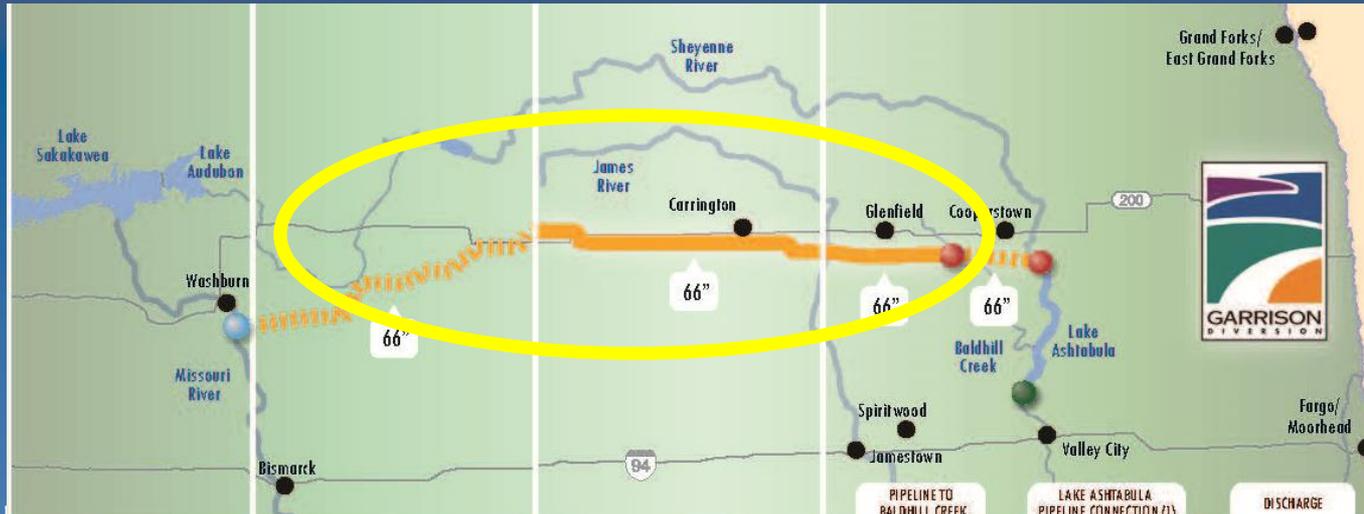


	Source Water
Uncertainty	Will Horizontal Collector Wells Provide Needed Capacity?
Evaluation	Aquifer Testing and Analysis
Benefit	Capacity Validation and Conceptual Design and Cost

# Typical Horizontal Collector Well



# Pipeline Alignment Optimization

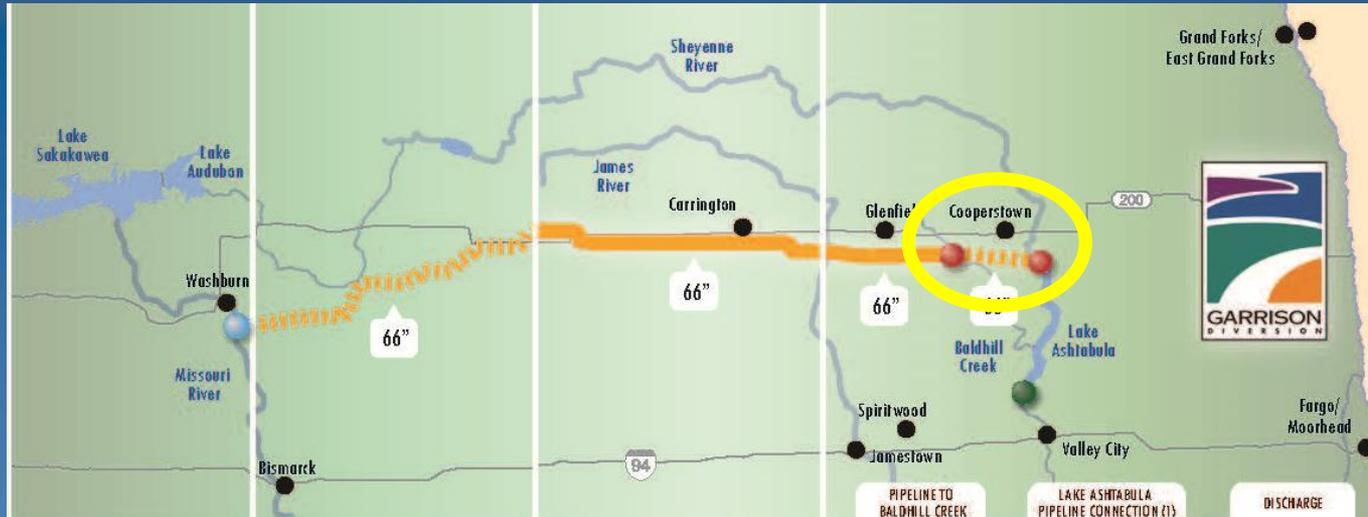


	Alignment
Uncertainty	Finalize Route to Avoid/Minimize Wetland Impacts
Evaluation	Detailed Alignment Study with Aerial Mapping and Onsite Observations
Benefit	Optimized Horizontal Alignment and Conceptual Cost

# Pipeline Example



# Discharge Location and Conceptual Design



	Discharge
Uncertainty	Is Baldhill Creek a Feasible Discharge Location?
Evaluation	Hydrology Study to Assess Impacts on Flow and Owners
Benefit	Certainty if Baldhill Creek is a Discharge Option

# Discharge Structure Example



# Discharge Structure Example



# RRVWSP Implementation Work Plan

## Red River Valley Water Supply Project Implementation Work Plan

-  Intake
-  Discharge Location Options
-  Baldhill Dam
-  Highway 200 Pipeline Route
-  Pipeline Connections

 Completed

### Breakdown

Concept Phase	\$ 3,540,000
Preliminary Phase	\$ 5,070,000
Final Phase	\$ 25,090,000

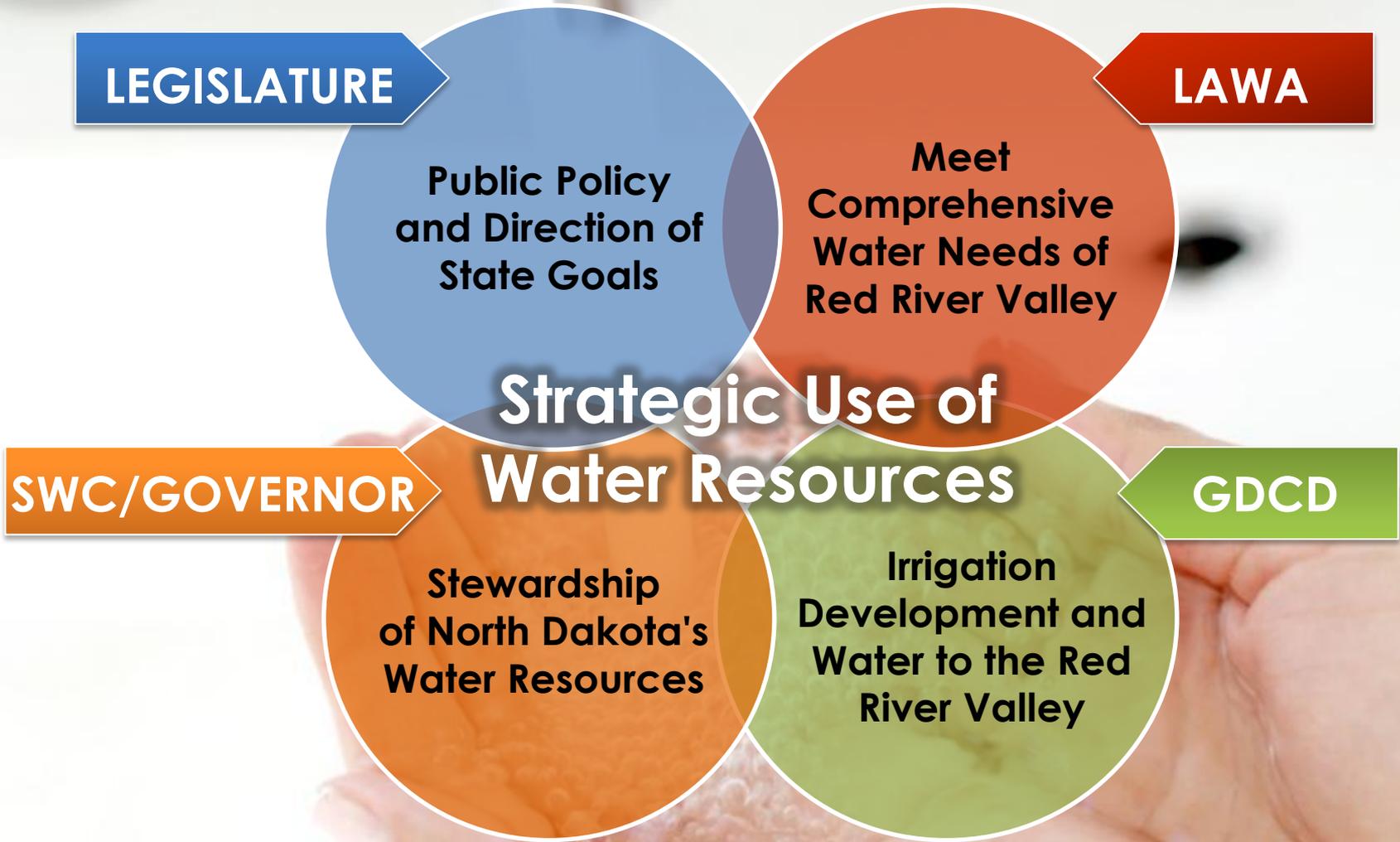


	MISSOURI RIVER INTAKE	MISSOURI RIVER CONNECTION	HIGHWAY 200 ROUTE	HIGHWAY 200 ROUTE	LAKE ASHTABALA PIPELINE CONNECTION (1)	DISCHARGE
Project Planning	✓	✓	✓	✓	✓	✓
Finalize Alignment Selection (2)	\$ 400,000	\$ 540,000	\$ 110,000	\$ 50,000	\$ 30,000	\$ 700,000
Pipeline/Flowage Easements, Land Options, and Negotiations with Reclamation (2)	\$ 300,000	\$ 890,000	\$ 170,000	\$ 70,000	\$ 180,000	\$ 100,000
Preliminary Permitting	\$ 100,000	\$ 150,000	\$ 110,000	\$ 50,000	\$ 30,000	TBD
Predesign (2)	\$ 1,700,000	\$ 1,770,000	\$ 260,000	\$ 120,000	\$ 80,000	\$ 700,000
Final Pipeline/Flowage Easement, Land Acquisitions, and Contract with Reclamation	\$ 1,370,000	\$ 4,040,000	\$ 3,080,000	\$ 1,290,000	\$ 800,000	\$ 900,000
Final Design	\$ 3,440,000	\$ 3,530,000	\$ 2,610,000	\$ 1,180,000	\$ 780,000	\$ 1,200,000
Final Permitting	\$ 200,000	\$ 290,000	\$ 220,000	\$ 100,000	\$ 60,000	TBD
Sub-Totals	\$ 7,510,000	\$ 11,210,000	\$ 6,560,000	\$ 2,860,000	\$ 1,960,000	\$ 3,600,000
<b>Total Work Plan Costs</b>						<b>\$ 33,700,000</b>

(1) Lake Ashitabala Pipeline Connection not required if discharged through Baldhill Creek.

(2) Reduced costs shown for the Highway 200 and Pipeline to Baldhill Creek segments since portions of alignment sections, pipeline easements, and preliminary designs previously completed.

# Collaborative Vision and Implementation



# Municipal, Rural and Industrial (MR&I) Water Supply

- **MR&I Program began in 1986**
  - Garrison Diversion Unit Reformulation Act
- **\$400 million federally authorized**
  - To date - \$287 M has been expended



# MR&I

- **2015 MR&I**
  - Southwest Pipeline Project - \$2,000,000
  - South Central Regional Water District - \$4,387,500
    - **Total - \$6,387,500**
- **2016 MR&I**
  - Gladstone - \$735,000
  - Makoti - \$1,050,000
  - Glenburn - \$1,237,500
    - **Total FY2016 = \$3,022,500**
- **If additional 2016 federal funding is available**
  - Mohall - \$670,000
  - Sherwood - \$456,000

# THANK YOU!

