

# Summary & Findings

## RRVWSP Alternatives Comparison

April 16, 2012



# 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 1930's-type drought
- Expected economic impact ~\$20.4 billion over 10 years

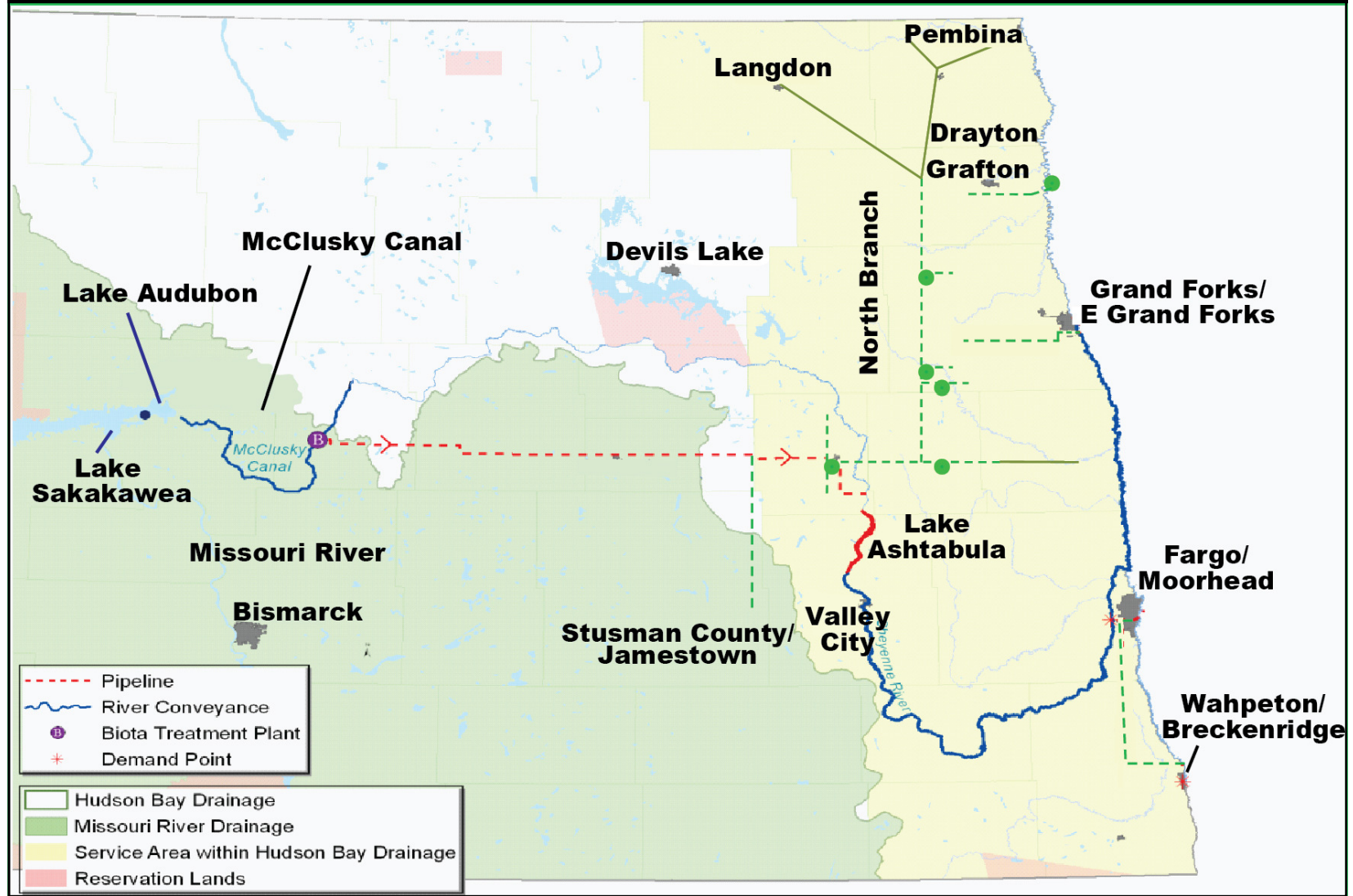


# Problem

- Project will take a minimum of six years to construct
- Conversely, only one year of back-up water supply is contained in Lake Ashtabula
- Industrial demand exceeds current supply



# Preferred Alternative Overview





## Background – Preferred Alternative

- **Convey Missouri River water from McClusky Canal to Lake Ashtabula**

### Main Project Components:

- **Utilizes Principal Supply Works**
- **Capacity: 122 cfs**
- **McClusky Canal Intake & Biota WTP**
- **Conveyance Pipeline: 122 miles**
- **Pumping head required: 180 feet**

## Background – Preferred Alternative

- **Previously developed cost estimates:**
  - Total Project Cost (2012\$): \$612,700,000
- **Federal Record of Decision (ROD) and Congressional Authorization not yet obtained**



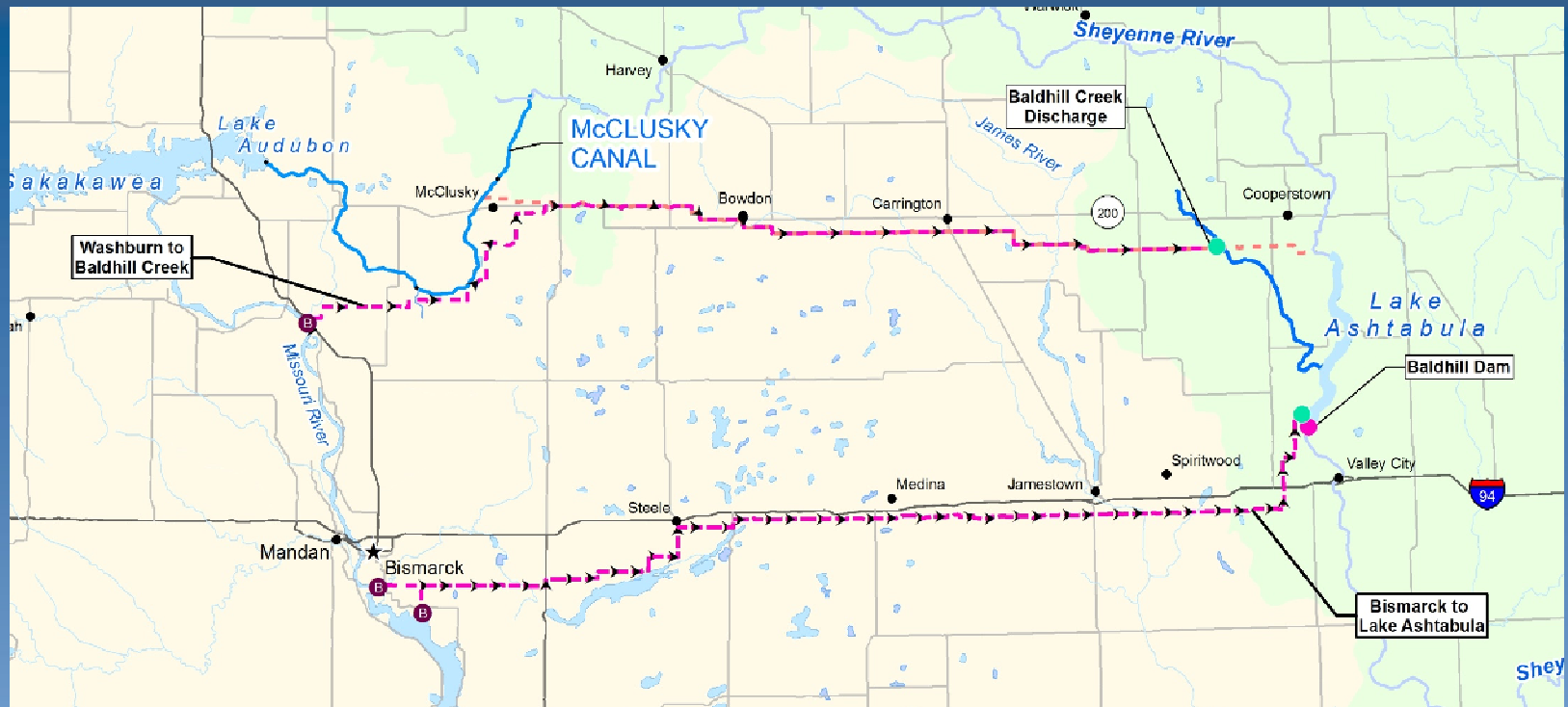
# Plan B

- Considered multiple potential alternatives
- Two alternatives emerged:
  - Washburn to Baldhill Creek
  - Bismarck to Lake Ashtabula

**OBJECTIVE**

**Determine “Plan B”**

# Plan B Alternatives to Compare



- ✓Washburn Alternative Pumping Head Required: 420 Feet
- ✓Bismarck Alternative Pumping Head Required: 340 Feet



# Primary Considerations

- Conventional Intakes
- Treatment Implications
- Baldhill Creek Discharge & Conveyance
- Lake Ashtabula Discharge
- Environmental or Cultural Resources Concerns
- Pipeline Route & Trenchless Crossing Refinements
- Cost Estimates

# What did we find out?

Washburn and Bismarck Alternatives - Project Cost Comparisons (2012\$)				
Alternatives	Intake Costs	Biota WTP Cost	Main Pipeline Cost	Total Project Cost
Washburn to Baldhill Creek (Conv. Intake)	\$53,000,000	\$128,400,000	\$600,000,000	\$781,400,000
Bismarck to Lake Ashtabula (Conv. Intake)	\$53,000,000	\$128,400,000	\$623,000,000	\$804,400,000
Bismarck to Lake Ashtabula (Conv. Intake)	\$223,000,000	\$238,400,000	\$253,000,000	\$714,400,000
Washburn to Baldhill Creek (Conv. Intake)	\$223,000,000	\$238,400,000	\$280,000,000	\$741,400,000

- Conceptual costs are expected to be within 30% (within margin of estimate accuracy)
- Considered conventional intake based on screening of available hydrogeologic data

There is no significant advantage between the two routes based on costs alone

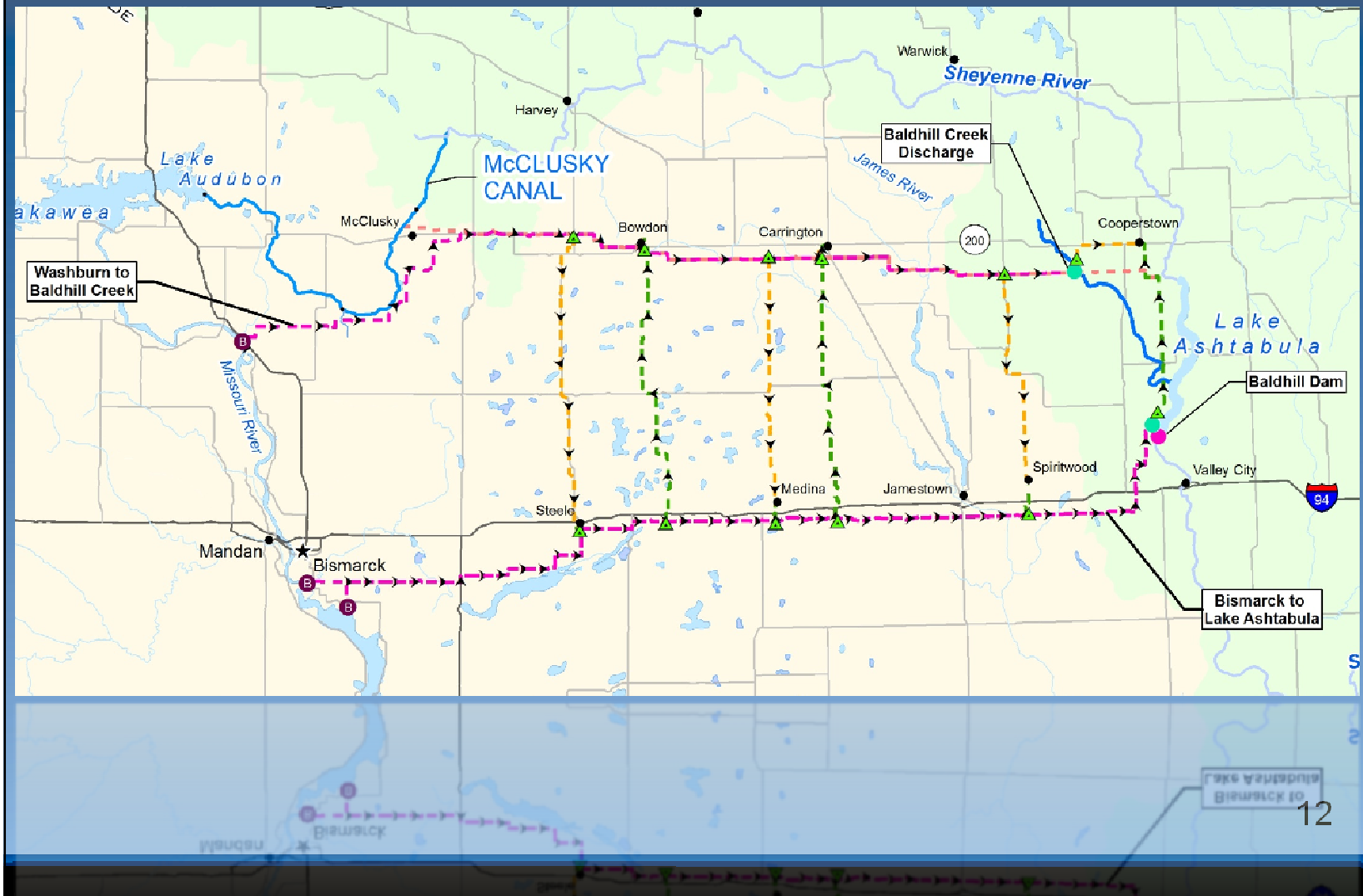


# Direct Pipeline User Considerations

- **Direct Pipeline Users – the Project could potentially provide water to additional users with spur lines connected to the main Project pipeline**
- **Who can be served from each route?**
- **What are the cost implications?**



# Potential Direct Pipeline Users



# What did we find out?

Direct Pipeline User Cost Summary		
Alternative	Total Projected Water Demand MGD	Pipeline Cost (2012\$)
Washburn to Baldhill Creek Main Pipeline:		
Potential Direct Pipeline Users:		
Steele	1.4	\$10,694,000
Bowdon	1.1	\$555,000
Medina	1.2	\$8,711,000
Carrington	2.0	\$1,638,000
Spiritwood	4.0	\$17,040,000
Cooperstown - Baldhill Creek	23.8	\$38,606,000
<b>Totals</b>		<b>\$77,244,000</b>
Bismarck to Lake Ashtabula Main Pipeline:		
Potential Direct Pipeline Users:		
Steele	1.4	\$581,000
Bowdon	1.1	\$10,697,000
Medina	1.2	\$862,000
Carrington	2.0	\$16,254,000
Spiritwood	4.0	\$2,755,000
Cooperstown - Baldhill Dam	23.8	\$68,944,000
<b>Totals</b>		<b>\$100,093,000</b>

# Bismarck Alternative Advantages



- Slightly lower operating cost due to reduced treatment and less pumping expected (much higher than Preferred Alternative)
- “Higher profile” corridor



# Washburn Alternative Advantages



- Equal or slightly lower capital cost
- Less congested corridor
- FEIS completed for majority of route
- ROW options 76% secured
- Preliminary design 83% completed
- Required permits identified
- Access to McClusky Canal in the future

# Conclusions

- **Preferred Alternative is expected to be the most economical option for both capital and operation & maintenance costs**



**Plan B: Washburn Alternative** utilizing previous Preferred Alternative route more advantageous and slightly more economical than the Bismarck Alternative

# Plan B Alternatives

