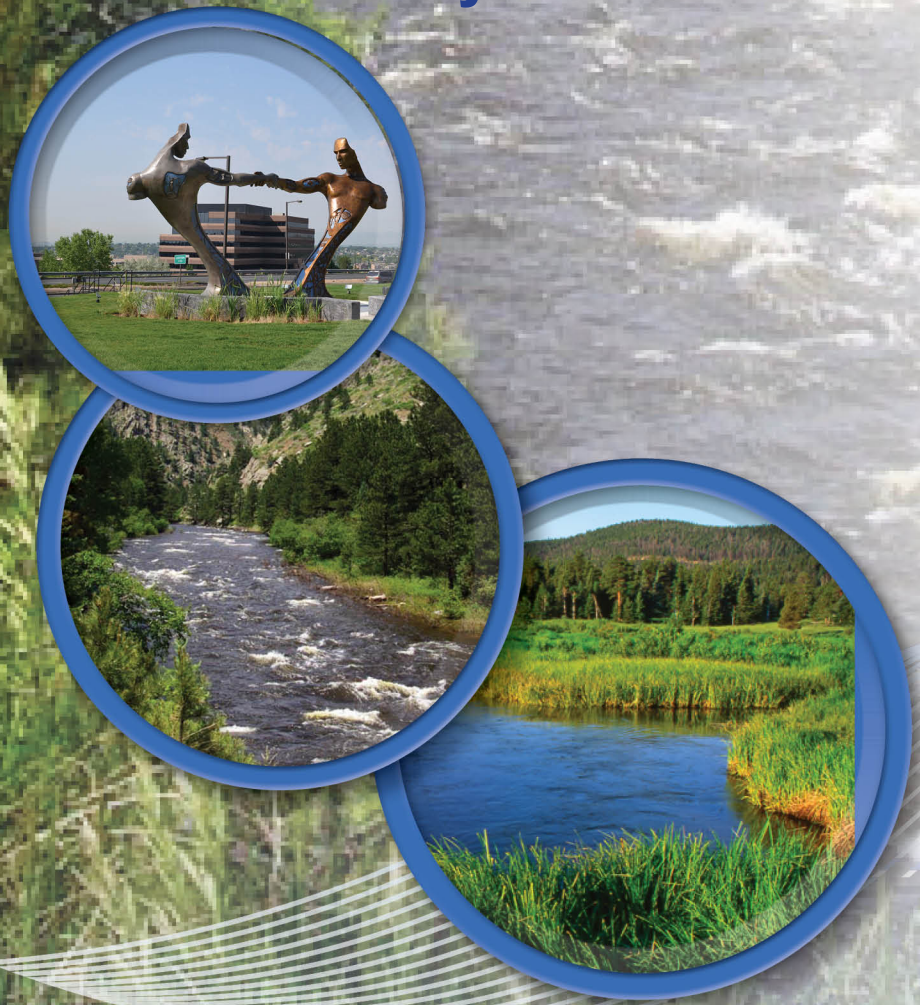
Thornton Northern Water Supply Project
City Council Planning Session Meeting



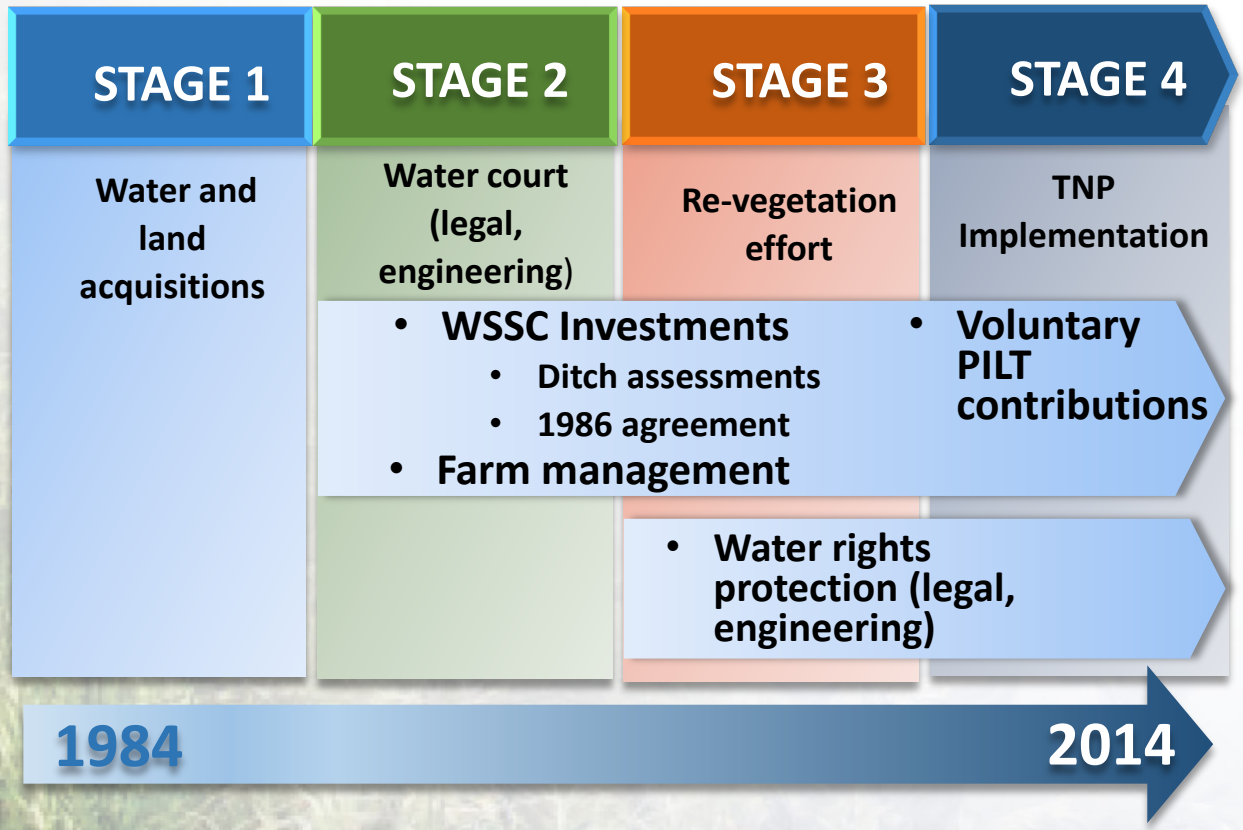
City of Thornton

June 3, 2014

Glossary of Acronyms

- 1041 Permit – HB 1041 (1974) authorizes local governments to designate as activities of state interest the site selection and construction of major new domestic water (Larimer, Boulder, and Adams)
- 404 Permit – Regulates the discharge of dredged or fill material into waters of the United States, including wetlands (administered by USACE).
- USR – Use by Special Review – Land use permit that Weld County uses to permit water infrastructure projects
- AF/YR – acre-feet of water per year. One AF supplies about 5 residents
- NISP – Northern Integrated Supply Project
- TNP – Thornton Northern Project
- WSSC – Water Supply and Storage Company
- USACE – United States Army Corps of Engineers
- CDPHE – Colorado Department of Public Health and Environment

Thornton's Northern Project – the vision

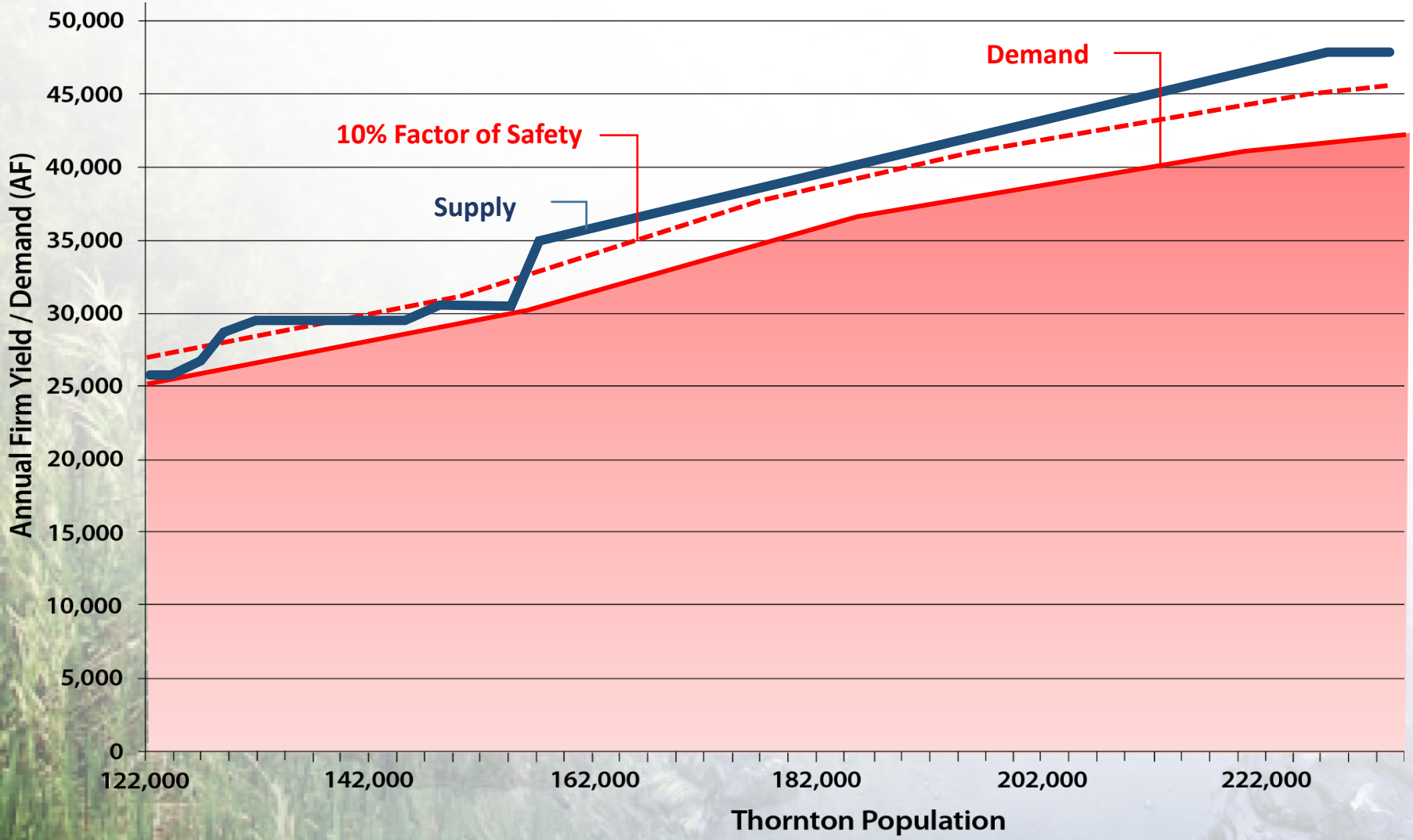


- Protect public health and customer acceptance
- Cost effective supply
- Drought protection

Recent planning efforts by staff have confirmed purpose and need for the new supply

- Improve system reliability by diversifying Thornton's existing water supply
- Continue with other projects to provide a reliably supply for 150,000 residents expected to occur by 2023 to 2028 (for which development plans are approved)
- Increase capacity of the existing system through the Thornton Northern Project (and current projects underway) to serve a population in excess of 150,000.
- Development of the Thornton Northern Project includes decreed water rights that are sufficient to meet project demands through 2065.

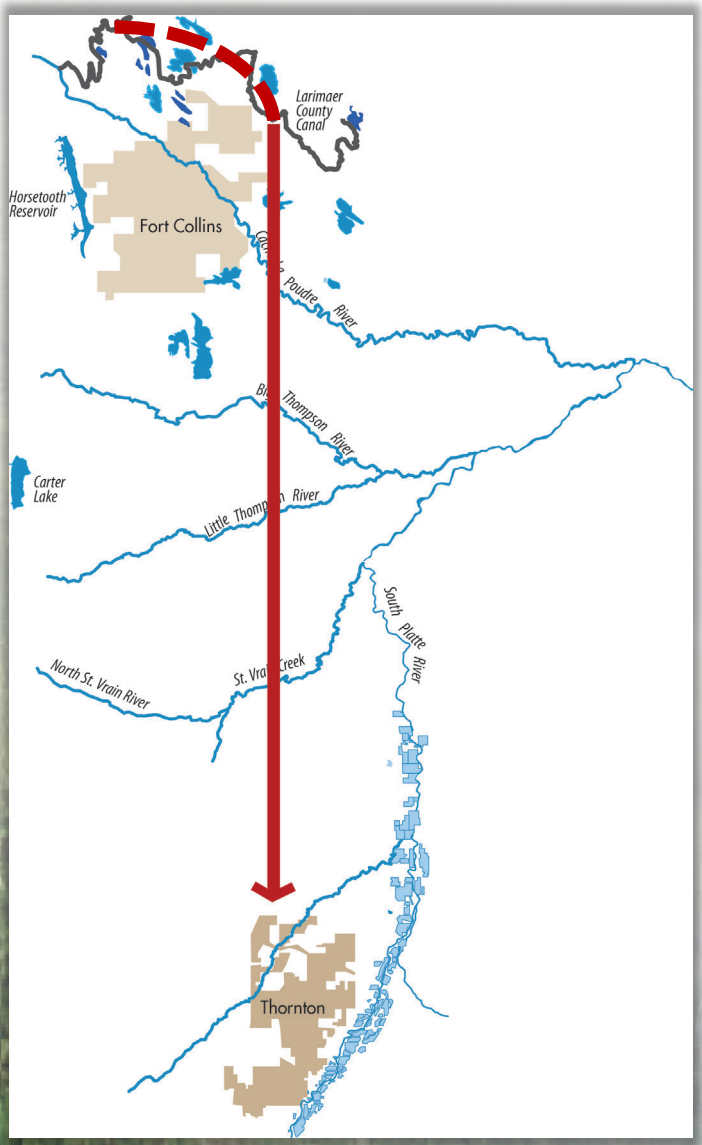
TNP will meet new demands AND provides drought resistance



A thoughtful evaluation of all options to meet this need

Concept 1	Classic Pipeline from WSSC
Concept 2	Poudre River diversion
Concept 3	Colorado Big Thompson Water Exchange
Concept 4	South Platte River Exchange

Concept 1 Classic Pipeline from WSSC



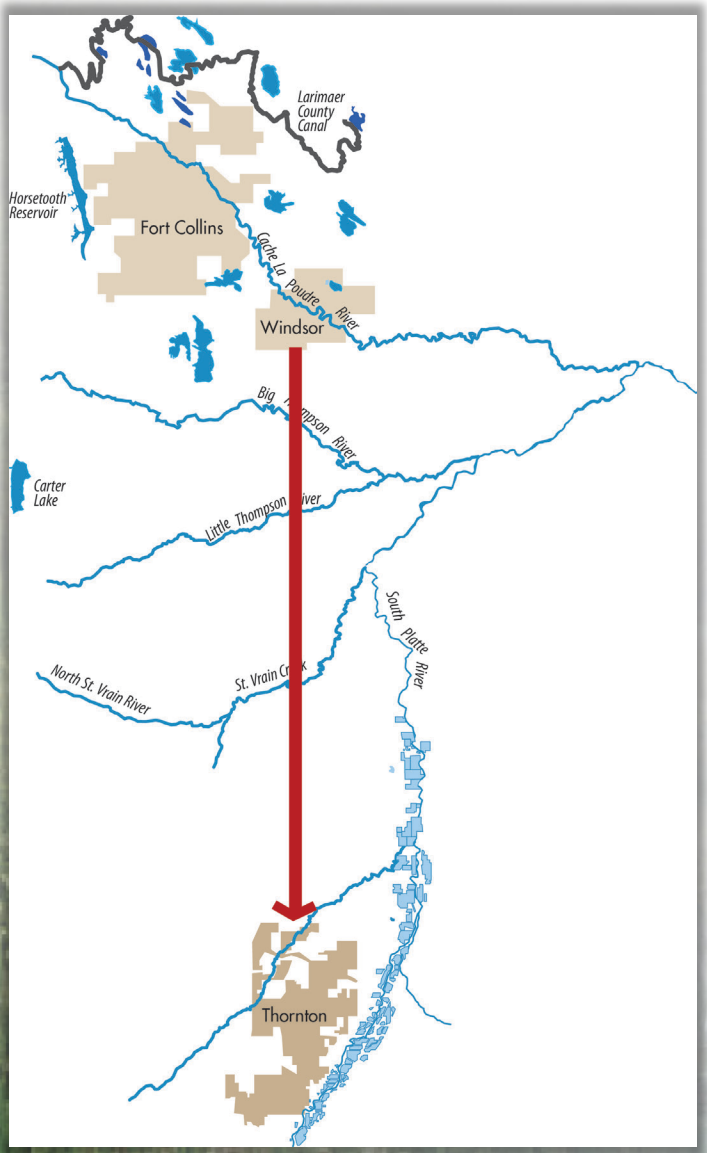
Description

- Diversion From LCC headgate
- Withdraw water from existing WSSC reservoir(s)
- Pipeline and pump stations to deliver water to Thornton

Implementation Challenges

- Subject to Larimer County 1041 regulations
- Subject to Weld County use by special review regulations
- Major river crossings and potential impacts to jurisdictional and non-jurisdictional wetlands, depending on alignment

Concept 2 Poudre River diversion



Description

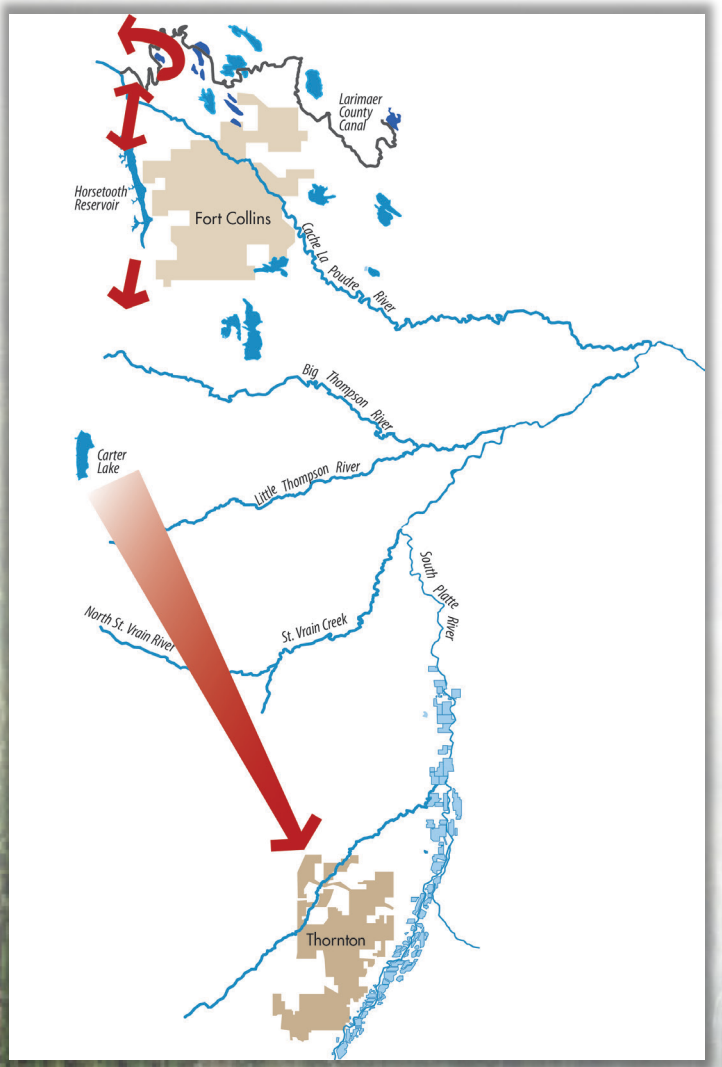
- Diversion from LCC headgate
- Return flow to Poudre River
- Downstream diversion from new/existing Poudre River headgates
- Pipeline and pump station system to deliver water to Thornton

Implementation Challenges

- Connections to the Poudre River will likely trigger a federal permitting
- Possible Larimer County 1041 regulations for return flow and flow measuring structures along Poudre
- Subject to Weld County use by special review regulations
- Relatively poor source water quality

Concept 3

Colorado Big Thompson Water Exchange



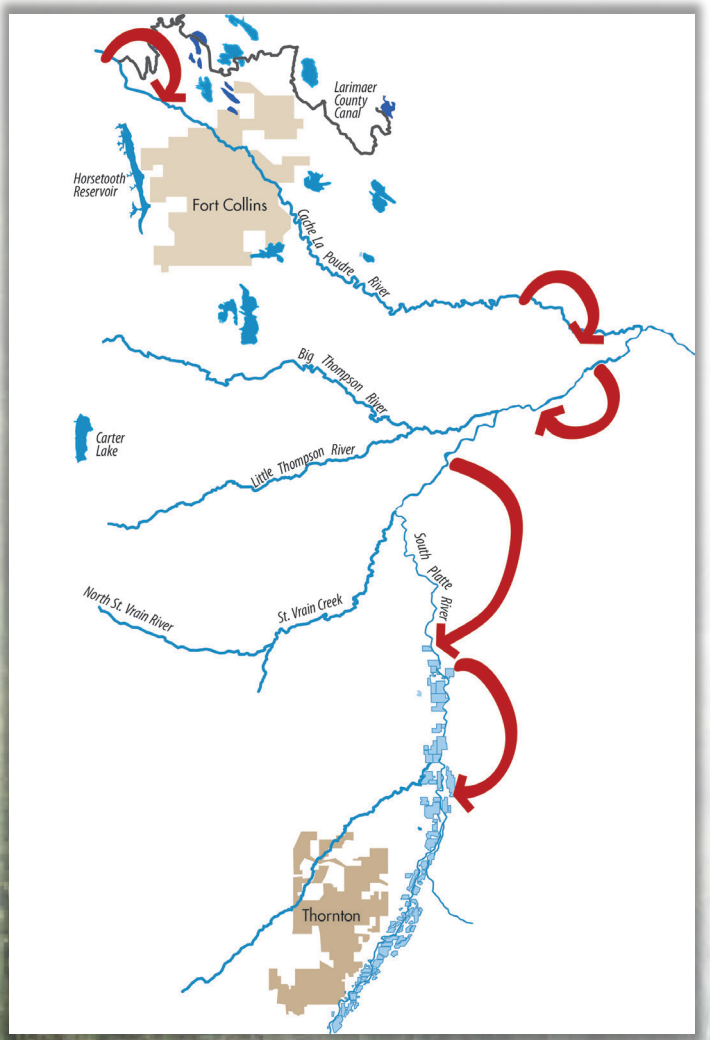
Description

- Diversion from LCC headgate.
- Deliver Thornton WSSC shares to Horsetooth Reservoir
- Water from Carter Lake is delivered to Thornton through existing or planned Northern Water Infrastructure

Implementation Challenges

- Requires storage rights in NISP
- Use of facilities requires admission to Northern Water, requiring buy-in and pro-rated O&M costs beyond Thornton's control
- Thornton’s application to become a member of Northern Water would trigger a Federal permitting process
- Pipeline to Thornton would require a 1041 permit from Boulder County

Concept 4 South Platte River Exchange



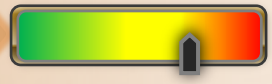
Description

- Diversion from LCC headgate
- Return flow to river via return flow structures
- South Platte River water is diverted in exchange for Poudre River water, when South Platte River conditions permit.

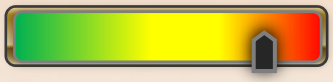
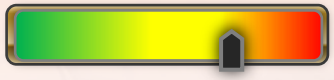
Implementation Challenges

- Uncertainty of future river administration reduces reliability
- Produces inadequate supply to meet projected water demands, even with addition of new storage and favorable hydrologic conditions.
- Poorest water quality

Relative probability of success is a function of cost and various non-economic factors

	Permitting Complexity	Institutional Constraints	Sufficient Supply	Costs	Probability of Success
Concept 1				$400M To $500M	
Concept 2				$350M To $450M	
Concept 3				Not Estimated	
Concept 4				Not Estimated	

Probable permits required for Concept 1 and Concept 2 are similar, but relative risks are distinct

Permit Process	Concept 1 Classic Pipeline	Concept 2 Poudre River Diversion
USACE 404 Permit		
Larimer County 1041		
Weld County USR Permit		
Adams County 1041		
CDPHE Design Approval		
Windsor Site Plan	**NA**	

Concept 1 **Classic Pipeline from WSSC**

Discussions with USACE provided guidance on 404 permitting requirements

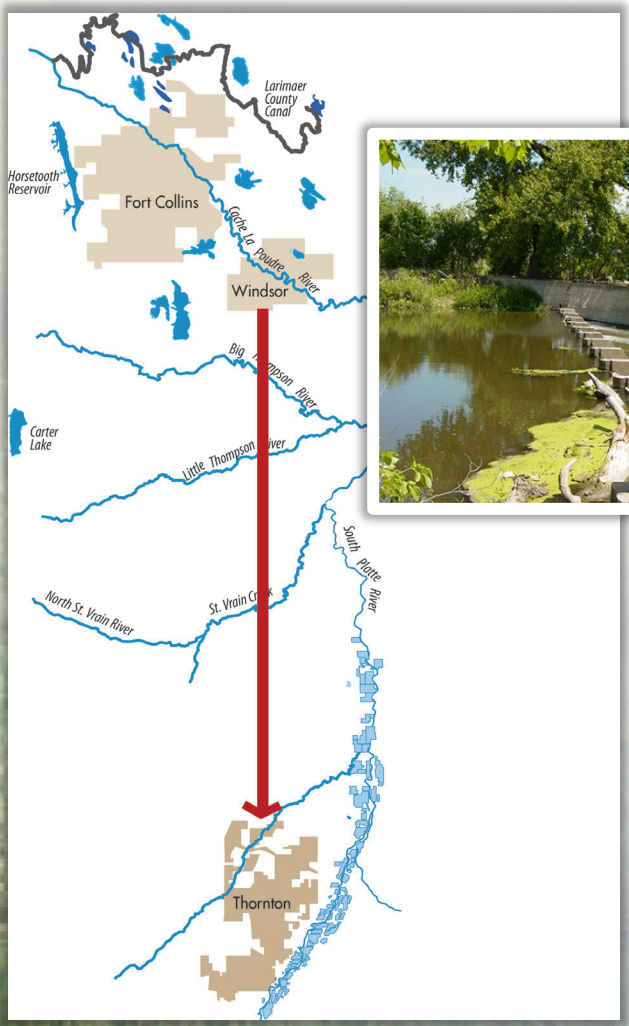
- Larimer County Canal likely considered jurisdictional by USACE
- 404 permit may be required depending on implementation strategy

Permitting Complexity

Concept 2

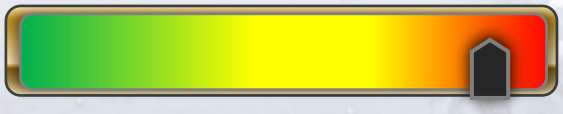
Poudre River Diversion

Faces potential for lengthy 404 permitting process



- Direct withdrawal from Poudre River near B.H. Eaton Ditch headgate
- Triggers impact to Waters of the US
- Poorer water quality could complicate the Design Approval process with CDPHE

Permitting Complexity

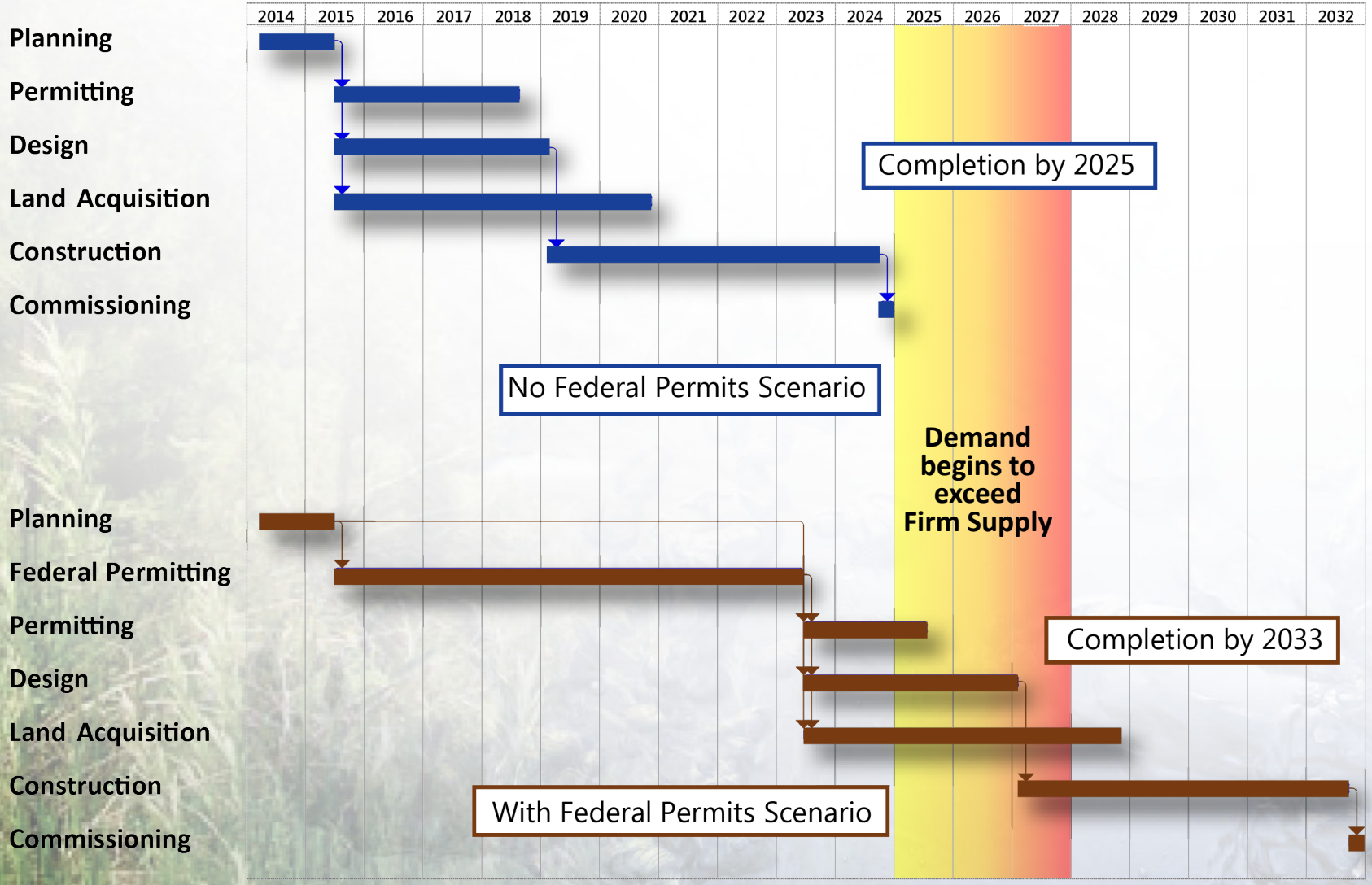


Federal approval process can be lengthy

- **Arkansas Valley Conduit**
  5 years
- **Moffat Collection System**
  11 years (still in process)
- **Northern Integrated Supply Project**
  10 years (still in process)
- **Southern Delivery System**
  6 years
- **Windy Gap Firming Project**
  8 years (still in process)

Schedule: No Federal Permitting vs. Federal Permitting

Preliminary implementation schedules



Next steps in evaluation and implementation

1. Further verification from USACE that project is configurable without 404 Permit
2. Initial outreach to the potentially applicable land use agencies and CDPHE
3. Develop and implement water quality assessment program
4. Develop Project Delivery Plan including refinements to cost estimates, contracting plan, and schedule