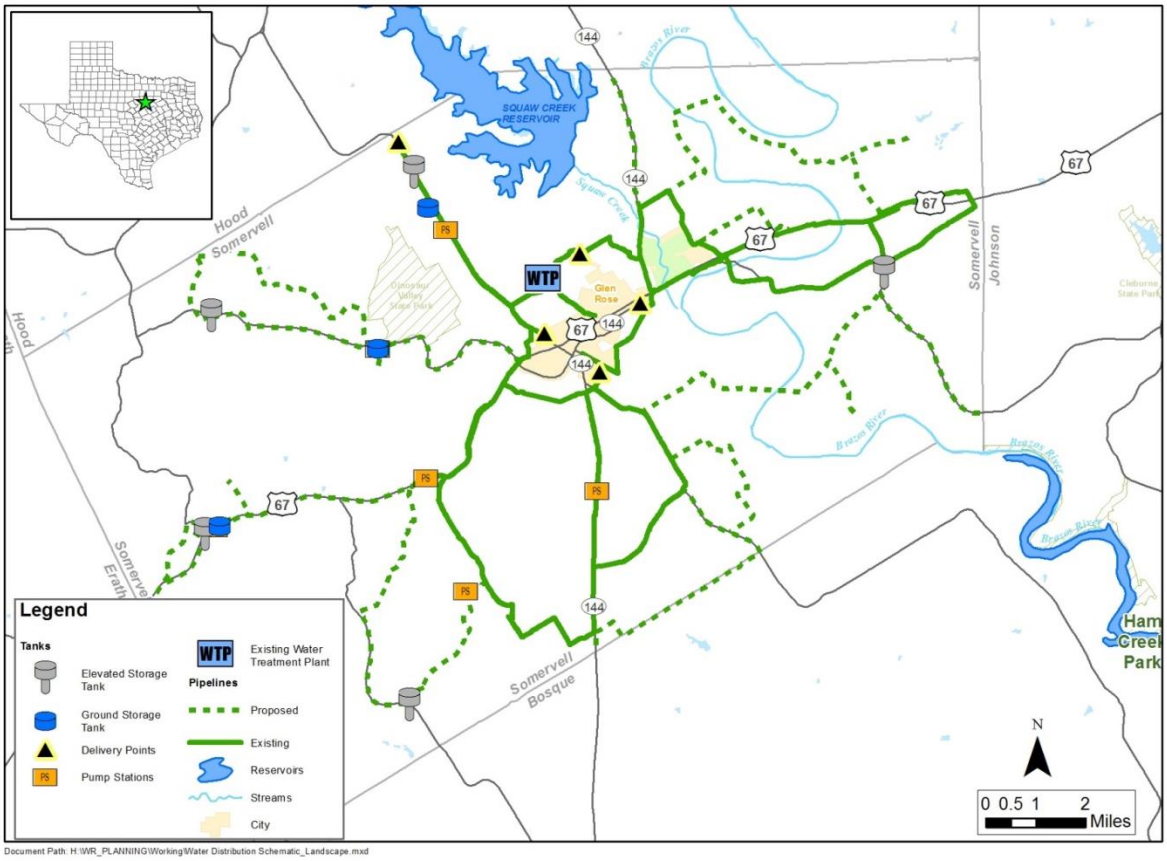
8.3 Somervell County Water Supply Project

8.3.1 Description of Option

The Somervell County Water District (SCWD) completed the first part of their surface water supply system in October 2011. Previously, Somervell County obtained all of its water from the Trinity Aquifer, which was not able to sustain current and future uses. SCWD is currently supplying water to the City of Glen Rose and Comanche Peak Steam Electric Station as wholesale customers and to many retail commercial and residential customers in the county. The components of the project that have been completed include the Paluxy River channel dam and reservoir, the raw water pump station, a 36-inch raw water pipeline, the 4,118 acre-foot off-channel Wheeler Branch Reservoir, a 2.5 MGD membrane filtration water treatment plant, two treated water pump stations and elevated storage tanks, and part of the distribution piping system. A 1.25 MGD water treatment plant expansion and additional distribution system piping will allow SCWD to deliver water to more commercial and residential customers within Somervell County. The SCWD plans to complete the project by 2035. When complete, the project will provide 2,000 acre-feet per year of surface water supplies to water users in Somervell County. Figure 8.3-1 shows SCWD's the existing and proposed infrastructure and major delivery points.

Figure 8.3-1 Proposed Phases of the Somervell County Water Supply Project



8.3.2 Available Supply

The Somervell County Water District has a water right for 2,000 acre-feet per year from the Wheeler Branch Reservoir, which is operated in conjunction with a channel dam on the Paluxy River (CA-12-5744)[1]. The District has an agreement with the Brazos River Authority (BRA) that makes the 2,000 acre-feet per year available on a reliable basis by subordinating BRA's water right in Lake Whitney (CA 12-5157). The existing components of the Somervell County Water Supply Project provide1,400 acre-feet per year. The planned water treatment plant expansion in 2016 will allow the SCWD to use the full yield of the project[2].

8.3.3 Environmental Issues

There would be limited environmental impacts along the water distribution system route, provided all terms and conditions of the permits are met. Environmental impacts could include:

- Possible minor impacts to riparian corridors, depending on location of pipelines
- Other possible minor impacts from pipeline development

The impacts of pipeline development will be minimized to the extent possible by following existing roadway corridors and by avoiding environmentally sensitive areas where feasible. A summary of environmental issues is presented in Table 8.3-1. Suitable habitat for the black-capped vireo, golden-cheeked warbler, and the whooping crane were not observed in the proposed construction areas, and no adverse impacts to federally-listed threatened or endangered species are anticipated[2].

Table 8.3-1 Environmental Issues: Somervell County Water Supply Project

Water Management Option	Somervell County Water Supply Project
Implementation Measures	A 1.25 MGD water treatment plant expansion, pump stations, ground and elevated storage tanks, and pipelines (approx. 75 miles)
Environmental Water Needs/Instream Flows	Negligible impact.
Bays and Estuaries	Negligible impact.
Fish and Wildlife Habitat	Possible minor impacts on riparian corridors, depending on specific location of pipelines.
Cultural Resources	Possible low impact.
Threatened and Endangered Species	Possible low impact.
Water Management Option	Somervell County Water Supply Project

[1] Certificate of Adjudication 12-5744

[2] Somervell County Water District, Engineering Feasibility Report Phase 5, 6, 8a, and 8b Distribution System. Prepared for TWDB by Freese and Nichols, Inc. Updated March 2013.

8.3.4 Engineering and Costing

Figure 8.3-1 shows the facilities included in the Somervell County Water Project. Water from Wheeler Branch Reservoir is treated at the water treatment plant below the dam and distributed to the county by a system of pump stations, ground and elevated storage tanks, and pipelines. Completed phases include a 2.5 MGD water treatment plant and high service pump station, a raw water pump station, 2 booster pump stations, 4 ground storage tanks, 2 elevated tanks, and 75 miles of pipeline ranging from 6 inches to 18 inches in diameter. Future phases will include expanding the water treatment plant and high service pump station to 3.75 MGD, 3 booster pump stations, 2 ground storage tanks, 3 elevated tanks, and 75 miles of pipeline ranging from 6 inches to 12 inches in diameter.

Financing was identified as a possible implementation issue in the 2011 Plan. To date, the phases of the Somervell County Water Supply Plan that have been built have been financed through multiple loan requests, including: TWDB's Water Infrastructure Fund (WIF) construction loan ($9.4 million), WIF rural loan ($9.5 million), Economically Distressed Areas Program (EDAP) Rural State Water Plan Grant ($9.5 million), EDAP State Water Plan Grant ($1.3 million), and the EDAP State Water Plan Loan ($1.3 million), among others.

Table 8.3-2 summarizes the capital costs for the phases that have yet to be constructed (i.e., Phases 7A and 9 through 17), which total $23,017,000 in September 2013 dollars. Contingencies, professional services, land costs, and interest during construction will add $12,232,000, for a total project cost of $35,249,000. With 5.5 percent interest and 20-year bonds, the annual debt service is $2,950,000. Operation and maintenance costs for pumping, transmission and treatment add $606,000 per year, for a total annual cost of $3,556,000 for delivery of 600 acre-feet. All costs are for retail, as opposed to wholesale, facilities. The cost of treated water delivered is $5,928 per acre-foot, or $18.20 per thousand gallons. The development of a new surface water supply and retail distribution system in a rural area results in relatively high costs per unit of water. The cost for this strategy is especially high because it is calculated by dividing the total cost for the remainder of the project by the total amount of water made available by the remainder of the project. The WTP expansion in Phase 7A increases the total supply by 600 acft/yr because 1,400 acft/yr was made available by earlier phases and the water right limits the project to 2000 acft/yr. The costs of Phases 9-17 are associated with a retail distribution system in a rural area where the density of customers is low. Considering the entire project (Phases 1-17) and the full permitted amount of water (2,000 acft/yr), the annual cost of water is around $12.89 per thousand gallons.

Table 8.3-2 Cost Estimate Summary for Somervell County Water Supply Project Phases 7A & 9-17 (September 2013 Prices)

Item	Estimated Cost for Facilities
Water Treatment Plant Expansion (1.25 MGD)	$895,000
High Service Pump Station Expansion	$90,000
6" Pipe	$2,336,000
8" Pipe	$7,203,000
12" Pipe	$6,400,000
Boring and Casing	$684,000
Horizontal Directional Drilling	$475,000
Pavement Repair	$142,000
Pressure Reducing Valve	$95,000
Ground Storage Tanks	$895,000
Elevated Storage Tanks	$3,265,000
Pump Stations	$537,000
TOTAL COST OF FACILITIES	**$23,017,000**
Engineering, Legal Costs and Contingencies	$6,905,000
Environmental & Archaeology Studies and Mitigation	$1,853,000
Land Costs	$2,282,000
Interest During Construction (1 year)	$1,192,000
TOTAL COST OF PROJECT	**$35,249,000**
ANNUAL COST	
Debt Service (5.5 percent for 20 years)	$2,950,000
Operation and Maintenance	$529,000
Energy Costs (852,700 kWh @ $0.09/kWh)	$77,000
TOTAL ANNUAL COST	**$3,556,000**
Available Project Yield (acft/yr)	**600**
Annual Cost of Water ($ per acft)	**$5,928**
Annual Cost of Water ($ per 1,000 gallons)	**$18.20**

Notes:

1. All costs are for retail facilities

2. Total project yield is 2000 acft/yr; 1400 acft/yr provided by other phases

8.3.5 Implementation Issues

Four sites with potentially significant cultural resources were identified in the vicinity of the proposed pipeline route[3]. The Somervell County Water District plans to preserve all four sites by completely avoiding each site and following the recommendations specified in the report. No impact to cultural resources is expected. Financing will continue to be an implementation issue, and financing vehicles similar to those used to fund the first part of the project are expected to be used to complete the project. Table 8.3-3 compares this water management strategy to the plan development criteria.

Table 8.3-3 Comparison of Somervell County Water Supply Project to Plan Development Criteria

Impact Category	Comment(s)
A. Water Supply	
1. Quantity	1. Sufficient to meet needs
2. Reliability	2. High reliability
3. Cost	3. Relatively high, but reasonable for a county-wide system
B. Environmental factors	
1. Environmental Water Needs	1. Low impact
2. Habitat	2. Low impact
3. Cultural Resources	3. Low impact
4. Bays and Estuaries	4. Low impact
5. Threatened and Endangered Species	5. Low impact
6. Wetlands	6. Low impact
C. Impact on Other State Water Resources	• No apparent negative impacts on state water resources; no effect on navigation
D. Threats to Agriculture and Natural Resources	• None
E. Equitable Comparison of Strategies Deemed Feasible	• Done
F. Requirements for Interbasin Transfers	• Not applicable
G. Third Party Social and Economic Impacts from Voluntary Redistribution	• None

[3] An Archaeological Survey of the Proposed Somervell County Water District Pipeline Route. Prepared by AR Consultants, Inc. for Somervell County Water District. January 2012.

Potential Regulatory Requirements:

Implementation of this water management strategy will require the following permits for pipeline construction:

- U.S. Army Corps of Engineers Section 404 permit for pipeline stream crossings and discharges of fill into wetlands and waters of the U.S. during construction.
    - Stream crossings could be authorized under Nationwide Permit 12 (NWP-12), Utility Line Activities, if all terms and conditions are met, which is likely.
- A TPDES General Permit for Construction Activity is required for construction activities that disturb more than one acre, and a Storm Water Pollution Prevention Plan is required for any project that disturbs five acres or more.
- TP&WD Sand, Shell, Gravel, and Marl permits for construction in state-owned stream beds may be required.
- Appropriate permits have been and will be obtained for TxDOT highway crossings.