

Business Case for Pipe Replacement

Drinking Water State Revolving Fund Green Project Reserve

Town of Laverne, Oklahoma

MECE 211157

DWSRF P-40-2003002-01

May 2012



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JUN 04 2012

WATER QUALITY DIVISION

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PIPE REPLACEMENT AND AMR INSTALLATION

TOWN OF LAVERNE
MECE 211157

Summary

- Project consists of replacement of 46,110 feet of lead-jointed steel and cast iron distribution pipe (installed in the 1920's) with new 6-inch, 8-inch, and 10-inch PVC Class 200 water lines to eliminate loss of water caused by leaks and breaks of the old water lines.
- DWSRF loan amount = \$3,700,000
 - \$736,584.00 Pipe Replacement
 - \$399,000.00 Automatic Meter Reading Installation
- Energy efficiency (green) portion of loan = \$500,000
 - The remaining portion of the loan will be used for the rehabilitation of the existing water storage tank and the construction of a new 530,000-gallon standpipe.
- Projected annual water savings = 0.176 MGD or 64.10 MGY
- Projected savings in repairs: \$30,000 to \$33,000 per year

Background

- The water distribution system has approximately 13 miles of steel and cast iron distribution pipe ranging from 2 to 12 inches in diameter. Water loss from breaks and leaks on these lines is extreme. The existing water system does not have water meters installed. Each customer pays a monthly flat fee for water usage.
- Water lines that were built in 1925 account for approximately 70% (9 miles) of the 13 miles of distribution pipe. The remaining 4 miles of water line (which will not be replaced) was built in the 1960's. This proposed project will replace 46,110 feet of pipe (8.73 miles or approximately 100% of the pipe installed in the 1920's.) with 6-inch, 8-inch, and 10-inch PVC pipe.
- According to Laverne's monthly operational reports, water pumped from the water wells is 0.504 million gallons per day (MGD) or 183.96 MGY.
- The system water loss is estimated of the following:
 - Total Population for Laverne = 1,050
 - Estimated Normal Water Usage = 312.75 GPCD (gallons per capita per day)
 - Normal Total Gallons Per Day = 328,387 gallons
 - Normal Total Gallons Per Year = 119,861,438 gallons
 - Actual Total Gallons Per Year = 183,960,000 gallons
 - Total Estimated Water Loss = 0.176 MGD or 64.10 MGY
 - When comparing the estimated normal water usage to the actual water usage, an estimated 34.84% of all water pumped is lost from the water system mainly due to customers using excessive water because of the lack of meters in the

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system. Also, water loss is due to break and leaks caused by corrosion and oxidation of the old cast iron and steel lines.

Results

- The Town of Laverne spends an average of \$5,000 per month (\$60,000 per year) on repair and maintenance of the water lines. Most of these repairs were made on the lines installed in the 1920's.
- 70% of Laverne's water lines were installed in the 1920's. Replacing the old water lines built 90 years ago will greatly reduce repairs and maintenance and will help the town financially.
- The water system also lacks water meters. Each customer pays a monthly flat fee for water usage. The addition of meters to the water system (\$399,000 projected costs), which categorically qualifies as a "green project," will also contribute to water savings for the system.

Conclusion

- By Replacing 70% of the existing steel and cast iron water lines and installing water meters on the system, the Town of Laverne will be able to save up to \$42,000 per year by reducing their maintenance and repairs costs.
- The Town will also save on their pumping and operation costs since the leaks and breaks from their existing water lines are going to be greatly reduced. Less water will need to be pumped because it will flow directly to the storage tanks instead of being lost through leaks and breaks in the system.
- After installing the water meters, the Town will have a method to determine exactly how much water is being used by each customer. This will prevent customers from excessive water usage which will also reduce pumping and operational costs.

Cost Estimate					
Water System Improvements					
For the Town of Laverne, Oklahoma					
Revised 5-22-2012					
MECE Project Number:		211157			
Item No.	Quantity	Unit	Description	Unit Cost	Cost
1	4,482.50	LF	10" PVC CL200 Water Line	\$24.00	\$107,580.00
2	7,936.50	LF	8" PVC CL200 Water Line	\$20.00	\$158,730.00
3	33,341.00	LF	6" PVC CL200 Water Line	\$14.00	\$466,774.00
4	350.00	LF	2" PVC CL200 Water Line	\$10.00	\$3,500.00
5	120.00	EA	6" Gate Valve and Box	\$900.00	\$108,000.00
6	60.00	EA	Fire Hydrant Assembly	\$2,750.00	\$165,000.00
7	10,500.00	LF	Street and Driveway Bore	\$39.00	\$409,500.00
8	1,210.00	LF	Highway Bore with Steel Casing	\$150.00	\$181,500.00
9	600.00	SY	Asphalt Repair	\$75.00	\$45,000.00
10	1,500.00	SY	Sidewalk and Driveway Repair	\$60.00	\$90,000.00
11	350.00	EA	Long Service Setting with AMR Meters, Meter Box, Setter, Etc.	\$725.00	\$253,750.00
12	350.00	EA	Short Service Setting with AMR Meters, Meter Box, Setter, Etc.	\$415.00	\$145,250.00
13	1.00	LS	530,000 gal Standpipe	\$500,000.00	\$500,000.00
14	1.00	LS	Rehabilitation of Existing Standpipe	\$150,000.00	\$150,000.00
15	21.00	EA	6" x 6" x 6" Tee	\$350.00	\$7,350.00
16	3.00	EA	8" x 8" x 8" Tee	\$350.00	\$1,050.00
17	10.00	EA	6" x 6" x 10" x 10" Cross	\$350.00	\$3,500.00
18	30.00	EA	6" x 6" x 6" x 6" Cross	\$325.00	\$9,750.00
19	6.00	EA	6" x 90° Bend	\$200.00	\$1,200.00
20	15,370.00	SY	Solid Slab Sodding	\$2.50	\$38,425.00
21	3.00	EA	Replace Pumps in Wells	\$5,000.00	\$15,000.00
22	18.00	EA	Interconnections to Existing System	\$2,500.00	\$45,000.00
			Construction		\$2,905,859.00
			Contingency		\$290,585.90
			Total Construction Cost		\$3,196,444.90
			Engineering Fee (Study & Report)		\$11,800.00
			Engineering Fee (Basic Services)		\$208,494.00
			Resident Project Representative		\$93,600.00
			Survey & Construction Staking		\$52,400.00
			Bond Counsel Fees		\$55,500.00
			Financial Advisor		\$55,500.00
			Trustee Acceptance Fee		\$500.00
			DEQ Permit		\$6,265.00
			Testing		\$19,496.10
			Total Project Cost		\$3,700,000.00