Business Case for

Logan Co. Rural Water, Sewer and Solid Waste Management District No. 1

200,000 Gallon Elevated Water Storage Facility

Contract 1 of 2

DWSRF No. P40-2004207-02

Summary:

Installation of an elevated storage tank will eliminate the need for a booster pump to maintain 25 psi at all times.

Total project cost: $1,651,622.50
SRF loan amount: $1,250,000.00
Construction cost this Contract: $750,000.00
Electric savings 600 Kwh/yr
Annual electric savings $1400

Background:

Logan County RWD #1 owns and operates a water supply and distribution system in southern Logan County. Average consumption for the system is 260 gallons per customer per day. Many of these customers are at such high elevation that a pump station with VFD's must run all the time during periods of high use to maintain the minimum of 25 psi.

Results:

Construction of a new elevated storage tank East of I-35 will eliminate the need for the pump station which currently has to be run during periods of high demands. Eliminating the need for the pump station will eliminate electric cost and save energy.

Conclusions:

Construction of a new elevated storage tank will save $1,407.00 per year in electrical cost and approximately 600 Kwh of electrical consumption per year. This is based on last years electric bills and usage.

Logan Co. Rural Water, Sewer and Solid Waste Management District No. 1

Green Business Case for Water Meter Replacement Project

Contract 2 of 2

DWSRF No. P40-2004207-02

Summary:

Replacement of 2460 old and malfunctioning water meters is estimated to eliminate the apparent loss of 23.4 million gallons per year and reduce the systems non-revenue water.

Total project cost: $1,651,662.50
SRF loan amount: $1,250,000.00
Construction cost this Contract: $755,285.00
Water saving green portion of loan 100%
Annual water savings 23.4 MG

Background:

The water distribution system serves 6600 people. Total system production for the last year was 234.1 MG for an average of 641,000 gallons per day.

The total annual water loss is 15% of which 10% is attributed to bad metering. The other 5% is leaks and flushing. This would yield an annual water loss of 23.4 MG.

About half of the system meters are over 18 years old and the other half average 8 years.

Based on industry standards water meters should be replaced every 15 years or 1,000,000 gallons. Of the meter that average 8 years old, over 70% of those have in excess of 1,000,000 gallons on them.

Several lots of existing meters have been tested and most of these fail a low flow test (i.e toilet flushes, and sinks). This means the existing system meters are not registering these low flows.

Results:

Based on a system assessment approximately 2100 of the existing meters are either too old or ran out (excess of 1,000,000 gallons)

The annual apparent water loss attributed to the existing meters is 23.4 MG.

Conclusion:

The estimated 23.4 MG of apparent water loss is being consumed but not recorded thus the value of the water lost is associated with the average loss to the district is $84,240.00 per year or about 8% of the districts budget.

$$\frac{(23{,}400{,}000)(\$3.60)}{1{,}000} = \$84{,}240.00$$

Reducing this loss will increase the financial stability of the district and allow the district to recover enough revenue to finance the new meters.

Accurate metering of water consumption is an important conservation measure because inaccurate metering misleads customers in regard to water consumption. Providing a more accurate water bill will send a stronger price signal to customers and will result in more efficient water consumption.

Water leakage and inaccuracy increases with water meter age; therefore, an investment in water meters today will generate increasing benefits in the coming years. Also, the water savings from the water meter replacement will extend the life of the water supply and delay the need for capital expansion projects.

The payback on the project will be 755,285/84,240 or roughly 9 years.

(REV) 11/28/2011

Logan County Rural Water, Sewer, and Solid Waste Management District No. 1

AMR System Cost Estimate

	Item Description	Unit	QTY	Unit Price	Total Price
1	3/4" Meter(s)	EA.	2,440.00	$115.00	$280,600.00
2	1" Meter(s)	EA.	13.00	$195.00	$2,535.00
3	1-1/2" Meter(s)	EA.	1.00	$600.00	$600.00
4	2" Meter(s)	EA.	2.00	$725.00	$1,450.00
5	3" Mater(s)	EA.	4.00	$2,300.00	$9,200.00
6	Radios	EA.	2,460.00	$105.00	$258,300.00
7	Fixed Base System w/ Software	L.S.	1.00	$35,000.00	$35,000.00
8	Service and Support	L.S.	1.00	$20,000.00	$20,000.00
9	Installation	EA.	2,460.00	$60.00	$147,600.00

Total Project	**$755,285.00**
Loan Amount	$500,000.00
Logan County RWD #1 Match	$255,285.00

200,000 Gallon Elevated Water Storage Tank Cost Estimate

	Item Description	Unit	QTY	Unit Price	Total Price
1	New 200,000 Gallon Elevated Water Storage Tank	L.S.	1.00	$750,000.00	$750,000.00

Total Project	**$750,000.00**
Total Construction Cost	**$1,505,285.00**
Engineering	$91,250.00
Inspection	$29,687.50
Bond & Legal	$25,000.00
DEQ Permit	$440.00
Total Project Cost	$1,651,662.50
Total Loan Amount	**$1,250,000.00**
Logan County RWD #1 Match	$401,662.50

DAVID BRUCE WYATT 15398 OKLAHOMA REGISTERED PROFESSIONAL ENGINEER

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DW-622
GPR Checklist
Rev. 7/2011
File #3

Oklahoma Drinking Water State Revolving Fund
Green Project Reserve Checklist

Applicant: Logan Co. Rural Water, Sewer and Solid Waste Management District No. 1

Project Number: P40-2004207-02

Date: October 25, 2011

The Green Project Reserve (GPR) includes four types of projects: Green Infrastructure, Water Efficiency, Energy Efficiency and Environmentally Innovative. All GPR projects must meet DWSRF eligibility requirements. Please check all green components or activities that are applicable to your project. Additional information concerning categorically green and business cases is available in the Oklahoma DWSRF Green Project Reserve Guidance Document (DW-621). Please submit this checklist and all applicable attachments (business case, cost estimate with each green component highlighted, etc.) to your DWSRF Project Engineer.

Green Infrastructure

Green stormwater infrastructure includes a wide array of practices at multiple scales that manage wet weather and that maintains and restores natural hydrology by infiltrating, evapotranspiring and harvesting and using stormwater. On a regional scale, green infrastructure is the preservation and restoration of natural landscape features, such as forests, floodplains and wetlands, coupled with policies such as infill and redevelopment that reduce overall imperviousness in a watershed. On the local scale, green infrastructure consists of site- and neighborhood-specific practices, such as bioretention, trees, green roofs, permeable pavements and cisterns.

☐	Pervious or porous pavement	Categorically Green
☐	Biorentention	Categorically Green
☐	Green roofs	Categorically Green
☐	Rainwater harvesting/cisterns	Categorically Green
☐	Gray water use	Categorically Green
☐	Xeriscape	Categorically Green
☐	Landscape conversion programs	Categorically Green
☐	Retrofitting or replacing existing irrigation systems with moisture and rain sensing equipment	Categorically Green
☑	Other green infrastructure	Business Case Required

Water Efficiency

EPA's WaterSense program defines water efficiency as the use of improved technologies and practices to deliver equal or better services with less water. Water efficiency encompasses conservation and reuse efforts, as well as water loss reduction and prevention, to protect water resources for the future.

☐	Installing or retrofitting water efficient devices such as plumbing fixtures and appliances	Categorically Green
☐	Installing any type of water meter in previously unmetered areas, if rate structures are based on metered use	Categorically Green
☑	Replacing existing broken/malfunctioning water meters with Advanced Meter Reading systems (AMR)	Categorically Green
☐	Retrofitting/adding AMR capabilities or leak equipment to existing meters (not replacing the meter itself).	Categorically Green
☐	Recycling and water reuse projects that replace potable sources with non-potable sources,	Categorically Green
☐	Retrofit or replacement of existing landscape irrigation systems to more efficient landscape irrigation systems, including moisture and rain sensing controllers	Categorically Green
☐	Projects that result from a water efficiency related assessments (such as water audits, leak detection studies, conservation plans, etc) as long as the assessments adhered to the standard industry practices referenced above	Categorically Green
☐	Distribution system leak detection equipment, portable or permanent.	Categorically Green
☐	Automatic flushing systems (portable or permanent).	Categorically Green
☐	Pressure reducing valves (PRVs).	Categorically Green
☐	Internal plant water reuse (such as backwash water recycling).	Categorically Green
☐	Water meter replacement with traditional water meters	Business Case Required
☐	Distribution pipe replacement or rehabilitation to reduce water loss and prevent water main breaks	Business Case Required
☐	Storage tank replacement/rehabilitation to reduce water loss	Business Case Required
☐	New water efficient landscape irrigation system (where there is currently not one)	Business Case Required

Energy Efficiency

Energy efficiency is the use of improved technologies and practices to reduce the energy consumption of water quality projects, use energy in a more efficient way, and/or produce/utilize renewable energy.

☐	Renewable energy projects, which are part of a public health project, such as wind, solar, geothermal, and micro-hydroelectric that provide power to a utility (http://www.epa.gov/cleanenergy). Micro-hydroelectric projects involve capturing the energy from pipe flow.	Categorically Green
☐	National Electric Manufacturers Association (NEMA) Premium energy efficiency motors	Categorically Green
☐	Energy efficient retrofits, upgrades, or new pumping systems and treatment processes (including variable frequency drives (VFDs)).	Business Case Required
☐	Pump refurbishment to optimize pump efficiency (such as replacing or trimming impellers if pumps have too much capacity, replacing damaged or worn wearing rings/seals/bearings, etc.).	Business Case Required
☐	Projects that result from an energy efficiency related assessments (such as energy audits, energy assessment studies, etc), that are not otherwise designated as categorical.	Business Case Required
☑	Projects that cost effectively eliminate pumps or pumping stations.	Business Case Required
☐	Projects that achieve the remaining increments of energy efficiency in a system that is already very efficient.	Business Case Required
☐	Upgrade of lighting to energy efficient sources (such as metal halide pulse start technologies, compact fluorescent, light emitting diode, etc).	Business Case Required
☐	Automated and remote control systems (SCADA) that achieve substantial energy savings	Business Case Required

Environmentally Innovative

Environmentally innovative projects include those that demonstrate new and/or innovative approaches to delivering services or managing water resources in a more sustainable way.

☐	Utility Sustainability Plan consistent with EPAs SRF sustainability policy	Categorically Green
☐	Greenhouse gas (GHG) inventory or mitigation plan and submission of a GHG inventory to a registry (such as Climate Leaders or Climate Registry), as long as it is being done for a facility which is eligible for DWSRF assistance.	Categorically Green
☐	Source Water Protection Implementation Projects	Categorically Green
☐	Construction of US Building Council LEED certified buildings, or renovation of an existing building, owned by the utility, which is part of an eligible DWSRF project.	Categorically Green
☐	Projects, or components of projects, that result from total/integrated water resources management planning (including climate change) consistent with the Decision Criteria for environmentally innovative projects and that are DWSRF eligible.	Business Case Required
☐	Application of innovative treatment technologies or systems that improve environmental conditions and are consistent with the Decision Criteria for environmentally innovative projects, such as projects that significantly reduce or eliminate the use of chemicals in water treatment; or treatment technologies or approaches that significantly reduce the volume of residuals, minimize the generation of residuals or lower the amount of chemicals in residuals; or trenchless or low impact construction technology; or use of recycled materials	Business Case Required
☐	Educational activities and demonstration projects for water or energy efficiency (such as rain gardens).	Business Case Required
☐	Projects that achieve the goals/objectives of utility asset management plans	Business Case Required

Form completed by:

David B. Wyatt, P.E.
Typed or Printed Name

Project Engineer
Title

(405) 741-7090
Phone Number

wdbengineering@sbcglobal.net
E-mail Address

Attachments:

☑ Business Case(s)
☑ Project Cost Estimate with Green Components marked or highlighted
☐ Other _____