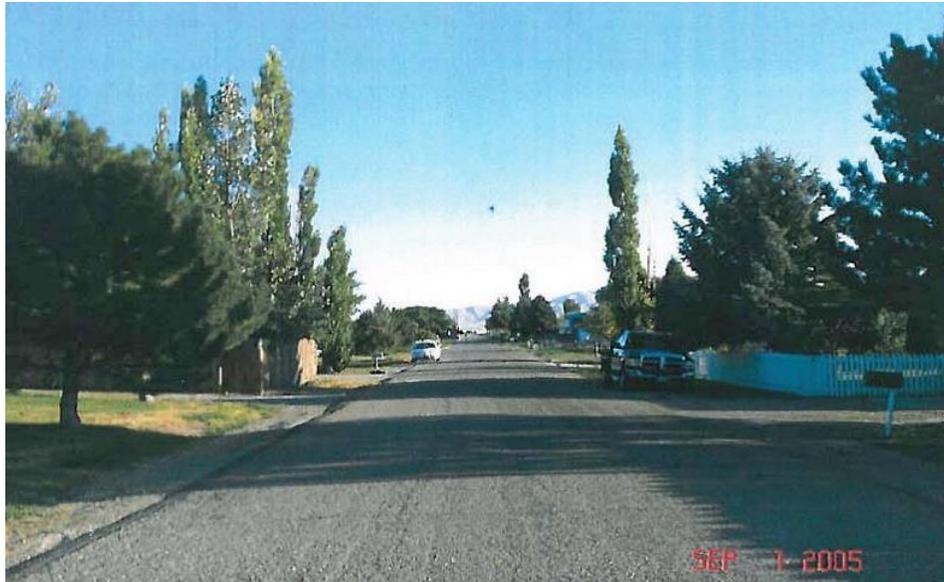


# Drinking Water State Revolving Fund Green Project Reserve

- Final -



## Smith Road Water Users Assoc. Drinking Water Project SRF Loan #DW1603 (pop. 57) \$840,090

### Final Green Project Reserve Justification

#### Categorical GPR Documentation

1. INSTALL 19 WATER METERS WITH AMR SYSTEMS (Water Efficiency). Categorical GPR per 2.2-2a: *Installing any type of water meter in previously unmetered areas if rate structures are based on metered use (\$39,600).*

#### Business Case GPR Documentation

2. REPLACES LEAKING DISTRIBUTION PIPING (Water Efficiency). Categorical GPR per 2.4-1: *Projects that result from a water efficiency related assessment such as water audits; also Business Case GPR per 2.4-1...reducing water consumption; per 2.4-4: Proper water infrastructure management should address where water losses could be occurring...fix them...replacing aging infrastructure; also per 2.5-2: Distribution pipe replacement ...to reduce water loss and prevent water main breaks (\$152,000).*
3. INSTALLS NEW WELL WITH ENERGY-EFFICIENT PUMP AND VFD CONTROLLER; REPLACES EXISTING WELL PUMP WITH NEW ENERGY-EFFICIENT PUMP AND VFD CONTROLLER (Energy Efficiency). Business Case GPR per 3.5-1: *Energy efficient ...new pumping systems...including VFDs (\$9,000).*

Approved by the State of Idaho SRF Loan Program  
September 2018

## Categorical

# 1. NEW WATER METERS<sup>1</sup>

## Summary

- The Smith Road Water Users Association (SRWUA) will install 19 remote-read water meters.
- Loan amount = \$840,090
- GPR portion of loan (AMR) = 4.7% (\$39,600) (Installed Cost)

## Background

- The SRWUA services approximately 19 single family residences.
- The population serviced by SRWUA is approximately 57 people via 19 connections.
- As an unmetered community, the consumptive values are very high in comparison with metered communities.

## Results

The project consists of:

- Drilling an additional well and outfitting it with an energy-efficient pump and VFD;
- Refurbishing Well #1 and Well #2 with new energy-efficient pumps and VFDs;
- Installing new distribution piping of four inch C900 PVC pipe with flushing hydrants at each end of Smith Road to eliminate dead ends;
- Installing remote-read water meters.



## Conclusion

- Metering of water consumption is an important conservation measure because providing water bills based on consumptive use sends a strong price signal to customers resulting in more efficient consumption.
- Implementation of a tiered rate structure, after meter installation, will further aid conservation efforts extending the life of the water supply system and delaying capital expansion projects.
- **GPR Costs:** Purchase and install meters = \$39,600 (installed cost)  
**Total = \$39,600**
- **GPR Justification:** The project is Categorically GPR-eligible (Water Efficiency) per Section 2.2-2a: *Installing any type of water meter in previously unmetered areas if rate structures are based on metered use*<sup>2</sup>.

<sup>1</sup> May 2015 Smith Road WUA Amendment to the FPS B Phinney, P.E., Keller Associates, Inc.

<sup>2</sup> 2012 EPA Guidelines for Determining Project GPR-Eligibility. Attachment 2.

## 2. Distribution System PIPE REPLACEMENT

### Summary

- Replacement of leaking distribution piping with new 4-inch C-900 PVC pipe will eliminate the water loss estimated at approximately 10% of total water usage.
- Loan amount = \$840,090
- GPR portion of loan = \$152,000 = 18% (Installed Cost)

### Background

- The water system faces difficulties with both water quantity and quality. A few issues with the system include Maximum Contaminant Level (MCL) exceedance, well failure, loss of pressure, dead ends in the distribution system, unmetered flows, and a badly corroded and leaking water storage tank.
- There are no water meters in the existing public water system. Estimated system water loss = 10%

### Results

- Distribution pipe replacement is a component of this project due to the high calculated water loss that is occurring in the existing system. The cost for replacement of the distribution system with C-900 PVC pipe is \$71,000

### Conclusion

- By replacing the 1500 feet of old leaking distribution piping, it is estimated that the Association will conserve water by eliminating the estimated 10% water loss.
- The project also eliminates potential health hazards associated with waterborne pathogens entering the water distribution system by replacing leaky pipes with new corrosion resistant materials.
- **GPR Costs:**  
Replacing 1500 feet of distribution piping = \$152,000  
Total GPR Costs = \$152,000
- **GPR Justification:** The replacement of undersized water distribution piping as recommended in the Facility Planning Study is GPR-eligible by a Business Case GPR (Water Efficiency) per the criteria requirements of Section 2.4-1: *...reducing water consumption*; per 2.4-4: *Proper water infrastructure management should address where water losses could be occurring...fix them... replacing aging infrastructure*; also per 2.5-2: *Distribution pipe replacement ...to reduce water loss and prevent water main breaks.*<sup>3</sup>

<sup>3</sup> 2012 EPA Guidelines for Determining Project GPR-Eligibility. Attachment 2.

## 3. New Pump/VFD and Replacement Pump/VFDs

### Summary

- A total of 3 new pumps will be installed and equipped with variable frequency drives (VFDs).
- Loan amount = \$840,090
- Energy savings (green) portion of loan = 1.1% (\$9,000) (Installed cost)
- Simple pay-back period = 3.75 years (VFD)

### Background

- The system is short on redundancy, overall well capacity, storage capacity and emergency power supply.
- The project is eliminating the need for a booster pump.
- A new well will be added to the system and the existing wells #1 and #2 is are being rehabbed.
- All of the wells are being fitted with new pumps and motors with premium efficiency motors and VFDs.



### Calculated Cost Effectiveness of Improvements<sup>4</sup>

#### **Motor Analysis:** Booster Pump (eliminated)

- This 7.5 Hp pump, at least 35 years old, ran continuously when in use. It will be taken out of service.

#### **VFD Analysis:**

All three wells will be outfitted with new 5HP motors and VFDs.

- WITHOUT A VFD: New 5-HP pump without VFD; Annual MWH utilized for this new system = 5.4; energy cost approximately = \$806.
- WITH A VFD: New 5-HP pump with a VFD; Annual MWH utilized for this new system is = 2.7; energy cost approximately = \$268.
- Therefore, using VFDs for the new pumps provide a decrease in energy consumption of 2.7 MWH for a savings = \$538 annually per pump. At a typical VFD cost of \$3,000 the pay-back period = 3.75 years for each well.

### Conclusion

- The estimated annual savings to the Subdivision resulting from using energy efficient motors and VFDs is \$268 per pump/VFD.
- Using VFDs on pump motors is associated with extended life of the motors and should assist the Subdivision in conservation of the short-lived assets budget.
- **GRP Costs Identified:** VFDs (3 @ \$3,000) = \$9,000 (Installed Cost)
- **GPR Justification:** The Pump/VFD system is Business Case GPR-eligible (Energy Efficiency) per Section 3.5-1: *Energy efficient retrofits, upgrades, or new pumping systems and treatment processes (including variable frequency drives (VFDs)).*

<sup>4</sup>WEG Electric Motor Payback Tool, energy cost @ \$0.10/kWh.