Farmers Friend Irrigation Company Headgate Automation: Phase I

APPLICANT:

Farmers Friend Irrigation Company
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PROJECT MANAGER:

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Executive Summary

Date: April 26, 2022
Applicant: Farmers Friend Irrigation Company
Category: A

City: Ririe, ID
County: Jefferson and Bonneville
State: Idaho

Headgate automation by installing SCADA systems are the next step in improving the Farmers Friend Irrigation Company's system. Automation of these eight proposed headgates for Phase 1 will provide safety and efficiency improvements for the water master and patrons. Automation will also prevent patrons from adjusting headgates themselves and causing other water users to receive less water than they should.

Project Location

Project Farmers Friend Canal Company Headgate Automation and Irrigation Flow Measurement Phase 1

Headgates 1 & 2: 43°36'53.08"N 111°47'45.07"W
Headgates 3 & 4: 43°36'44.78"N 111°49'27.55"W
Headgates 5, 6, 7, & 8: 43°35'16.48"N 111°56'37.30"W

Project Description and Milestones

Farmers Friend Canal Company has existing headgates in place. All of the headgate structures are in good repair and have a structure sufficient for the automated headgate and SCADA systems Metcom Inc. has provided bids for. None of the structures will need additional concrete poured or any other work done to the structures.

Headgates 1 & 2 need to be automated for safety reasons. These headgates are directly on the side of a major interstate highway – Highway 26. It is difficult and dangerous for the water master to adjust the headgates at this location. Installing automation on these two headgates will allow the water master to measure and adjust them remotely. It will also ensure that none of the shareholders are adjusting the headgates.

Headgates 3-8 have had recurring issues with shareholders adjusting the headgates and taking more water than they should. They need to be automated to control the level of the headgates and place the control in the hands of the water master who has the responsibility to ensure that everyone in the service area of the Farmers Friend Irrigation Company receives the correct amount of water. Each individual ditch or lateral pulls a different amount of water. Some headgates can be lower than others and still pull a sufficient amount of water. Only the water master should be able to control the level of the headgates, but that isn't always what happens. Automating these headgates will allow them to adjust automatically based on the level of water flowing in the ditch and control the amount of water that flows into the laterals and ditches.

Once installed, the automation systems will measure the flow of water and the headgates will open or close according to the scheduled need of the individual ditch based on water rights and water availability. The information recorded by the computers will be sent to the water master in real time. The water master will know how much water is flowing in and through the ditches and be able to manage and control the system more efficiently. This will allow everyone to get the correct amount of water when it is being delivered.

Automation of the two diversions with two headgates will take the Metcom professional 40 hours each. Automation of the diversion with four headgates will take him 50 hours. It will take the equivalent of three weeks for the automation to be installed. To allow for weather and other delays that may occur, we plan for this project to be completed in four weeks. Headgates 1 & 2 will be automated first to resolve the safety issue. Since Headgates 5, 6, 7, & 8 have the most issues with the headgates being adjusted, they will be automated next. Headgates 3 & 4 will be automated as soon thereafter as possible. The work on this project will begin April 1, 2023.

Evaluation Criteria

E.1.1. Evaluation Criterion A—Project Benefits (35 points) Up to 35 points

All of the proposed headgate automations and SCADA systems have been identified as improvements that will modernize and improve the efficiency of our existing infrastructure, allow for better management and direction of the water allowed in our system, and minimize conflicts related with water delivery. Although our infrastructure is in sound and operable condition, it can be improved through automation to better control the amount of water diverted into the different ditches on our system. In the current drought, any water saved by sound and efficient management practices is a good thing for the entire Snake River Basin.

These improvements will regulate the water supply which will encourage our patrons to work together to maximize their watering time while also controlling the flow and improving

management of the systems. This will conserve water and reduce strain on the Snake River and other reservoirs which we draw from on occasion.

E.1.2. Evaluation Criterion B—Planning Efforts Supporting the Project (30 points)

We do have other projects planned, but these improvements take precedence. We know how much water we have in our system and where it goes, but with these additional improvements we will be able to manage and direct that water more efficiently. We will also be able to restrict who can raise and lower the headgates and keep a better schedule for the individual ditches that receive water from the Farmers Friend Canal. This in turn will allow us to work with our patrons to solve issues such as flooding and water wasting, and measure and more efficiently control the water flowing through the individual ditches. These improvements will allow us to maintain a good relationship with those who rely on us to deliver their water and address issues when they arise.

This project addresses the main objective in the Farmers Friend Irrigation Company Water Conservation and Management plan: Headgate Automation. The main issue we have with the headgates on our laterals, especially the Cleverly, is shareholders going up to their headgate and opening it more than it should be. The additional flow measurement from the automation will help us analyze where water is flowing and give us the information needed to direct the water and stop shareholders taking more than their share of the water. These improvements will help us conserve water by delivering only the amount of water shareholders are allowed.

E.1.3. Evaluation Criterion C—Implementation and Results (20 points)

We estimate that installation of the SCADA system for these eight headgates in three locations can be completed in four weeks. Automation of these headgates must be done in the off season when no water is flowing in the canal or ditches. Water is diverted by Farmers Friend Canal Company beginning May 1 of each year. Depending on the availability of the SCADA installation professional, this work could begin April 1, 2023, and be completed before May 1st when the water is diverted into the canal. If the SCADA professional is not available at that time, the work will have to be done the fall of 2023 when the water is turned out for the winter.

Because all of the work for this project will take place within existing infrastructure we do not need to obtain any permits. Two SCADA installation companies have visited each of our headgates and given us quotes for each headgate along with recommendations for any alterations or repairs that need to be done in order to install the SCADA systems. We will not be altering anything environmental or cultural and so do not need any compliance documents.

E.1.4. Evaluation Criterion D—Nexus to Reclamation (5 Points)

The Farmers Friend Irrigation Company strives to conserve water and make the most efficient use of the water we deliver through our system. Our region has been faced with drought for many years now and it has become clear that our reservoirs will be depleted every year. Our efforts to conserve and more efficiently use water from the Palisades Reservoir and Jackson Lake Reservoir, which are Reclamation facilities, will all contribute to a healthier Snake River Basin.

E.1.5. Evaluation Criterion E—Presidential and Department of the Interior Priorities (10 points)

These projects will strengthen water supply sustainability by improving the management and direction of the water that is diverted by the Farmers Friend Irrigation Company from the Snake River. This increased management will allow us to conserve water by measuring how much is flowing through our system and redirecting it where it is needed most. If we can leave some of our allotted storage water in the reservoirs for later use either by us or let other entities rent it, it will increase the entire basins resilience to climate change and help mitigate some of the impacts of the drought conditions we are facing.

Project Budget

Funding Plan and Letters of Commitment

The Farmers Friend Irrigation Company receives annual assessments for maintenance, and payments for aquifer recharge when there is sufficient water supply to allow for that. With funds saved from assessments and aquifer recharge we have the full non-federal share of $32,095.00 available to realize this project.

Budget Proposal

Total Project Cost Table	
Source	Amount
Costs to be reimbursed with requested Federal Funding	$31,500
Costs to be paid by the applicant	$32,095.00
Total Project Cost	$63,595.00

Total Cost for Materials				
Improvement	Materials/other costs	Price/unit	Quantity	Cost
Automation	Campbell CR-1000X	$ 1,895.00	2	$3,790.00
Automation	Campbell CR-800	$ 1,095.00	1	$ 1,095.00
Automation	RF-451	$ 995.00	3	$2,985.00
Automation	Spread Spectrum antenna plus cable and fittings	$ 245.00	3	$ 735.00
Automation	Manual-off-Automation switch box with display	$ 1,700.00	4	$ 6,800.00
Automation	5000 lb Actuators with limit switches and position	$ 1,700.00	8	$ 3,600.00

Automation	Hoffman box, 303010 with locks, insulated & plate	$ 1,125.00	2	$2,250.00
Automation of four headgate diversion	Hoffman box, 303610 with locks, insulated & plate	$1,225.00	1	$ 1,225.00
Automation	Metal stand for nema-4 box, painted	$ 275.00	3	$ 825.00
Automation	31 series Heavy Duty batteries	$ 135.00	6	$ 810.00
Automation	100 watt solar panel	$ 150.00	3	$ 450.00
Automation	7 amp solar regulator	$ 155.00	3	$ 465.00
Automation	3, 0-4.06 feet staff guages	$ 85.00	16	$1,360.00
Automation	1" 30' Conduit, fittings, sealed flex and fittings	$ 120.00	3	$360.00
Automation	4" PVC stilling wells with transducers	$ 795.00	11	$8,745.00
Automation	Two rain tight boxes for junction boxes	$ 75.00	4	$300.00
Automation	Wire, terminals, breakers, treys, antenna mast, power cable,	$ 250.00	2	$500.00
Automation of four headgate diversion	Wire, terminals, breakers, treys, antenna mast, power cable,	$ 450.00	1	$450.00
Automation	Program plus communication programming	$1,250.00	2	$2,500.00
Automation of four headgate diversion	Program plus communication programming	$ 2,000.00	1	$2,000.00
Total Cost for Materials				**$51,245.00**

Cost for Labor				
Position	**Price/unit**	**# of hours**	**# of Improvements**	**Cost**
Automation and SCADA installation professional	**$ 95.00**	**130**	**8 headgates - 3 locations**	**$ 12,350.00**
			Total Labor	

Budget Narrative

Salaries and Wages
The Project Manager, Larry Lovell, is a board member of the Farmers Friend Irrigation Company. Where all of the work has been contracted through an automation professional, no labor has been added for Larry. The professional from Metcom Inc. will install the automation and SCADA systems for the 8 headgates. No other work is needed to prepare the headgates for automation.

Equipment
No equipment beyond what the automation professional will need for installation is needed for these projects.

Materials and Supplies
All materials and supplies listed above are needed for the headgate automation and SCADA system installation. All costs are estimates based on current material costs, and quotes from Metcom Inc..

Contractual
The installation and programming of the headgate automation and SCADA systems is the only contractual item for this phase of the project. The estimate for the materials is $51,245.00. The estimate for the labor is 130 hours at $95 an hour.

Environmental and Cultural Resources Compliance

We will not be altering anything environmental or cultural and so do not need any compliance documents.

Required permits or approvals

We do not need to obtain any permits for any of the enumerated automation or construction project.

Official Resolution

For Small Scale Water Efficiency Projects FY 2022

April 26, 2022

Whereas, the Farmers Friend Irrigation Company, in Ririe, Idaho is a legally organized irrigation company in the State of Idaho, and

Whereas, the Company promotes, supports, and encourages water conservation.

Therefore, be it resolved that the Board of Directors of the Farmers Friend Irrigation Company agrees and authorizes that:

1. The Board has reviewed and supports the application proposal to the waterSMART: Small-Scale Water Efficiency.
2. The Board authorizes Larry Lovell, and gives him the legal authority to enter into the WaterSMART: Small Scale Water Efficiency Grants agreement.
3. The Farmers Friend Irrigation Company can provide the matching obligations, and
4. If selected for a Small Scale Water Efficiency Grant, the applicant will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

4/25/22
Date

Ryan Hawkins, President
Farmers Friend Irrigation Company