



MINIDOKA IRRIGATION DISTRICT
98 WEST 50 SOUTH
RUPERT, ID 83350
(208) 436-3188

"M.I.D. IS AN EQUAL OPPORTUNITY PROVIDER AND EMPLOYER"

WaterSMART
Water Conservation Field Service Program
Funding Opportunity Announcement Number R22AS00105

Minidoka Irrigation District's System Optimization Review

The Project Manager is:
Shawna Adams
98 West 50 South
Rupert, Idaho 83350
midshawna@gmail.com
208-260-1097
SAM/DUNS Number: 081826240

Background	2
Technical Description	2
Project Schedule	3
Budget Narrative	4
Appendix	6
Official Resolution	6
Scope of Work - Sunrise Engineering	6
Project Schedule	6
Detailed Project Budget	6

Background

Minidoka Irrigation District (MID, The District) is the namesake of the Minidoka Project, one of the Bureau of Reclamation's oldest projects. The Minidoka Project, established in 1904, encompasses seven dams, over 1,600 miles of canals, and 4,000 miles of laterals. MID serves approximately 1,300 water users with over 502 miles of canals, laterals, and drainage systems in Minidoka and Cassia Counties in arid South-central Idaho. MID receives storage water from the Minidoka, American Falls, Palisades, and Jackson Dams.

The District has functioned for many years without the necessary upgrades for the present and future needs of the District's customers. After receiving a title transfer from the Bureau of Reclamation in January 2021, MID continues to work towards its goals of water conservation and improving water delivery service. The District will be conducting a System Optimization Review to identify areas of improvement across the District. MID currently has a Water Management Plan in place that calls for enhancing infrastructure as needed to ensure water conservation, reducing the overall diversion from the Snake River, and ensuring water availability as needed. The plan also calls for developing enhanced drought resiliency in agriculture irrigation.

Since receiving title transfer, the District has begun the process of allowing water users who traditionally use groundwater to transition to surface water, allowing more water to remain in the aquifer. With these additional water users it is becoming more important to track exactly where the water is going, how it is being used, and the volume the District is able to return to the river.

MID intends to implement an optimization review to gather information regarding water loss and areas for prioritized improvements throughout the District. Working closely with an engineering firm, MID will measure water flows through channels and record all measurements. After concluding the research portion of the project, MID will share information with the engineering firm. Pending the result of the study, MID intends to enhance and automate infrastructure, pipe waterways as needed, and improve aging structures where needed to prevent ongoing increasing loss in those areas.

Technical Description

In order to complete the measurements MID will be using an OTT MF Pro Velocity and Depth Sensor with a MF Pro Meter.

To determine flow in a stream the stream's average velocity (fps) and the cross-sectional area (ft²) must be determined. These are multiplied, which gives the flow.

(velocity*width*depth) or (ft/sec * ft * ft = ft³/sec or CFS).

Velocity and depth inevitably vary across the channel, resulting in the need for a series of measurements to be taken across the channel.

When physically conducting the flow measurements, standard protocol will be followed as detailed here:

1. Stretch a tape measure across the channel and secure it on both ends. By ensuring it is tightly stretched across the channel, an accurate measurement will be collected.
2. Measurements are taken along the tape measure at the interval below:

- a. If channel width is less than 10 ft across data will be collected every 6 inches taking the first reading at 3 inches from the channel bank.
 - b. If the channel is larger than 10 ft across, 20 evenly divided measurements points across the entire channel will be determined; the first measurement will be taken at half of the determined interval from channel bank
3. Ensure the flow meter is reading flow in feet per second (ft/s) and the allotted time for reading flow is set at twenty seconds.
 4. The sensor must be facing upstream and the data collector must take care to stand to the side of the flow meter, to avoid impacting the measurement.
 5. The operator will measure the actual water depth using the wading rod and call it out to the recorder who will record it on the field sheet.
 6. The wading rod is then adjusted to the correct depth – putting the flow meter at 60% of the water depth, measured from the surface.
 7. Begin measuring velocity once the depth is set. After 20 seconds, the operator will record or vocalize the average velocity to the recorder and then continue to the next site.

Following these standard protocols will ensure accurate and consistent data collection. Collecting flow data works best with a team of two people. One person to handle the flow meter while the other records the stream width, depths, and velocities. This will necessitate the hiring of a summer intern. MID plans to utilize the College of Southern Idaho's Natural Resource Management program to select an intern with an interest in surface water management. This will allow for not only additional help when measuring flows, but also allow students who are interested in pursuing water management careers valuable field study time and experience. By tracking the water flows at the dam, tracking flows into laterals and diversion points, and the water leaving MID's possession at the lower end of the system MID will be able to better understand where the water loss is actually taking place if it is taking place on Minidoka Irrigation District's area of responsibility.

MID is in the process of piping waterways that are especially troublesome year after year, basing the ranking not only on the level of detriment to the system but also on the positive results of the improvement. Measuring and tracking the water loss through leakage, seepage or evaporation will help determine the best course of action to allow MID to be the best possible stewards of the natural resources entrusted to the District.

Project Schedule

While the schedule for the project must remain flexible due to unforeseen circumstances with funding awards and availability, the estimated and assumed timeline for this project will be as follows:

Phase One: Preparation - Spring/Early Summer 2023

Phase 1 will involve determining measurement site locations as well as developing a schedule for measurements. Also included in this phase will be securing the software necessary to accurately track flow measurements and easily transmit it to the engineering firm. The final component of this phase will include the interviewing and hiring of an intern through the

College of Southern Idaho's Natural Resources and Water Management department. This phase is expected to be completed prior to water turn-in for the 2023 season.

Phase Two: Information Gathering - Summer 2023

Phase 2 of this project will include the data collection at predetermined measurements sites. As this information is collected and recorded, the data will be relayed to the engineering firm on a weekly or bi-weekly schedule. This will be determined by the firm, on a schedule they request.

Phase Three: Engineering Work and Plan Development - Fall/Winter 2023-2024

Phase 3 will consist of the engineering firm using data collected and supplied by MID to prepare cost estimates and cost-benefit analysis for the predetermined canal reaches and areas. The ranking matrix will use cost, water savings, maintenance costs, and projected costs, as well as other logistical considerations to assign project prioritizations. The scope of work submitted by Sunrise Engineering has been attached as Appendix B.

Phase Four: Compilation and Completion of Plan Development - Spring 2024

Upon receipt of the completed study and report from the engineering firm, MID will be reporting the findings to the Board of Directors. Working within budgetary restrictions and with consideration for additional district-wide maintenance requirements, MID will begin scheduling the highest priority projects. Getting these projects scheduled will allow for materials and supplies to be purchased as the market for available materials allows.

A gantt chart detailing this schedule has been attached as Appendix C.

Budget Narrative

The total estimated cost for this project is \$51,267.60. The anticipated federal contribution has been calculated at \$25,000.00, 49% of the total budget. Minidoka Irrigation District is prepared to fund the remaining 51% of the anticipated costs at \$26,027.35. These funds are available through in-kind contributions from wages and benefits as well as the use of district-owned equipment. The additional cash contributions will be allocated from the annual Operations and Maintenance budget.

The manpower estimated to complete this project totals 680 hours at varying hourly rates as determined by position. The District's Manager is expected to provide feedback and direction on an as-needed basis for this project. The Project Manager will be managing and monitoring the progress on this project, collecting data, and taking measurements. The Project Manager will also be involved in the hiring of the intern as well as monitoring their contributions to the project. The Administrative Assistant will be responsible for accounting for the hours allocated and billed to the project. The GIS Specialist will be critical to this project, as the mapping and tracking information will be crucial. The knowledge shared by the ditchriders in the predetermined areas will be valuable in relaying historic and day-to-day knowledge of the ebb and flow of waterways, as well as daily diversion calculations.

The fringe benefits associated with this project are the standard benefits that are paid on all hourly and salary-based employees, regardless of standard district projects or other grant-based projects.

The equipment needed for this project includes a District-owned truck and a district-owned flow meter. The truck aligns with item number 8801 on the 2021 FEMA Schedule of Equipment Rates. The flow meter is critical for accurate flow measurements, and while it does not directly correlate to a specific item on the FEMA schedule, we have calculated the wear on a per hour basis.

The largest expense for this project will be the engineering fees associated with the analysis of the sites and the completion of the ranking matrix. *A complete scope of work and fee schedule is attached as Appendix B*

A detailed line by line budget is included in Appendix D.

Appendix

- A. Official Resolution
- B. Scope of Work - Sunrise Engineering
- C. Project Schedule
- D. Detailed Project Budget

Appendix A
Official Resolution

**RESOLUTION OF THE BOARD OF DIRECTORS
OF THE MINIDOKA IRRIGATION DISTRICT
BUREAU OF RECLAMATION WATERSMART GRANT**

Whereas, the Board of Directors of the Minidoka Irrigation District (MID) desires to apply for a Bureau of Reclamation WaterSMART Grant, also known as a financial assistance award, for the purpose of conducting a system optimization review on waterways operated and maintained by MID, and

Whereas, the estimated cost of the project is \$51,027.35 and the Board of Directors desires to apply for a financial assistance award in the amount of \$25,000.00, and

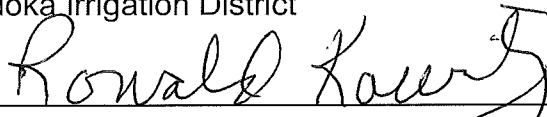
Whereas, the Bureau of Reclamation requires the Board of Directors of MID to adopt a resolution containing certain information in order to apply for and obtain a financial assistance award,


Now, therefore, upon motion made, seconded, and carried, **it is resolved** by the Board of Directors of MID:

- The Chair of the Board of Directors of MID, Ronald Kowitz, is authorized to enter into and sign agreements and other documents on behalf of MID committing MID to financial and legal obligations associated with the receipt of a financial assistance award.
- The Board of Directors of MID has reviewed and supports the application for a financial assistance award submitted by MID.
- MID has funds on deposit and employees and equipment that can provide the amount of funding/or in-kind contributions as specified in the funding plan.
- MID will work with the Bureau of Reclamation to meet established deadlines for entering into a grant, financial assistance award, or cooperative agreement.

Dated April 12, 2022

Minidoka Irrigation District

By 
Ronald Kowitz, Chair of the Board of Directors

Attest: 
Ruth S. Bailes, Secretary of the Board of Directors

Appendix B
Scope of Work- Sunrise Engineering

BOR Watersmart 2022 Funding Opportunity

Project Understanding:

In pursuit of water conservation measures the Minidoka Irrigation District (MID) is seeking a better understanding of their water losses and the size and cost of potential improvements that could eliminate or significantly reduce the losses through lining, piping or other treatments to reduce seepage. In conjunction with water savings cost estimates for treatment will be prepared to allow and estimate of cost in terms of dollars per acre foot of conserved water.

Sunrise Scope of Work:

Using flow and reach data provided by MID, Sunrise will size channel sections, pipes, or other treatment methods. Sunrise will prepare cost estimates for treatment methods on a per foot, or a per canal reach basis for the top nine sites identified by MID as having the most significant inefficiencies or water losses.

Sunrise will prepare a net present worth analysis of water savings vs. project financing costs for the top nine project areas as identified by MID. Sunrise will prepare a project ranking matrix to identify top priority projects. The ranking matrix will use cost, water savings, maintenance and other logistical considerations related to long term District goals to score and assign a ranking.

Compensation:

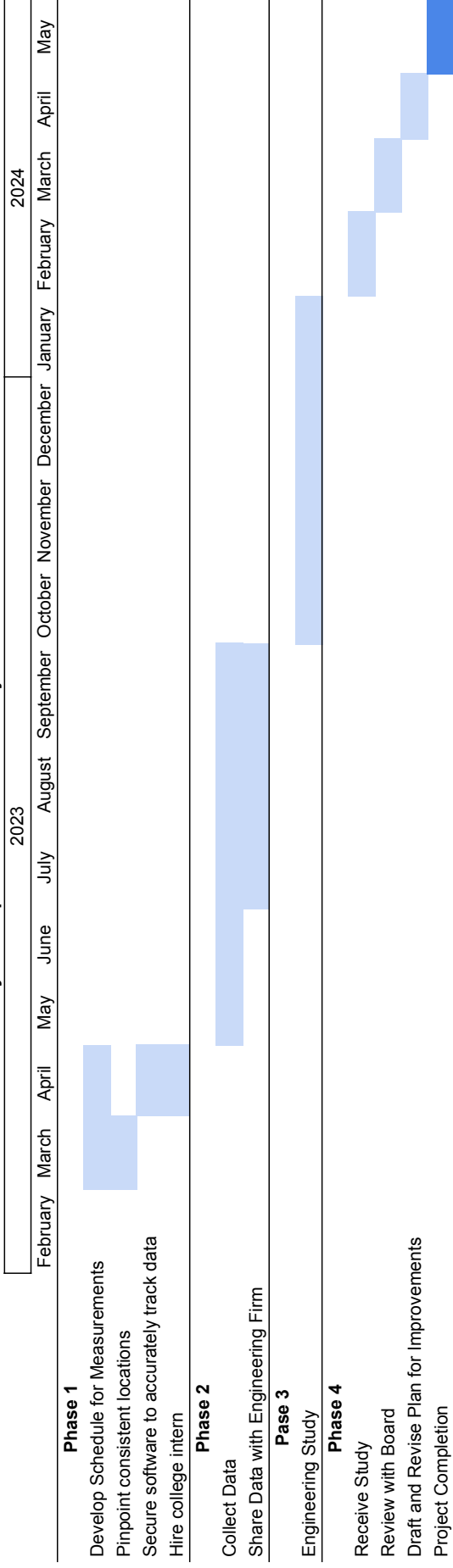
The estimated cost to perform the scope of work is as follows:

	<u>Description</u>	<u>Cost</u>
1	PHASE 1 Seepage Estimates	\$5,500
11	<i>TASK 1 Receive Flow and Reach Data</i>	
12	<i>TASK 2 Enter Data in Spreadsheet Analysis</i>	
13	<i>TASK 3 Tabulate Flow Reach Lengths and Rates</i>	
14	<i>TASK 4 Map Exhibits of Pipeline Reaches</i>	
2	PHASE 2 Size Lining Methods	\$11,700
21	<i>TASK 1 Estimate Pipe Sizes</i>	
22	<i>TASK 2 Estimate Open Channel Sizes</i>	
23	<i>TASK 3 Estimate PAM application rates</i>	
24	<i>TASK 4 Prepare Cost Estimates for Pipe</i>	
25	<i>TASK 5 Prepare Cost Estimates for Open Channel Lining</i>	
26	<i>TASK 6 Prepare Cost Estimates for PAM treatments</i>	
3	PHASE 3 Financial Analysis	\$3,300

31	<i>TASK 1 Project Funding Terms</i>	
32	<i>TASK 2 NPV of Costs</i>	
33	<i>TASK 3 NPV of Water Savings</i>	
4	PHASE 4 Project Selection Matrix	\$10,200
41	<i>TASK 1 Identify Selection Criteria</i>	
42	<i>TASK 2 Establish Scoring Values</i>	
43	<i>TASK 3 Complete Scoring Matrix</i>	
44	<i>TASK 4 Prepare Report Recommendations</i>	
	<u>Estimated Total</u>	<u>\$30,700</u>

Appendix C
Project Schedule

**Minidoka Irrigation District
System Optimization Review- Project Schedule**



Appendix D
Detailed Project Budget

<u>Budget/Item Description</u>	Qty	Unit/Price	Total
SALARIES AND WAGES (est. hours x hourly wage)			
Manager	20	\$36.76	\$735.20
Project Manager	350	\$21.00	\$7,350.00
Administrative Assistant	30	\$20.00	\$600.00
GIS Specialist	30	\$24.00	\$720.00
Ditchider	50	\$18.00	\$900.00
Intern	200	\$14.00	\$2,800.00
Total			\$13,105.20
FRINGE BENEFITS			
Manager	20	\$16.71	\$334.20
Project Manager	350	\$14.59	\$5,106.50
Administrative Assistant	30	\$13.59	\$407.70
GIS Specialist	30	\$17.59	\$527.70
Ditchrider	50	\$11.32	\$566.00
Total			\$5,848.40
EQUIPMENT			
#11 1/2 ton pickup (FEMA #8801)	75	\$11.75	\$881.25
Flow Meter	250	\$0.57	\$142.50
Total			\$1,023.75
Contractual			
Sunrise Engineering	1	\$30,700.00	\$30,700.00
Total			\$30,700.00
SUPPLY/MATERIALS			
Information Tracking software	1	\$350.00	\$350.00
Total			\$350.00
TOTAL ESTIMATED PROJECT COST			\$51,027.35
Federal Grant Contribution		49.0%	25,000.00
Minidoka Irrigation District's Contribution		51.0%	26,027.35