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RECLAMATION



Goshen Irrigation District

Lateral and Spill Automation Project

Applicant Contact:

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Technical Proposal and Evaluation Criteria

Executive Summary

Applicant Information

Application Date: 11/13/24

Applicant Name: Kevin Strecker

City, County, State: Torrington, Goshen, Wyoming

Project Manager:

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Requested Reclamation Funding: \$1,177,691 ; **Total Project Cost:** \$2,355,383

Project Summary

Goshen Irrigation District (GID) is a Category A funding group II applicant seeking funding to improve operational efficiency and sustainability along its canals. The District was formed in 1923 and immediately contracted with the United States to obtain water from the North Platte River. GID operates and maintains the Fort Laramie Canal from Whalen Dam to mile marker 85.3 (Wyoming/Nebraska state line), with some general rehabilitation work done by both the Goshen Irrigation District and the Gering-Ft. Laramie Irrigation District. GID also maintains nearly 300 miles of laterals and approximately 200 miles of drains. In advance each year, Goshen Irrigation District pays the United States a proportionate share of the estimated cost of operating and maintaining the reserved works. The reserve works, operated and maintained by the Bureau of Reclamation, include Pathfinder Dam and Reservoir and Guernsey Dam and Reservoir.

The GID canal system delivers water to almost 52,484 acres in south-eastern Wyoming, generally through automated center-pivot irrigation systems. With the advances in pivot technologies such as 'corner' systems (end guns and swing-arm systems) and variable rate pivots, which can stop at all hours, managing the water to feed the laterals has become increasingly difficult due to the variability of water demand. By replacing manual gates with automated ones, the district can achieve significant water savings and improve overall operational efficiency.

In summary, 8 Automated gates and metering stations are proposed at 4 sites at critical points throughout the district. The gates will communicate through a cellular network via AT&T towers to send commands to the sites and gather all data, including flows, levels, alarms, etc. The gates will be interfaced with an upgraded SCADA software system, which enables remote monitoring and control, allowing the gates to work together as a system to efficiently manage water and provide ever-improving customer service, moving towards an 'on-demand' system vs. the current 72hrs notice to turn water on and 48hrs notice for water turn off.

This remote monitoring capability further allows GID to assess water usage patterns, identify leaks or malfunctions promptly, and take corrective actions without delays. The ability to monitor and control water flow from a central location significantly improves operational efficiency and reduces maintenance costs. By employing sensors and feedback mechanisms, these gates can adjust water flow rates in real time, ensuring optimal canal management practices. It is estimated that the lateral spill management will allow GID to save up to 2,188 AF/year through this implementation. This adaptability improves the resilience of the irrigation system and minimizes water losses during periods of excess rainfall or drought. Integrating automated gates with data analytics tools enables GID to gather valuable insights into water usage trends, crop water requirements, and overall system performance. By analyzing this data, the district can make informed decisions, implement targeted water management strategies, and further optimize resource allocation.

Project Location

This project proposes the installation of automated, metered gates throughout the district. Eight (8) gates are proposed at four (4) installation sites, all located within Goshen County. Water from the North Platte Project is diverted into the Fort Laramie Canal, which serves the Goshen Irrigation District in Wyoming and the Gering-Ft. Laramie Irrigation District in Nebraska. Water is also diverted into the Interstate Canal, where the Pathfinder Irrigation District operates. The Goshen Irrigation District is designated as the operating agency of Whalen Dam. See *Figure 1* below for a map of canal locations. See *Appendix C, pgs. 46 – 51* for a full description of each recommended gate.



Figure 1 Outline of GID Project Locations

Technical Project Description

The Goshen Irrigation District operates and maintains the Fort Laramie Canal from Whalen Dam to mile marker 85.3 (Wyoming/Nebraska state line), with some general rehabilitation work done by both the Goshen Irrigation District and the Gering-Ft. Laramie Irrigation District. There are also some 300 miles of laterals and approximately 200 miles of drains for which the district is responsible. Water is delivered to 52,484 acres (approximately 400 farms) and to the United States (at the Wyoming/Nebraska state line) for use by the Gering-Ft. Laramie Irrigation District. For this service, the United States pays the Goshen Irrigation District an amount called a water carriage credit, which is based on the costs incurred by the Goshen Irrigation District on the involved features determined by the Secretary of the Interior.

Currently, 6 ditch riders are employed to operate the laterals and spills along the Fort Laramie Canal. These ditch riders are called into action when farmers notify them of any management needs. The farms in this area are serviced on rotating schedules throughout the season, with a typical season duration of 100 to 130 days. There are several service points and turnouts along the laterals. Currently, filtered pipes are used coupled to pumps to draft water from the canal to supply the pivot irrigators. As of now, most laterals have a wasteway to spill surplus water, which are typically unmetered ditches.

In this proposal, 8 automated gates and monitoring stations are proposed at 4 sites (see *Appendix C* for a detailed list of sites and gates). The gates will communicate through a cellular network. Data from the gates will be transmitted through AT&T's cellular network to send commands to the sites and gather all data, including flows, levels, alarms, etc. Via this network, the gates will be interfaced with a comprehensive SCADA system, which allows remote monitoring and control and allows the gates to work together as a 'system' to manage water and provide ever-improving customer service efficiently.



Figure 2 Lateral 7.0 Location

As seen in *Figure 2*, the 7.0 Lateral location (41°55'59.50"N, 104°8'10.322"W) is approximately 9 miles South of Torrington. The site currently has 2 manually operated slide gates feeding the lateral with a stated maximum flow of 40 CFS. Each current gate is 3 feet wide and an estimated 2 feet tall. The headwall height is 5 feet tall. The goal at this location is to maintain a set CFS flow rate down the lateral. Based on these requirements, the installation of 2 automated slipmeters (see *Appendix C, Pgs. 44 - 45*), which combine flow metering and control, is proposed here.



Figure 3 67.5 Spill Location

As seen above in *Figure 3*, 67.5 spill location (41°53'25.56"N, 104°14'20.42"W) is approximately 12 miles SSW of Torrington. The site currently has 3 old slide gates; one is no longer functioning or used. There is a large overhang where the current gate operators go through the concrete. After the water exits the gate(s), the water rushes downstream via a lined spill. The goal is to automatically measure and spill the water in the canal when a certain preset level is reached. The current canal water height is ~8'. This site will require more civil work on the current structure as the structure has aged and deteriorated. GID staff plan to use 2, 72" Rubicon Flume Gates. Old infrastructure will be removed, and box culverts will be used to replace old tubes that the current gates are mounted on. A new headwall and wing walls will also be built.



Figure 4 62.2 Check Structure

As seen above in *Figure 4*, the 62.2 Check structure location (41°55'29.57"N, 104°17'44.63"W) is approximately 11 miles Southwest of Torrington. The site currently has 7 bays that are 6 feet wide. The total channel width is 46'; Side wall heights are 8'. Upstream maximum water height is ~5.3'; during normal operating, the observed water level is around 4.6' Upstream and 3.2' Downstream, for 1.4' of drop. The maximum flow for this structure is 750 CFS. The district would prefer fewer wider gates to minimize obstructions that could accumulate debris, so the site requires reworking. The proposed automated gates will work to maintain the upstream canal level. The proposed installation of 3 automated flume gates (see *Appendix C pgs. 49-50*) installed side by side would be ideally suited for this location. This installation will allow for control of the flow and maintenance of upstream water levels while providing precise measurements of canal flow.



Figure 5 45.1 Lateral Location

The final project location, seen above in *Figure 6*, is the 45.1 lateral location. There are currently two 3-foot undershot gates at the site; one is manually operated, and the other has automation to open and close, but from district crew experience, the current automated gate performance is unreliable. Estimated flows through one of the gates are 15-20 CFS. The existing headwall height is 8'. The proposed installation of an automated slipmeter (see *Appendix C, Pgs. 50-51*) is well-suited for this application and location. As mentioned previously, this installation would allow for control and measurement of the flow and automatically adjust to deliver a specified CFS flow rate downstream.

Each of the proposed gate sites will require similar general work but to varying extents for each step. The first objective at each site will be to ensure that existing structures are structurally reviewed and repaired where necessary to ensure the structure is watertight when the automated gates are installed. If retrofitting is required, this will be accomplished using a gas-powered concrete saw. District crews will then remove and dispose of the concrete using prybars, a mini excavator, and a dump truck. The site will be prepped with any fill and compaction thereof needed for the placement of the concrete structure to house the new gate. District crews will fabricate concrete forms out of plywood, 2x4s, and snap ties for the placement of the concrete. The frame of the new automated check gate will then be affixed to the concrete using concrete anchor bolts drilled into the new structure and secured with adhesive. Any gaps between the frame and the structure will be filled with a speed-plug concrete mortar. The solar panel will be set into the concrete pad, and the gate will be installed

in the frame. Lastly, with the help of a gate manufacturer technician, the gate will be wired and calibrated.

Evaluation Criteria

Evaluation Criteria A – Quantifiable Water Savings

Describe the amount of estimated water savings. For projects that conserve water, please state the estimated amount of water expected to be conserved (in acre-feet per year) as a direct result of this project.

Please include a specific, quantifiable water savings estimate; do not include a range of potential water savings.

- ❖ GID has recorded spill data (See *Table 1* below for 2014-2023 records) from their canal patrolmen. However, this is only the observed data recorded when patrolmen gather spill site measurements once daily. This amounts to approximately 5,880 AF/Year in recorded annual losses. Non-recorded spills are also an occurrence; we will estimate the system spill loss by the following calculations:

Most pivots used in the GID service area employ variable-rate pivots, systems that include end guns and corner systems. These features can vary a pivot's flow rate by more than 1 CFS; as farmers typically order water based on a maximum need, the water not used when the pivot isn't servicing a field's corner is simply sent down the canal to be spilled.

GID's operations management estimates that it is reasonable and conservative to use an estimated flow change of .25 CFS per pivot as an 'unused flow'. Since the pivot services field corners roughly 1/4 of the time, during the other 3/4 of the time, the additional flow is not needed and sent to spill. Based on the overall seepage of the system, calculated at 36%, it is safe to assume half of this flow will spill. This yields the average daily loss of:

$$.25 \text{ CFS} \times .75 \text{ hours/day} \times 36\% (\text{seepage}) = .0675 \text{ cubic ft/day} = .134 \text{ acre-feet/day}$$

GID currently has over 250 pivots in its system, and each pivot typically runs one-half of the entire season, which averages 14 weeks (7 weeks, or 49 days per pivot). Using these numbers, the following spill can be totalized:

$$.134 \text{ ac-ft/day} \times 250 \text{ pivots} \times 49 \text{ days of service} = 1,642 \text{ acre-feet of spillage per season}$$

This gives the estimate that roughly 1,642 AF/year are lost in unrecorded spills. GID staff find that this is a reasonable estimate that agrees with their overall observations of the system. By running the laterals in an automated total channel control format, the flow entering each service lateral would be monitored, and adjustments would be made every few minutes to ensure the flow entering the lateral is only what was ordered by the stakeholder. The automated gates will not only measure the flow passed to the next pool but will also be in constant communication with the downstream neighboring gate(s) to ensure supply is not

over-delivered; if less water is being used than delivered and the level within the pool rises, the upstream gate(s) will reduce flows to normalize the level and store excess water across the pools instead of passing it to the spill point. Similar automation applications in geographically similar locations (*See Appendix B for relevant referenced case studies*) allow for accurately estimating a spill reduction of nearly 90% or better in most automated canals. When applied across the GID system, this equates to an average water savings of 2,188 AF/year or better. Furthermore, the automated system will generate additional data on canal efficiencies (diversions vs. deliveries) to identify areas of the canal subject to higher transit losses. This data can then be used to further reduce water loss in the future through preemptive system maintenance and improvement planning.

Table 1 GID Diversions and Deliveries, 2014-2023

GOSHEN IRRIGATION DISTRICT WATER DISTRIBUTION										
All values are in Acre Feet										
YEAR	WHALEN DIVERSION	DAYS GID RAN WATER	TOTAL SUPPLY ON ALLOCATION YEAR	LATERAL LOSS	LATERAL WASTE	CANAL LOSS	CANAL WASTE	GID SYSTEM LOSS PERCENTAGE	TOTAL DELIVERED TO FARMS	TOTAL DELIVERED TO THE ACRE
2014	106,030	96	N/A	17,825	1,888	18,630	2,407	34%	65,280	1.24
2015	92,776	85	N/A	14,578	3,033	15,780	998	33%	58,387	1.11
2016	130,157	107	N/A	19,649	3,540	23,604	3,970	33%	79,394	1.51
2017	131,901	110	N/A	26,436	3,650	20,460	1,052	36%	80,303	1.53
2018	105,973	85	N/A	15,513	4,526	15,449	1,209	29%	68,902	1.31
2019	62,018	69	N/A	13,523	3,159	15,369	1,622	47%	31,747	0.60
2020	147,480	133	N/A	25,438	5,209	28,849	2,164	37%	85,820	1.64
2021	121,643	99	140,943	20,527	5,126	22,974	1,120	36%	68,515	1.31
2022	108,149	85	130,992	18,402	2,733	21,936	594	37%	64,449	1.23
2023	116,596	104	N/A	26,049	5,137	18,198	5,663	38%	58,332	1.11
10 YEAR AVERAGE	112,272	97	N/A	19,794	3,800	20,125	2,080	36%	66,113	1.26

2023 WATER YEAR
 Irrigation Account at start of water season 430,470 Acre Feet
 Canal Efficiency 62%
 Irrigation account as of February 20th 2024 **704,035 Acre Feet**

As shown in *Table 1*, GID estimates that from the current delivery efficiency (Delivered Water divided by Diverted Water) on the Fort Laramie Canal is 64% based on 10 years of data.

Describe current losses: Please explain where the water that will be conserved is currently going and how it is being used. Consider the following:

- Explain where current losses are going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground).

The vast majority of losses seen in the system result from spillage or seepage, whether the groundwater recharge is intentional or not. Periodic spill auditing has measured an average of 39,919 acre-feet per season in recorded losses. GID's operations management estimates that it is reasonable and conservative to use

an estimated flow change of .25 CFS per pivot as an 'unused flow'. Since the pivot services field corners roughly 1/4 of the time, during the other 3/4 of the time, the additional flow is not needed and sent to spill. Based on the overall seepage of the system, calculated at 36%, it is safe to assume half of this flow will spill. This yields the average daily loss of:

$$.25 \text{ CFS} \times .75 \text{ hours/day} \times 36\% (\text{seepage}) = .0675 \text{ cubic ft/day} = .134 \text{ acre-feet/day}$$

GID currently has over 250 pivots in its system, and each pivot typically runs one-half of the entire season, which averages 14 weeks (7 weeks, or 49 days per pivot). Using these numbers, the following spill can be totalized:

$$.134 \text{ ac-ft/day} \times 250 \text{ pivots} \times 49 \text{ days of service} = 1,642 \text{ acre-feet of spillage per season}$$

This gives the estimate that roughly 1,642 AF/year are unrecorded spills.

- *If known, please explain how current losses are being used. For example, are current losses returning to the system for use by others? Are current losses entering an impaired groundwater table becoming unsuitable for future use?*
 - ❖ Current losses are leaked from the area surrounding the gates and spilled from over-delivery, becoming unrecoverable once they reach the soil. Although seepage has some positive impacts through groundwater recharge, much of the loss GID experiences is not by preference, thereby requiring a diversion much greater than the actual delivery need.
- *Are there any other known benefits associated with where the current losses are going? For example, is seepage water providing additional habitat for fish or animal species?*
 - ❖ The district is unaware of any direct and intended benefits associated with current losses.

Describe the support/documentation of estimated water savings: Please provide sufficient detail supporting how the estimate was determined, including all supporting calculations. Please be sure to consider the questions associated with your project type when determining the estimated water savings, along with the necessary support needed for a full review of your proposal.

In addition, please note that the use of visual observations alone to calculate water savings, without additional documentation/data, is not sufficient to receive credit under this section. Further, the water savings must be the result of reducing or eliminating a current, ongoing loss, not the result of an expected future loss.

- ❖ Quantifiable water savings have been calculated by quantifying water that flows over a flume at the main diversion site. This data is collected with instrumentation that GID staff currently have available. As discussed, GID sees an estimated average of acre-feet per year in recorded losses in the form of spillage and seepage. As referenced and calculated above, the district estimates an additional 45,799 AF/Year lost in unrecorded spills due to variable rate pivots, mechanical problems, and many miles of non-automated canals. Implementing automation within the project area is estimated to eliminate spillage between 50-90% and

increase water use efficiency by 10-30%. The proposed automated gate technologies and controls have been proven to dramatically reduce spills when properly implemented. Frenchman-Cambridge Irrigation District in Cambridge, NE, is an example of the spill reduction that can occur when utilizing the proposed automation. In effect, with these automated systems implemented, spills generally happen only when storm events require the release of excess water. See *Figure 6* below for evidence of a reduction in spillage pre- and post-automation via the Frenchman-Cambridge Irrigation District case study, with automation occurring at the beginning of 2020. Find the full case study in *Appendix B*.

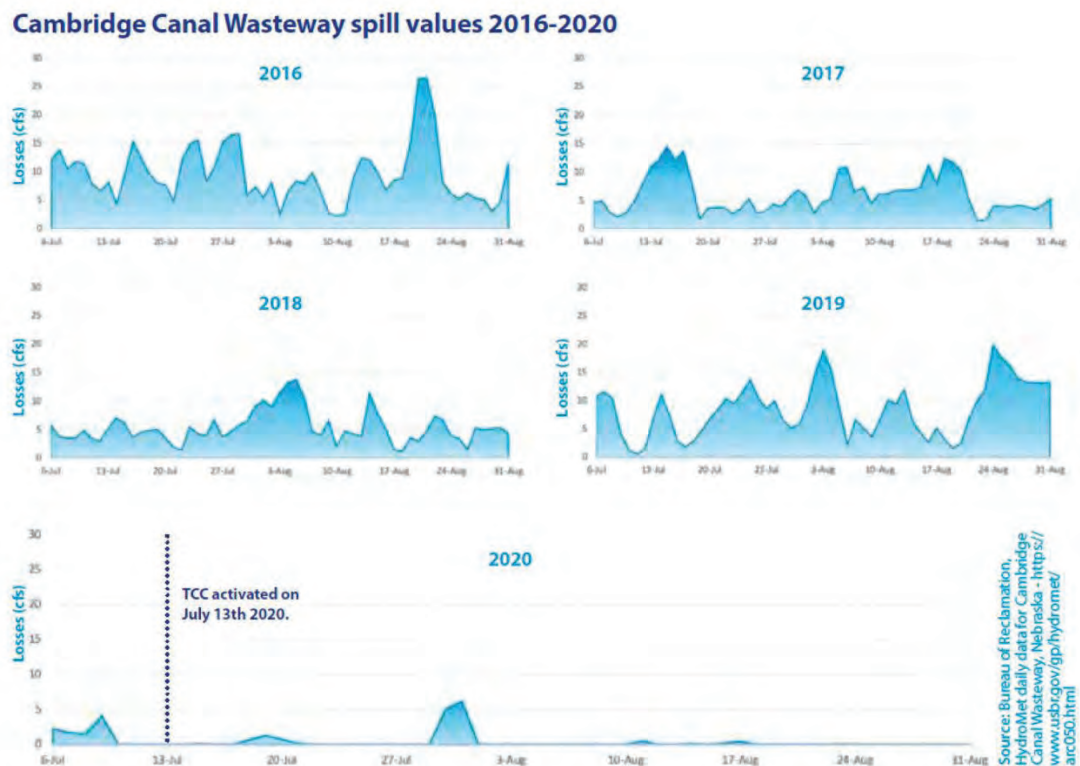


Figure 6 Comparative District record of spillage before and after implementing the proposed automation system.

Please address the following questions according to the type of infrastructure improvement you are proposing for funding.

(1) Canal Lining/Piping: Canal lining/piping projects can provide water savings when irrigation delivery systems experience significant losses due to canal seepage. Applicants proposing lining/piping projects should address:

- How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.

❖ N/A

- *How have average annual canal seepage losses been determined? Have ponding and/or inflow/outflow tests been conducted to determine seepage rates under varying conditions? If so, please provide detailed descriptions of testing methods and all results. If not, please provide an explanation of the method(s) used to calculate seepage losses. All estimates should be supported with multiple sets of data/measurements from representative sections of canals.*

❖ N/A

- *What are the expected post-project seepage/leakage losses, and how were these estimates determined (e.g., can data specific to the type of material being used in the project be provided)?*

❖ N/A

- *What are the anticipated annual transit loss reductions in terms of acre-feet per mile for the overall project and for each section of the canal included in the project?*

❖ N/A

- *How will actual canal loss seepage reductions be verified?*

❖ N/A

- *Include a detailed description of the materials being used.*

❖ N/A

(2) Municipal Metering: *Municipal metering projects can provide water savings when individual user meters are installed where none exist to allow for unit or tiered pricing and when existing individual user meters are replaced with advanced metering infrastructure (AMI) meters. To receive credit for water savings for a municipal metering project, an applicant must provide a detailed description of the method used to estimate Page 10 of 22 savings, including references to documented savings from similar previously implemented projects. Applicants proposing municipal metering projects should address the following:*

- *How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.*

❖ N/A

- *How have current system losses and/or the potential for reductions in water use by individual users been determined?*

❖ N/A

- *For installing end-user water service meters, e.g., for a residential or commercial building unit., refer to studies in the region or in the applicant's service area that are relevant to water use patterns and the potential for reducing such use. In the absence of such studies, please explain in detail how expected water use reductions have been estimated and the basis for the estimations.*

❖ N/A

- *What types (manufacturer and model) of devices will be installed and what quantity of each?*

❖ N/A

- *How will actual water savings be verified upon completion of the project?*

❖ N/A

(3) Irrigation Flow Measurement: *Irrigation flow measurement improvements can provide water savings when improved measurement accuracy results in reduced spills and over-deliveries to irrigators. Applicants proposing municipal metering projects should address:*

- *How have average annual water savings estimates been determined? Please provide all relevant calculations, assumptions, and supporting data.*
 - ❖ As seen previously in *Table 1*, quantifiable annual water savings have been determined by establishing an annual average baseline of water diverted compared to water delivered. 10 years of data have been analyzed here to account for variations in seasonal allotments (*Appendix A*) and established a 10-year baseline for an average of 112,272 AF diverted, and 66,113AF delivered for an average operational efficiency of approximately 64% at current operating status. Given the level of automation this project proposes, the gate manufacturer estimates a conservative rate of 50-90% reduction in overall spills based on prior performance in similar projects (See complete case study in *Appendix B*). Consideration of the proposed automation's rate of reduction in overall spills suggests a considerable increase in the district's current annual operational efficiency. It is also estimated that this proposed project will increase delivery efficiency by 10-30% of the 10-year water delivery average.
- *Have current operational losses been determined? If water savings are based on a reduction of spills, please provide support for the amount of water currently being lost to spills.*
 - ❖ The vast majority of recorded losses in the system result from seepage and spillage. Periodic spill auditing has measured an average of 5,880 acre-feet per season in recorded losses and an estimate of an additional 1,642 AF/year of unmeasured losses due to variable system demand by center pivot systems.
- *Are flows currently measured at proposed sites, and if so, what is the accuracy of existing devices? How has the existing measurement accuracy been established?*
 - ❖ Current flows are measured using charts that give average channel flow by height of gate opening and average canal height. This accuracy will vary depending on the actual canal water height. Less height in the canal means less water pressure on the gate, reducing the flow through the gate.
- *Provide detailed descriptions of all proposed flow measurement devices, including accuracy and the basis for the accuracy.*
 - ❖ Rubicon SlipMeters and FlumeGates are the proposed gates for this automation project. The proposed automated gates automatically adjust to maintain a consistent flow rate in response to changes in upstream and downstream flows, reducing the amount of water deemed unrecoverable from spillage. Additionally,

Rubicon gates can be utilized to monitor and meter the flow of water with an accuracy of $\pm 2.5\%$. See *Appendix C, pgs. 54-61* for data sheets on all proposed gates.

- The FlumeGate is a combined flow measurement and overshoot control gate designed for open channel applications. Accurate flow measurement, precise motor control, power supply, and radio telecommunications are fully integrated in a single device. The FlumeGate calculates flow from the gate's own measurements of upstream water levels, downstream water levels, and gate position. The FlumeGate automatically controls the flow of water by carrying the gate position based on a desired setpoint and control objectives such as maintaining a constant flow, or a constant level within the canal. The FlumeGate's overshoot design allows it to pass most debris without intervention.
 - The SlipMeter is a combined flow meter and control gate designed to automate customer service points/turnouts and offtakes / lateral headings. Accurate flow measurements, precise motor control, power supply, and radio telecommunications are fully integrated into a single device. The acoustic array flow measurement technology captures the full velocity distribution in the conduit or box. Instantaneous flow rate and total volume passed are calculated, providing a precise account of water usage. The device can be managed and monitored on-site or operated remotely when connected to a SCADA network such as Rubicon's SCADAConnect Live or SiteConnect system. It can automatically control the flow of water by varying the gate position based on a desired set point.
 - *Will annual farm delivery volumes be reduced by more efficient and timely deliveries? If so, how has this reduction been estimated?*
 - ❖ Yes, implementing this project will help reduce over-delivery by ensuring proper cut-offs and increasing GID's ability to conduct water delivery in a timely manner.
 - *How will actual water savings be verified upon completion of the project?*
 - ❖ After the automated headgates are installed and integrated into the SCADA system, flows into the canal and amounts of water spilled will be compared to historical canal operator entries and existing monthly spill totals recorded by the SCADA system. Monthly post-project water balance values will also be compared to pre-project mass balances during the months without precipitation events to deduce if a mass balance comparison can be used to evaluate the performance of the Rubicon headgates, generally between June and October annually.
- (4) Turf Removal:** *Applicants proposing turf removal projects should address:*
- *How have average annual water savings estimates been determined? Please provide all relevant calculations, assumptions, and supporting data.*

❖ N/A

- *What is the total surface area of turf to be removed, and what is the estimated average annual turf consumptive use rate per unit area?*

❖ N/A

- *Was historical water consumption data evaluated to estimate average annual turf consumptive use per unit area? If so, did the evaluation include a weather adjustment component?*

❖ N/A

- *Will site audits be performed before applicants are accepted into the program?*

❖ N/A

- *How will actual water savings be verified upon completion of the project?*

❖ N/A

(5) Smart Irrigation Controllers, Controllers with Rain Sensor Shutoff, Drip Irrigation, and High-Efficiency Nozzles: Applicants proposing smart irrigation controllers, controllers with rain sensor shutoff, drip irrigation, or high-efficiency nozzle projects should address:

- *How have average annual water savings estimates been determined? Please provide all relevant calculations, assumptions, and supporting data.*

❖ N/A

- *Was historical water consumption data evaluated to estimate the percent reduction in water demand per unit area of the irrigated landscape? If so, did the evaluation include a weather adjustment component?*

❖ N/A

- *What types (manufacturer and model) of devices will be installed, and what quantity of each?*

❖ N/A

- *Will the devices be installed through a rebate or direct-install program?*

❖ N/A

- *Will site audits be performed before and after installation?*

❖ N/A

- *How will actual water savings be verified upon completion of the project?*

❖ N/A

(6) High-Efficiency Indoor Appliances and Fixtures: Installing high-efficiency indoor appliances and fixtures can provide water savings for municipal water entities where there is significant potential for replacing existing non-efficient indoor appliances and fixtures. Applicants proposing high-efficiency indoor appliance and fixtures projects should address:

- *How have average annual water savings estimates been determined? Please provide all relevant calculations, assumptions, and supporting data.*

❖ N/A

- *What types (clothes washers, shower heads, etc.) of appliances and fixtures will be installed, and what quantity of each?*

❖ N/A

- Have studies been conducted to verify the existence of non-efficient appliances and fixtures? Provide published water savings rates for each of these devices and reference the source for each of the device savings rates.

❖ N/A

- Will the devices be installed through rebate or direct-install programs?

❖ N/A

- How will actual water savings be verified upon completion of the project?

❖ N/A

(7) Commercial Cooling Systems: Cooling towers are components of many refrigeration systems with many applications. They dissipate heat to the atmosphere through the evaporative process and are common in manufacturing processes where cooling is required. They are also used for cooling large commercial buildings. Cooling tower structures vary in size, design, and efficiency. Regardless, all cooling towers consume large volumes of water and energy. Open-circuit or direct contact are the most common types of cooling towers. Water is supplied to the tower after gathering heat and then released in the upper tower levels. A fan near the base of the tower creates upward airflow. Closed-circuit towers are more efficient and closed-circuit towers with adiabatic cooling are more efficient yet. Water and energy savings can be achieved by replacing or retrofitting older, low-efficiency cooling towers. Applicants proposing cooling system projects should address:

- How have average annual water savings estimates been determined? Please provide all relevant calculations, assumptions, and supporting data.

❖ N/A

- Was historical water consumption data evaluated to estimate the percent reduction in water demand?

❖ N/A

- Specify the type (manufacturer and model) of the cooling tower system to be installed and/or provide a detailed description of the system retrofit plan.

❖ N/A

Evaluation Criteria B – Renewable Energy

Subcriterion No. B.1: Implementing Renewable Energy Projects Related to Water Management and Delivery

Describe the amount of energy capacity. For projects that implement renewable energy systems, state the estimated amount of capacity (in kilowatts) of the system. Please provide sufficient detail supporting the stated estimate, including all calculations in support of the estimate

- ❖ The automated gates are powered by a 12V DC Solar panel power supply, which computes to:

$$0.096KW = 12 \times 8 / 1000$$

This project proposes 8 gates, all equipped with a solar power source, as listed above. For more information, see *Appendix C, pg. 56, 60.*

Describe the amount of energy generated. For projects that implement renewable energy systems, state the estimated amount of energy that the system will generate (in kilowatt hours per year). Please provide sufficient detail supporting the stated estimate, including all calculations in support of the estimate. Please explain how the power generated as a result of this project will be used, including any existing or planned agreements and infrastructure.

❖ N/A

Describe the status of a mothballed hydropower plant. For projects that are bringing mothballed hydropower capacity back online, please describe the following:

- Clearly describe the work that will be accomplished through the WaterSMART Grant. Note: normal OM&R activities are not eligible for funding. The work being proposed must be an investment.

❖ N/A

- Provide information about the capacity (in kilowatts) of the existing hydro system and the expected capacity once it is brought back on-line.

❖ N/A

- Provide information about the duration that the hydro system has been offline and the reasons why it has been mothballed. Please include any regulatory reporting or filings (e.g., FERC filings) or other documentation regarding the system

❖ N/A

Describe any other benefits of the renewable energy project. Please describe and provide sufficient detail on any additional benefits expected to result from the renewable energy project, including:

- How the system will combat/offset the impacts of climate change, including an expected reduction in greenhouse gas emissions

❖ Yes, this project will support a reduction in greenhouse gas emissions. By installing automated gates allowing remote access and maintenance, GID staff will see a reduction in miles driven daily to the proposed project sites. This reduction can be calculated as such:

Emissions Reduction = (Original Miles Traveled - Reduced Miles Traveled) x Emission Factor per Mile

Explanation:

- Original Miles Traveled: The total distance traveled before implementing the reduction strategy.
- Reduced Miles Traveled: The new, lower distance traveled after implementing the reduction strategy.

- Emission Factor per Mile: The amount of greenhouse gas emissions produced by a vehicle per mile traveled, which can be obtained from sources like the EPA.

11,700 Original Miles – 4,400 Reduced Miles Travels = 7,300 Miles Saved

7,300 Miles Saved X 347grams/mile = 2,533,100 grams of CO2 emissions saved

- *Expected environmental benefits of the renewable energy system*
 - ❖ Expected environmental benefits stem from the reduction in necessary vehicle travel to and from project sites. With this reduction, the district will lower greenhouse gas emissions, as well as reduce travel and vehicle disturbance impacts on access roads, gate sites, and surrounding areas.
- *Any expected reduction in the use of energy currently supplied through a Reclamation project.*
 - ❖ N/A
- *Anticipated benefits to other sectors/entities*
 - ❖ Fewer spills and runoff will mean less maintenance of drain ditch erosion and siltation, which is a cost benefit to the district.
- *Expected water needs, if any, of the system.*
 - ❖ N/A

AND/OR

Subcriterion No. B.2: Increasing Energy Efficiency in Water Management

Describe any energy efficiencies that are expected to result from the implementation of the water conservation or water efficiency project (e.g., reduced pumping).

- *If quantifiable energy savings is expected to result from the project, please provide sufficient details and supporting calculations. If quantifying energy savings, please state the estimated amount in kilowatt-hours per year.*
 - ❖ N/A
- *How will the energy efficiency improvement combat/offset the impacts of climate change, including an expected reduction in greenhouse gas emissions.*
 - ❖ Creating automation within the district's canal will address the impacts of climate change through the responsible usage of available water. Using automated gates increases water conservation at a rate of 10-30% of total annual flow. It mitigates the amount of water lost via leaks and spillage while maintaining a consistent flow rate for customers. Additionally, canal automation negates the need for individuals to travel to the site and manage the canal. As mentioned, GID operates and maintains the Fort Laramie Canal from Whalen Dam to mile marker 85.3 (Wyoming/Nebraska state line). In addition, GID district staff are responsible for 300 miles of laterals and approximately 200 miles of drains. Water is

delivered to 52,484 acres (approximately 400 farms), and to the Wyoming/Nebraska state line. It takes approximately 10 hours and 2 maintenance crewmen to service the canals from Whalen Dam to the Wyoming/Nebraska state line, and an additional 8 hours for 6 ditch riders and 6 maintenance crewmen to service the 300 miles of laterals and 200 miles of drains. Eliminating routine vehicle travel reduces the overall carbon emissions associated with manual gate operations.

Emissions Reduction = (Original Miles Traveled - Reduced Miles Traveled) x Emission Factor per Mile

Explanation:

- Original Miles Traveled: The total distance traveled before implementing the reduction strategy.
- Reduced Miles Traveled: The new, lower distance traveled after implementing the reduction strategy.
- Emission Factor per Mile: The amount of greenhouse gas emissions produced by a vehicle per mile traveled, which can be obtained from sources like the EPA.

11,700 Original Miles – 4,400 Reduced Miles Travels = 7,300 Miles Saved

7,300 Miles Saved X 347grams/mile = 2,533,100 grams of CO₂ emissions saved

- *If the project will result in reduced pumping, please describe the current pumping requirements and the types of pumps (e.g., size) currently being used. How would the proposed project impact the current pumping requirements and energy usage?*
❖ N/A
- *Please indicate whether your energy savings estimate originates from the point of diversion or whether the estimate is based upon an alternate site of origin.*
❖ N/A
- *Does the calculation include any energy required to treat the water, if applicable?*
❖ N/A
- *Will the project result in reduced vehicle miles driven, in turn reducing greenhouse gas emissions? Please provide supporting details and calculations.*
❖ Yes, as discussed, canal automation negates the need for individuals to travel to the site and manage the canal. Eliminating routine vehicle travel reduces the overall carbon emissions associated with manual gate operations.
- *Describe any renewable energy components that will result in minimal energy savings/production (e.g., installing small-scale solar as part of a SCADA system).*
❖ The automated gates are powered by a 12V DC Solar panel power supply, which computes to:

$$0.096\text{KW} = 12 \times 8 / 1000$$

This project proposes 8 gates, all equipped with a solar power source, as listed above. For more information, see *Appendix C, pgs. 56, 60*. This eliminates the need to tie the gate controls to a separate power source, and thus reduces overall energy consumption.

Evaluation Criteria C – Other Project Benefits

Sustainability Benefits. *Will the project address a specific water and/or energy sustainability concern? Please address the following:*

- *Explain and provide details of the specific issue(s) in the area that is impacting water sustainability. Consider the following:*
 - *Describe recent, existing, or potential drought or water scarcity conditions in the project area.*
 - ❖ The project takes place in an area continually impacted by varying snowpack runoff, rainfall, and water conditions year by year. Continuing variability in precipitation throughout the year and significant water events lead to varying water years reliant on consistent precipitation throughout operating seasons. This area has specifically experienced severe to extreme drought conditions in the past 5 years, with the projection for this trend to continue.
 - *Is the project in an area that is experiencing or has recently experienced drought or water scarcity?*
 - ❖ As seen below in *Figures 7 and 8*, Goshen County, where this project is proposed to take place, has experienced one of the following levels of drought: D0 (Abnormally Dry), D1 (Moderate Drought), D2 (Severe Drought), D3 (Extreme Drought), D4 Exceptional Drought) in the past five (5) years or more. This is based on models from the U.S. Drought Monitor linked here: https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?fips_56015.

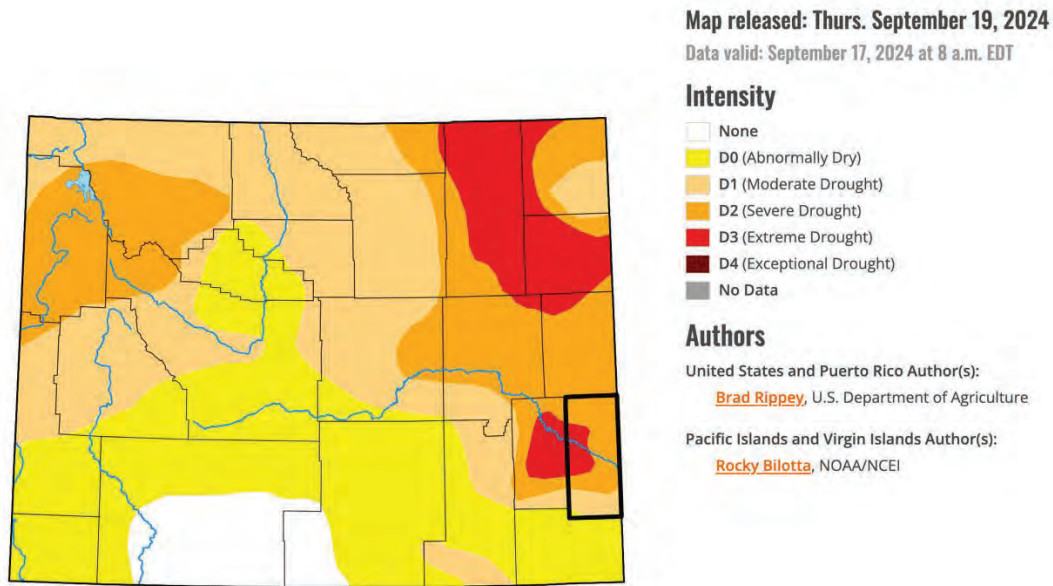


Figure 7 Wyoming State, GID Goshute County Drought Monitor Map

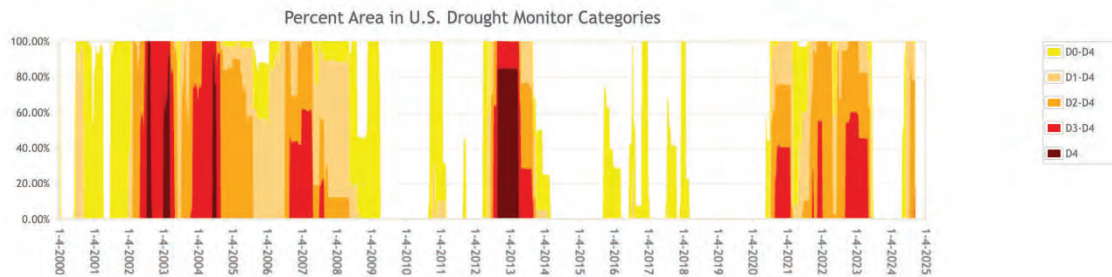


Figure 8 GID Goshute County, WY Historic Drought Monitor Data

- o Describe any projected increases to the severity or duration of drought or water scarcity in the project area. Provide support for your response (e.g., reference a recent climate-informed analysis, if available).
 - ❖ According to the Climate Mapping For Resilience and Adaptation portal (<https://livingatlas.arcgis.com/assessment-tool/explore/map>), the average annual total precipitation in the project area is around 14.3 inches, which, according to the aridity index, categorizes this area as semi-arid. This region has long dry periods, an estimated 247.8 days per year with no precipitation, and an estimated 22.8 consecutive dry days annually. Climate modeling predicts that this area will continue to experience dry conditions, with the likelihood that these conditions will increase over time. (See Mid and Late Century climate projections via the wildfire tab here: <https://livingatlas.arcgis.com/assessment-tool/explore/details>).

- *Explain and provide detail of the specific issue(s) in the area that is impacting energy sustainability, such as reliance on fossil fuels, pollution, or interruptions in service.*
 - ❖ **At present, the growing use of pivots and sporadic demand on the canal system cause unnecessary amounts of water to be sent through the system to maintain adequate flow to irrigators. Water that has been sent into the system but cannot be utilized is then lost due to seepage and spillage from over-delivery. This creates unnecessary energy expenditure, which promotes needless energy consumption.**
- *Please describe how the project will directly address the concern(s) stated above.*
 - ❖ **This project is expected to reduce the overall amount of water lost through conveyance and spillage, reducing the total amount of water required to meet GID's demands while preventing water wastage by retaining excess flows in the main channel upstream. Additionally, this project will allow GID to more adequately control and measure the flow of water, which will, in turn, increase the district's ability to maintain higher, more efficient, and more sustainable levels of service.**
- *Will the project directly result in more efficient management of the water supply? For example, will the project provide greater flexibility to water managers, resulting in a more efficient use of water supplies?*
 - ❖ **Yes, the project will allow water managers to more accurately control flow and eliminate leaks. Additionally, the SCADA integration will allow for a quicker response to system changes, resulting in more efficient water management.**
- *Please address where any conserved water as a result of the project will go and how it will be used, including whether the conserved water will be used to offset groundwater pumping, used to reduce diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.*
 - ❖ **Water conserved as a result of this project will remain in the canal for later usage, reducing the overall number of diversions required seasonally. Water that is conserved via this project that remains in the canal is likely to be held for use later in the season during dry years.**
 - *Indicate the quantity of conserved water that will be used for the intended purpose(s).*
 - ❖ **The exact quantity of conserved water will vary depending on the annual totals flowing through the system. However, all water conserved via this project is expected to be retained within the GID system.**
 - *Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use.*
 - ❖ **N/A**
- *Will the project assist States and water users in complying with interstate compacts?*

- ❖ Yes, Goshen Irrigation District manages water that is part of the North Platte River Decree. This project will contribute to the more sustainable management and conservation of water that is delivered via this inter-state compact.

Goshen Irrigation District is under contract to operate and maintain Whalen Diversion, located six- and one-half miles west-northwest of the town of Fort Laramie on the North Platte River. Water from the North Platte Project is diverted into the Fort Laramie Canal, which serves the Goshen Irrigation District in Wyoming and the Gering-Ft. Laramie Irrigation District in Nebraska. Water is also diverted into the Interstate Canal, operated by the Pathfinder Irrigation District. Goshen Irrigation District is designated as the operating agency of Whalen Dam. Each District contributes its share of the cost to the operation of Whalen on a per-acre basis.

The Goshen Irrigation District operates and maintains the Fort Laramie Canal from Whalen Dam to mile marker 85.3 (Wyoming/Nebraska state line), with some general rehabilitation work done by both the Goshen Irrigation District and the Gering-Ft. Laramie Irrigation District. There are also some 300 miles of laterals and approximately 200 miles of drains for which the district is responsible. Water is delivered to 52,484 acres (approximately 400 farms) and to the United States (at the Wyoming/Nebraska state line) for use by the Gering-Ft. Laramie Irrigation District. For this service, the United States pays the Goshen Irrigation District a water carriage credit.

- *Will the project help to prevent a water-related crisis or conflict? Is there frequently tension or litigation over water in the basin?*
 - ❖ This project aims to provide tail-end users of lateral ditches with a more consistent flow of usable water. Currently, water flow at the tail ends of laterals fluctuates significantly due to varying pivot pumping demands upstream. This results in excess water when demand drops and insufficient water when demand is high. The existing system is unable to respond quickly enough to keep up with these fluctuations.

Ecological Benefits. *In addition to the separate WaterSMART Environmental Water Resources Projects NOFO, this NOFO places a priority on projects that result in ecological benefits through this section and other sections above, consistent with the SECURE Water Act. Please provide information regarding how the project will provide ecosystem benefits, including the following:*

- *Will the project benefit species (e.g., federally threatened or endangered, a federally recognized candidate species, a state-listed species, or a species of particular recreational or economic importance)? Please describe the relationship of the species to the water supply and whether the species is adversely affected by a Reclamation project or is subject to a recovery plan or conservation plan under the Endangered Species Act (ESA).*

- ❖ Yes, the project will complement and enable the district habitat preservation and conservation efforts by reducing unnecessary water losses throughout the proposed system and allowing the district to manage water sustainably, rather than unnecessary spillage and over-delivery of water. Automated gates allow water to reside longer on the landscape in holding pools and allow GID to pull less water from the above-mentioned high-value district water sources. Some specific species recorded in the area that the proposed automation project may benefit include Whooping Cranes, Terns, Piping Plovers, and other migratory waterfowl that depend on healthy riparian regions for migration stop-overs. Reference <https://www.fws.gov/office/wyoming-ecological-services/species> for more specific species of concern and ESA-listed species in the Platte River ecosystem.
- *Will water remain in the system for longer periods of time? If so, provide details on current/future durations and any expected resulting benefits (e.g., maintaining water temperatures or water levels, recreational benefits, etc.).*
 - ❖ Yes, this project will improve the district's overall ability to control flow through the canal, resulting in water being held for longer durations of time. Through the implementation of automation, water usage will not only be able to be quantified and leaks reduced, but the level of water will be maintained to a higher degree to ensure efficient deliveries to agricultural customers.
- *Will the proposed project reduce the likelihood of a species listing or otherwise improve the species' status?*
 - ❖ No, this project does not directly reduce the likelihood of a species listing or improve its list status.
- *Please describe any other ecosystem benefits as a direct result of the project.*
 - ❖ The proposed automation would lessen the unintended flooding and spillage occurring throughout the system, keeping more water within the canal and requiring less water to be pulled from the source into the system in the first place.

Climate Change: E.O. 14008 emphasizes the need to prioritize and take robust actions to reduce climate pollution, increase resilience to the impacts of climate change, protect public health, and conserve our lands, waters, oceans, and biodiversity.

- *Describe how the project addresses climate change and increases resiliency. For example, does the project help communities respond to or recover from drought?*
 - ❖ The proposed project will increase the efficiency and sustainability of water delivery to agricultural providers by minimizing spillage through automation. Correctly timed releases aid in application efficiency, which improves sustainability and resiliency during droughts brought on by climate change.
- *Does the project seek to improve ecological resiliency to climate change?*
 - ❖ Yes. By managing the flow of water more consistently and sustainably, more water is left in the river/canal at a maintained level. The reduction in spillage and

seepage allows water to be utilized by all other aspects of the environment while still in the stream/canal. This consistent management also helps irrigators avoid large spillages and unnecessary flooding that can damage crops, land, and structures.

- *Does the proposed project seek to reduce or mitigate climate pollution, such as air or water pollution?*
 - ❖ Yes, currently, all head gate adjustments in the project area are accomplished manually. Implementing automation via this project will eliminate the need for ditch tenders to drive to individual gates to make changes and evaluate flow. The reduction in miles driven will lower the emissions generated by GID vehicles.

Emissions Reduction = (Original Miles Traveled - Reduced Miles Traveled) x Emission Factor per Mile

Explanation:

- Original Miles Traveled: The total distance traveled before implementing the reduction strategy.
- Reduced Miles Traveled: The new, lower distance traveled after implementing the reduction strategy.
- Emission Factor per Mile: The amount of greenhouse gas emissions produced by a vehicle per mile traveled, which can be obtained from sources like the EPA.

11,700 Original Miles – 4,400 Reduced Miles Travels = 7,300 Miles Saved

7,300 Miles Saved X 347grams/mile=2,533,100 grams of CO2 emissions saved

- *Does the proposed project include green or sustainable infrastructure to improve community climate resilience?*
 - ❖ The addition of automation within the district's canal will address the impacts of climate change through the responsible usage of available water. Using automated gates increases water conservation at a rate of 10-30% of total annual flow while minimizing water lost through spillage and leaks at headgates. The installation of automated head headgates will allow the gates to adapt to the changing canal water levels in real-time. Additionally, the automation of the canal negates the need for individuals to travel to the site and manage the canal. Eliminating routine vehicle travel reduces the overall carbon emissions associated with manual gate operations. The control panel for the proposed automated gates is also operated via solar power and a solar panel, further contributing to GID's ability to manage its water through sustainable means.

- *Does the proposed project contribute to climate change resiliency in other ways not described above?*
 - ❖ This project aims to promote sustainable water management in a landscape experiencing drier-than-normal conditions. Doing so will ensure more consistent water availability and delivery for end users, while also supporting environmental needs and wildlife throughout the project area.

Evaluation Criteria D – Disadvantaged Communities and Tribal Benefits

Subcriterion D.1. Disadvantaged or Underserved Communities: E.O. 14008 and E.O. 13985 affirm the advancement of environmental justice and equity for all through the development and funding of programs to invest in disadvantaged or underserved communities. For the purposes of this criterion, Tribes and insular areas (American Samoa, Guam, the Northern Mariana Islands, or the Virgin Islands) are considered disadvantaged.

- Please use the White House Council on Environmental Quality’s interactive Climate and Economic Justice Screening Tool, available online at *Explore the map - Climate & Economic Justice Screening Tool* (<https://screeningtool.geoplatform.gov/en/#17.59/36.63278/-105.181329>) to identify any disadvantaged communities that will benefit from your project. The Climate and Page 16 of 22 Economic Justice Screening Tool (CEJST) developed by the White House Council on Environmental Quality is a geospatial mapping tool that utilizes publicly available, nationally consistent data sets related to climate change, the environment, health, and economic opportunity to identify disadvantaged communities. In addition to identifying specific census tracts that are disadvantaged, the CEJST considers the lands of Federally Recognized Tribes as disadvantaged communities. In addition, regardless of whether a Federally Recognized Tribe has land, all Federally Recognized Tribal entities are considered disadvantaged communities for the purposes of the Justice40 Initiative.^[1]
 - ❖ The project takes place in Goshen County, WY, where 38.2% of the population is considered to be disadvantaged. The disadvantaged community area and population statistics can be seen in *Figure 9* below.

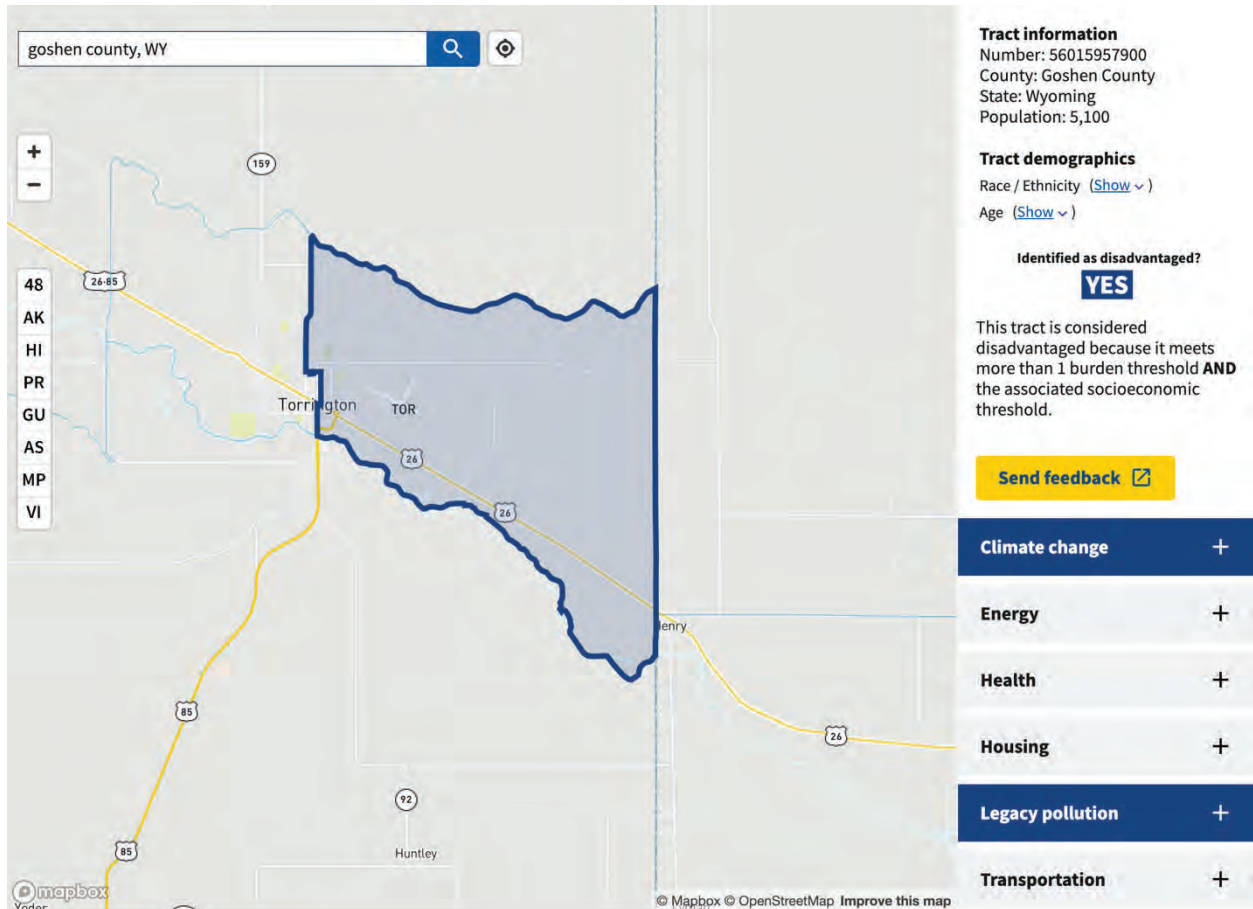


Figure 9 Goshen County Climate and Economic Justice Disadvantaged Communities Map

- If applicable, describe how the proposed project will serve or benefit a disadvantaged or underserved community, identified using the tool. For example, will the project improve public health and safety by addressing water quality, add new water supplies, provide economic growth opportunities, or provide other benefits in a disadvantages or underserved community?
 - ❖ The project will positively impact agricultural producers in the district's service area, which stand to be disproportionately impacted by the effects of climate change and significant weather events. By aiding in water delivery efficiency and a reduction in spillage and over-deliveries, this project will positively impact stakeholders in the agricultural sector within the service area whose livelihood is dependent on their ability to produce healthy crops. This level of automation implementation will also allow the GID system to shift from a schedule-driven system to an on-demand system, allowing water users and agricultural producers more flexibility with their water delivery ordering and timing.

Subcriterion D.2. Tribal Benefits: The Department of the Interior is committed to strengthening tribal sovereignty and the fulfillment of Federal Tribal trust responsibilities. The President's memorandum, Tribal Consultation and Strengthening Nation-to Nation Relationships, asserts the

importance of honoring the Federal government's commitments to Tribal Nations. Please address the following, if applicable:

- Does the proposed project directly serve and/or benefit a Tribe? Will the project increase water supply sustainability for an Indian Tribe? Will the project provide renewable energy for an Indian Tribe?
❖ No, this project does not directly benefit or serve a tribe.
- Does the proposed project support Tribally led conservation and restoration priorities, and/or incorporate or benefit Indigenous Traditional Knowledge and practices?
❖ No, this project does not support the above-mentioned programs.
- Does the proposed project directly support tribal resilience to climate change and drought impacts or provide other Tribal benefits such as improved public health and safety through water quality improvements, new water supplies, increased renewable energy, or economic growth opportunities? Does the proposed project support Reclamation's Tribal trust responsibilities or a Reclamation activity with a Tribe?
❖ No.

[1] OMB, CEQ, & CPO, M-23-09, Addendum to the Interim Implementation Guidance for the Justice40 Initiative, M-21-28, on using the Climate and Economic Justice Screening Tool (CEJST) (Jan. 27, 2023), https://www.whitehouse.gov/wp-content/uploads/2023/01/M-23-09_Signed_CEQ_CPO.pdf.

Evaluation Criteria E – Completing On-Farm Irrigation Improvements

If the proposed project will complement an on-farm improvement eligible for NRCS assistance, please address the following:

Describe any planned or ongoing projects by farmers/ranchers that receive water from the applicant to improve on-farm efficiencies.

- Provide a detailed description of the on-farm efficiency improvements.
❖ N/A
- Have the farmers requested technical or financial assistance from NRCS for the on-farm efficiency projects, or do they plan to in the future?
❖ N/A
- If available, provide documentation that the on-farm projects are eligible for NRCS assistance, that such assistance has or will be requested, and the number or percentage of farms that plan to participate in available NRCS programs
❖ N/A
- Applicants should provide letters of intent from farmers/ranchers in the affected project areas.
❖ N/A

- *Describe how the proposed WaterSMART project would complement any ongoing or planned on-farm improvement.*
❖ N/A
- *Will the proposed WaterSMART project directly facilitate the on-farm improvement? If so, how? For example, installing a pressurized pipe through WaterSMART can help support efficient on-farm irrigation practices, such as drip irrigation.*
❖ N/A

OR

- *Will the proposed WaterSMART project complement the on-farm project by maximizing efficiency in the area? If so, how?*
❖ N/A
- *Describe the on-farm water conservation or water use efficiency benefits that are expected to result from any on-farm work.*
❖ N/A
- *Estimate the potential on-farm water savings that could result in acre-feet per year. Include support or backup documentation for any calculations or assumptions.*
❖ N/A
- *Please provide a map of your water service area boundaries. If your project is selected for funding under this NOFO, this information will help NRCS identify the irrigated lands that may be approved for NRCS funding and technical assistance to complement funded WaterSMART projects.*
❖ N/A

Note: On-farm water conservation improvements that complement the water delivery improvement projects selected through this NOFO may be considered for NRCS funding and technical assistance to the extent that such assistance is available. For more information, including application deadlines and a description of available funding, please contact your local NRCS office. See the NRCS website for office contact information, <https://www.nrcs.usda.gov/conservation-basics/conservation-by-state/state-offices>

Evaluation Criteria F – Readiness to Proceed

Applications that include a detailed project implementation plan (e.g., an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates) will receive the most points under this criterion.

- *Identify and provide a summary description of the major tasks necessary to complete the project. Note: please do not repeat the more detailed technical project description provided in Section D.2.2.2. Application Content. This section should focus on a summary of the major tasks to be accomplished as part of the project.*

- ❖ Once funding for this project is awarded and Reclamation issues a Notice to Proceed, GID crews will begin ordering headgates and materials. Once GID receives notification of the delivery date of the materials, canal outages will be scheduled. Scheduling will be arranged so that several headgates can be commissioned each day and time utilized efficiently. Most of the work is expected between 10/2025, and 4/2027. It is expected to take 14 day(s) to install each headgate, 10 day(s) to prepare the canals, and 14 day(s) to install and commission the gates. Construction and any ground-disturbing activities will be performed within a small radius of the existing headgates and canals. Ground-disturbing activities will be minimal; no permits are expected to be required.
- *Describe any permits that will be required, along with the process for obtaining such permits.*
 - ❖ No permits are expected to be required to complete this project. All work is expected to take place within the district right-of-way. If a permit is necessary, it will be obtained prior to any ground-disturbing activities.
- *Identify and describe any engineering or design work performed specifically in support of the proposed project.*
 - ❖ Each headgate installation is unique, requiring some modification to the canal. GID crews are familiar with the construction and installation of the proposed headgates. Rubicon engineers have visited the proposed project sites and gathered adequate information to create a detailed quote and study, as can be seen in *Appendix C*.
- *Describe any new policies or administrative actions required to implement the project.*
 - ❖ No new policies or administrative actions will be required to implement and complete this project.
- *Describe the current design status of the project. If additional design work is required prior to construction, describe the planned process and timeline for completing the design work.*
 - ❖ Rubicon engineers have reviewed the original drawings on the canal infrastructure and followed up with a site visit to verify accuracies. With the design completed, a scoping study has been generated; this study can be found in *Appendix C*. The majority of the design work for this project has been completed; any remaining will be completed prior to implementation of the project.
- *Please also include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. Milestones may include, but are not limited to, the following: complete environmental and cultural compliance; mobilization; begin construction/installation; construction/installation (50% complete); and construction/installation (100% complete). Was the expected timeline for*

environmental and cultural compliance discussed with the local Reclamation Regional or Area Office?

- GID crews and Rubicon technicians will be available between 10/2025 and 03/2026 to prepare each site, install gates, and commission the gates at multiple sites simultaneously. If any further cultural compliance is found to be necessary by Bureau staff, GID will support and comply with any and all next steps. All construction and project implementation will be completed prior to 10/21/28. See *Appendix D, pgs. 67-79*, for a detailed project timeline summary and budgetary breakdown of each installation.

Evaluation Criteria G – Collaboration

Please describe how the project promotes and encourages collaboration. Consider the following:

- *Is there widespread support for the project? Please provide specific details regarding any support and/or partners involved in the project. What is the extent of their involvement in the process?*
 - ❖ GID has been collaborating with Wyoming Water Development for many years to secure funding for improvement projects across the district. These projects have included the installation of automated checks and gates, conversion of open ditch laterals to underground pipelines, headgate replacements, measuring stations, and various other infrastructure rehabilitations. Many of these projects have been funded 100% by materials grants from Wyoming Water Development, with GID crews handling the installation and labor. The GID Board of Commissioners plays an active, hands-on role in planning and coordinating the priority and timing of these projects. The district's needs are typically communicated by landowners or GID staff to the relevant District Commissioner, who then brings the concerns to the full Board for prioritization and action. Most GID projects that require funding benefit multiple landowners and are considered valuable assets to their farming operations. For projects that benefit only a single landowner, the landowner provides the materials, while GID crews handle the installation and oversight.
- *What is the significance of the collaboration/support?*
 - ❖ GID could not perform the upgrades and rehab to our system without the support of funding agencies like Wyoming Water Development, local NRCS, Bureau of Reclamation, and individual landowners without significant financial burden to the District landowners as a whole through increased water assessments.
- *Will this project increase the possibility/likelihood of future water conservation improvements by other water users?*

- ❖ Yes, the introduction of automation within GID's service area, paired with the high level of automation, will likely increase regional interest and trust in implementing technological improvements in irrigation infrastructures.
- *Will the project benefit multiple sectors and/or users (e.g., agriculture, municipal and industrial, environmental, recreation, or others)?*
 - ❖ This project will benefit all downstream users, including municipal, industrial, recreational, and hydroelectric generation.
- *Please attach any relevant supporting documents (e.g., letters of support or memorandum of understanding).*
 - ❖ See Attached Letter of Support from Senator Steinmetz District in *Appendix E*.

Evaluation Criteria H – Nexus to Reclamation

Describe the nexus between the proposed project and a Reclamation project or Reclamation activity. Please consider:

- *Does the applicant have a water service, repayment, or operations and maintenance (O&M) contract with Reclamation?*
 - ❖ Goshen Irrigation District is under contract to operate and maintain Whalen Diversion, located six- and one-half miles west-northwest of the town of Fort Laramie on the North Platte River. Water from the North Platte Project is diverted into the Fort Laramie Canal, which serves the Goshen Irrigation District in Wyoming and the Gering-Ft. Laramie Irrigation District in Nebraska. Water is also diverted into the Interstate Canal, where the Pathfinder Irrigation District operates. The Goshen Irrigation District is designated as the operating agency of Whalen Dam. Each District contributes its share of the cost to the operation of Whalen on a per-acre basis. Goshen Irrigation District operates and maintains the Fort Laramie Canal from Whalen Dam to mile marker 85.3 (Wyoming/Nebraska state line), with some general rehabilitation work done by both the Goshen Irrigation District and the Gering-Ft. Laramie Irrigation District. There are also some 300 miles of laterals and approximately 200 miles of drains for which the district is responsible. Water is delivered to 52,484 acres (approximately 400 farms), and to the United States (at the Wyoming/Nebraska state line), to be used by the Gering-Ft. Laramie Irrigation District. For this service, the United States pays to the Goshen Irrigation District a water carriage credit, which is based on the costs incurred by GID on the involved features determined by the Secretary of the Interior.
- *If the applicant is not a Reclamation contractor, does the applicant receive Reclamation water through a Reclamation contractor or by any other contractual means?*
 - ❖ N/A
- *Will the proposed work benefit a Reclamation project area or activity?*

- ❖ Yes, this project will benefit the upstream activities of Reclamation via sustainable management of water and less over-diversion of water due to the installation of automated gates and utilization of an upgraded SCADA system. In advance each year, the Goshen Irrigation District pays the United States a proportionate share of the estimated cost of operating and maintaining the reserved works. The reserve works, which are operated and maintained by the Bureau of Reclamation, include Pathfinder Dam and Reservoir and Guernsey Dam and Reservoir.

- *Is the applicant a Tribe?*

- ❖ No, GID Is not a tribe.

Performance Measures

Pre-project quantification of benefits will be completed by evaluating historical flow data collected from the project canal. Headgates within the project scope do not currently have SCADA and are, therefore, unable to produce data for comparison. After the automated headgates are installed and integrated into the SCADA system, the flow into the canal and the amount of water spilled will be compared to historical entries. Monthly post-project water balance values will also be compared to pre-project mass balances during the months without precipitation events to evaluate if a mass balance comparison can be used to evaluate the performance of the automated headgates, generally between June and October annually.

Project Budget

Funding Plan and Letters of Commitment

Please identify the sources of the non-Federal cost-share contribution for the project, including:

- *Any monetary contributions by the applicant towards the cost-share requirement and source of funds (e.g., reserve account, tax revenue, and/or assessments)*
 - ❖ N/A
- *Any costs that will be contributed by the applicant*
 - ❖ **The applicant plans to contribute \$538,912 to the total cost of the project.**
- *Any third-party in-kind costs (i.e., goods and services provided by a third party)*
 - ❖ N/A
- *Any cash requested or received from other non-Federal entities*
 - ❖ **The applicant has applied for and received \$638,780 in funds for this project from Wyoming Water Development.**
- *Any pending funding requests (i.e., grants or loans) that have not yet been approved and explain how the project will be affected if such funding is denied*
 - ❖ N/A

Official Resolution

RESOLUTION NO. W.S 24-01

A RESOLUTION AUTHORIZING SUBMISSION OF A BUREAU OF RECLAMATION WATER SMART WATER AND ENERGY EFFICIENT GRANT FOR THE GOSHEN IRRIGATION DISTRICT

WHEREAS, the Goshen Irrigation District recognizes the need to replace the 62.2 Check Structure, 7.0 Lateral Headgates, 67.5 Spillway Gates, and 45.1 Lateral Headgates along its District irrigation facilities.

WHEREAS, the Goshen Irrigation District Water Master Plan has identified the need to invest in infrastructure of the water service delivery system that supplies the Goshen Irrigation District and its irrigation water users by replacing certain aspects of its irrigation water delivery system; and,

WHEREAS, the Goshen Irrigation District wishes to finance this improvement and replacement process with funding from the Bureau of Reclamation Water SMART Water and Energy Efficiency grant [Water SMART grant]; and,

WHEREAS, the Bureau of Reclamation provides the enabling legislation for this grant program; and, WHEREAS, the Bureau of Reclamation requires that certain criteria be met, as described in the application governing the Water SMART grant, and to the best of the knowledge of the Goshen Irrigation District, this application meets the criteria; and,

WHEREAS, the Bureau of Reclamation Water SMART grant has a 50% match in non-Federal Funding and that amount has already been budgeted by the Goshen Irrigation District for water repairs to the irrigation water delivery system so that no additional funds are required; and,

WHEREAS, the Goshen Irrigation District agrees to work in cooperation through an agreement with the Bureau of Reclamation to meet established deadlines for the project.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE GOSHEN IRRIGATION DISTRICT, that an application for the Bureau of Reclamation Water SMART Water and Energy Efficiency Grant in the amount of \$2,355,383.00 be submitted on behalf of the Goshen Irrigation District, Wyoming.

BE IT FURTHER RESOLVED BY THE GOVERNING BODY OF THE GOSHEN IRRIGATION DISTRICT, that Manager Kevin Strecker is authorized to execute all documents relating to this grant application and is hereby designated to act as the authorized representatives on matters relating to this grant application.

PASSED, APPROVED AND ADOPTED this 24th day of October 2024. Goshen Irrigation District, a Wyoming Irrigation District



Kevin Strecker, Manager, Goshen Irrigation District

Appendix E Letters of Support

November 12, 2024

Bureau of Reclamation
Financial Assistance Operations
Attn: NOFO Team

To Whom It May Concern

I am writing to you in support of the Goshen Irrigation District's WaterSmart Water and Efficient Grant application entitled "Goshen Irrigation Lateral and Spill project" submitted by the Goshen Irrigation District. The project will install automated, metered gates throughout the district. Eight (8) gates are proposed at four (4) installation sites, all located within Goshen County. Water from the North Platte Project is diverted into the Fort Laramie Canal, which serves the Goshen Irrigation District in Wyoming and the Gering-Ft. Laramie Irrigation District in Nebraska. Goshen Irrigation services and provides irrigation water to 52,484 acres and 400 accounts across our district.

Funding from this grant would significantly aid the Goshen Irrigation District in its efforts to enhance water efficiency and achieve sustainable water savings.

Thank you for considering this grant application.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kevin Strecker', with a long horizontal flourish extending to the right.

Kevin Strecker
Manager
Goshen Irrigation District

Letters of Support Con't

November 8, 2024

Bureau of Reclamation
Financial Assistance Operations
Attn: NOFO Team

To Whom It May Concern

On behalf of the Goshen Irrigation District's Board of Commissioners, I am writing to support of the Goshen Irrigation District's WaterSmart Water and Efficient Grant application entitled "Goshen Irrigation Lateral and Spill project."

I have served on the Board since 2010 and currently serve as the chairman of the Board. My family has been in the agricultural industry for over 100 years in Goshen County and irrigation water is the lifeblood of our local economy. Funding of this project will help our District continue to become more efficient in its water savings and our Board strongly supports this project.

Thank you for considering this grant application.
Sincerely,



Shawn Booth
Goshen Irrigation District President, Landowner/Irrigator