

D.2.2.2 TECHNICAL PROPOSAL CONTENT

D.2.2.2.3 EXECUTIVE SUMMARY

The executive summary should include:

- The date, applicant name, city, county, and state

Date: November 13, 2024

Applicant Name: Kinsey Irrigation District

Address: 29 Mastin Road, Kinsey, MT 59338, Custer County, MT

- Please indicate whether you are a Category A applicant or a Category B applicant. If you are a Category B applicant, please briefly explain how you are acting in partnership with a Category A partner. Note: If you are a Category B applicant, you must include a letter from the Category A partner confirming that they are partnering with you and agree to the submittal and content of the proposal. See Section C.1. Eligible Applicants.

The Kinsey Irrigation District is a Category A Applicant

- A one-paragraph project summary that provides the location of the project, a brief description of the work that will be carried out, any partners involved, expected benefits, and how those benefits relate to the water management issues you plan to address. Note: This information will be used to create a summary of your project for our website if the project is selected for funding. For example, see the following description of a project selected for funding in FY 2023:

Example: The East Columbia Basin Irrigation District, near Othello, will convert 24,483 feet of earthen canals to polyvinyl chloride pipelines to address seepage and evapotranspiration losses. The project is expected to result in annual water savings of 290 acre-feet, which will be used to offset existing groundwater pumping in an area with significant aquifer depletion and to enhance flows in the Columbia River.

The Kinsey Irrigation District is proposing to convert 1.44 miles of the existing open irrigation canal called the Hammerbacker Lateral to a buried pipeline system. The Hammerbacker Lateral is a 1.44-mile canal lateral that supports 166 acres of prime agricultural land within the District. The canal is underlain by very pervious soils that lose a significant amount of water. Replacing the open lateral with a buried pipeline will eliminate seepage and evapotranspiration through the reach; improve irrigation delivery efficiency and effectiveness; eliminate safety hazards; increase crop yield; and conserve water diverted from the Yellowstone River. The existing drought conditions in southeast Montana are considered moderate to severe by the U.S. Drought Monitor. Project partners include members of the Kinsey Irrigation District.

- State the length of time and estimated completion date for the proposed project (month/year).

Proposed Construction Start Date: 12/2025

Proposed Construction End Date: 9/2027

Project Duration: 2 months

- Whether or not the proposed project is located on a Federal facility.

The Hammerbacker Lateral is located within the Kinsey Irrigation District, which is not a federal facility.

D.2.2.2.4 PROJECT LOCATION

Provide detailed information on the proposed project location or project area including a map showing the specific geographic location. For example, {project name} is located in {state and county} approximately {distance} miles {direction, e.g., northeast} of {nearest town}. The project latitude is {##°##'N} and longitude is {###°##'W}.

The Hammerbacker Lateral is a 7,600-foot lateral off the main canal within the Kinsey Irrigation District (KID). The ditch provides irrigation water to 166 acres of prime agricultural land within the district and is situated within the Lower Yellowstone River Basin (Hydrologic Unit Code (HUC) 10100001). The project has a latitude and longitude of 46.542570° South and 105.714850° East, respectively. The headgate for the KID Hammerbacker Lateral is specifically located in SE/4 of Section 8, Township 9 North, Range 48 East in Custer County, MT. A project area map is included as Exhibit 1 and a Location Map is shown in Figure 1.

D.2.2.2.5 PROJECT DESCRIPTION

Provide a more comprehensive description of the technical aspects of your project, including the work to be accomplished and the approach to complete the work. This description should provide detailed information about the project including materials and equipment and the work to be conducted to complete the project. This section provides an opportunity for the applicant to provide a clear description of the technical nature of the project and to address any aspect of the project that reviewers may need additional information to understand.

Please do not include your project schedule and milestones here; that information is requested in response to the Readiness to Proceed criterion described in Section E.1.5.2. In addition, please avoid discussion of the benefits of the project, which are also requested in response to evaluation criteria described in Section E.1. This section is solely intended to provide an understanding of the technical aspects of the project.

Note, if the work you are requesting funding for is a phase of a larger project, please only describe the work that is reflected in the budget and exclude description of other activities or components of the overall project.

The goal of this project is to replace the 7,600 lineal feet of the KID's Hammerbacker Lateral open ditch with a pipe. The Lateral supports 166 acres of prime agricultural land within the KID. The existing lateral is situated within porous soils. Field tests performed by the KID have shown that 7 cfs can be turned down the lateral from the headgate (measured at the headgate) with no deliveries being taken, and the water does not quite reach the end of the lateral system. The fields served by the lateral are not producing at optimal levels due to water shortages. The KID proposes to replace all 7,600 lineal feet of the open canal with a closed system pipeline. This upgrade will eliminate the seepage concerns and increase water supply for downstream irrigators. In addition, this

replacement will impact Montana's renewable resource benefits through conservation, preservation, management, and development. Montana's ecosystem and community will benefit through water conservation, protection of the Yellowstone River water quality and aquatic habitat, safe operation of facilities, increased crop yields, and revenue generation.

The Hammerbacker Lateral has extremely porous soils that allow water to be lost in large quantities due to seepage. The seepage in this portion of the lateral prevents agricultural fields downstream from being properly irrigated. This in turn causes lower crop yields for the users of the lateral as well as throughout the entire KID and additional water needs to be diverted to try and make up for the water loss. KID staff have measured flows within the Hammerbacker Lateral at the start of the proposed lining section and observed how far flows reach down the lateral. The water loss has been measured at 7 cfs, or 2,124 acre-feet of water each year. To supply the required amount of water at the end of the lateral system, KID must divert an additional 7 cfs of water necessary to irrigate the acreage served by the lateral.

There is a 3,000-foot section of the Hammerbacker Lateral that closely shares a bank with the Yellowstone River. This shared bank section is experiencing a high rate of bank erosion from both erosive river flows and saturation of the riverbank from lateral water losses. Saturation of the riverbank allows natural sloughing of the bank to occur, as the saturated bank becomes heavy from the increased weight of the water, which then exceeds the natural friction capacity of the soil structure. Thus, the natural erosive process from the river creates near vertical banks that then become saturated from the lateral seepage, resulting in a sloughing of the riverbank into the Yellowstone River. This situation creates a nuisance to the Yellowstone River by discharging a significant amount of sediment into the river and widening the river cross section.

The proposed project, if constructed, would pipe all 7,600 lineal feet of the Hammerbacker Lateral that will reduce water losses in the KID system and provide for the full application of water to crops during the peak irrigation season, when crops are particularly susceptible to heat. This is extremely important to crop development, as the water applied during the peak demand gives the plants the final boost of water and nutrients that they need to optimize plant growth and overall production to sustain agricultural production in the Kinsey area. The KID has worked with WWC Engineering to review alternatives and select the length and location of the proposed piping.

Problems and Needs

The Hammerbacker lateral is situated on sandy soils that are extremely pervious. Because of this, the lateral is currently losing over half of its water volume due to seepage during the course of an irrigation season. This underperformance is leading to prime crop land to be unused and crops to be underproduced for the landowners, which makes the land no longer 'prime' as it's not irrigated properly. The seepage is happening due to the well-draining soils. The soils of the ditch banks and the ditch bottom through the reach of concern are characterized as fine sandy loams to chanta and yamacall loams with

moderate to high hydraulic conductivity. These soil types cause water to seep through the ditch at a rapid rate.

Based on conversations with the KID, the following conditions were observed and discussed including granular well drained soils within the canal flow area and a low, gradual slope. The KID manager noted that in its current condition, water volumes within the lateral system are not sufficient to adequately supply water to all users along the lateral system. Seepage and evapotranspiration losses were measured by the KID to be over 7 cfs, or 2,124 acre-feet of water lost each year within the lateral. These losses equate to unproductive cropland downstream and throughout the entire KID, as seepage losses affect the entire district. Additionally, KID personnel spend a significant amount of time monitoring the lateral in the proposed project area to ensure they are pushing as much water as possible down ditch to supply the downstream users. According to the KID Manager, maintenance on this section of the lateral is very high due to the significant losses that occur.

Recent drought years have magnified the need for the full appropriation of water. Lower crop yields cause a significant decrease in economic benefits within the community and local economy. In order to avoid water rationing, KID has made water conservation and efficiency improvements of the canals and laterals a top priority moving forward.

This project is part of a larger effort to increase the KID's overall irrigation delivery efficiency, apply best management practices, reduce noxious weed infestations, greatly reduce seepage loss, and reduce soil erosion as much as possible. The project is needed because the current lateral experiences severe seepage and the KID is forced to spend countless hours on O&M efforts in order to maintain the operation of their water delivery system. The proposed project will result in significant water savings, increasing water delivery and irrigation efficiency. In addition, this project will help the KID in improving water management within their irrigation system as well as improve water quality and aquatic habitat in the Yellowstone River.

Specific Activities that will be Accomplished

Design/Permitting/Construction Oversight: The KID will contract with a licensed Professional Engineer to complete the design of the Hammerbacker Lateral Pipe Conversion Project. The Engineer will be responsible for the design of the proposed project, which will include, but is not limited to, surveying, geotechnical analysis, environmental considerations, hydrology and hydraulics, structural analysis, permitting, and construction administration duties. The Engineer will work with regulatory agencies to complete environmental compliance. The Engineer will provide a final plan set and specifications for the proposed project to facilitate construction. The Engineer will also provide advisory services during construction of the project to assure proper installation.

Construction: The KID will contract with a licensed General Contractor to complete the construction of the Hammerbacker Lateral Pipeline Conversion Project. The Contractor will be responsible for the purchase of all materials and supplies, providing

equipment, material testing, coordinating with subcontractors as necessary, and providing the workforce to complete the project according to the plans and specifications. The Contractor will work with the selected Engineer throughout the project. The Contractor will mark up the drawings during construction and provide a set of as-built drawings to the Engineer at the completion of the construction.

The project will consist of the installation of 7,600 feet of 15-inch diameter Plastic Irrigation Pipe (PIP), one B8GPBM Centrifugal Pump and pump house, cleanouts, outlet structures, topsoil salvaging and replacement, revegetation, and grading and compaction. These would be the general bid items that would be publicly bid on to select the lowest qualified bid from a Contractor.

D.2.2.2.6 EVALUATION CRITERIA

E.1 EVALUATION CRITERIA

E.1.1 Evaluation Criterion A—Quantifiable Water Savings (25 points)

Up to 25 points may be awarded for this criterion. This criterion prioritizes projects that will conserve water and improve water use efficiency, supporting the goals of E.O. 14008. Points will be allocated based on the quantifiable water savings expected as a result of the project. Points will be allocated to give greater consideration to projects that are expected to result in more significant water savings.

The proposed project will result in water conservation, drought resiliency, enhanced staff safety, improved water supply and management, water users conflict resolution, power savings, and increased irrigation efficiency that will improve future on-farm improvements. The proposed pipeline conversion project will result in the conservation of up to 2,124 acre-feet of water that is currently lost within the Hammerbacker Lateral each year primarily from seepage and evapotranspiration losses. Converting the open canal to a closed pipe system will mitigate these seepage losses by removing the water's contact with the existing well-drained soils and excess vegetation within the canal.

Additional benefits from the project include pump energy conservation by reducing the pump demand at downstream turnouts, improved management and maintenance of water within the Hammerbacker Lateral, reduced time and labor through improved management, improved water quality in the Yellowstone by controlling flows within the Hammerbacker Lateral to limit high nutrient concentrations and water temperatures that discharge to the Yellowstone River, the preservation of 166 acres of currently underserved irrigated lands, and improved crop development through the reliable supply of water to the downstream users.

1) 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.

The proposed pipeline conversion project will provide a significant water savings of an average of 7 cfs or 2,124 acre-feet of water per year. These water losses are attributed to seepage caused by the presence of well-drained soils along with undesirable evapotranspiration resulting from vegetative overgrowth. The flow conditions have been observed by KID staff, who have noted that the current water volumes within the lateral system are not sufficient to adequately supply water to all users along the lateral system.

2) Describe current losses:

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

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

The Hammerbacker Lateral is an open channel water delivery system with a manual, hand operated headgate at the turnout. The soils beneath the canal are extremely porous along with vegetative growth that allow for large quantities of water to be lost each year to seepage. The water volume of 2,124 acre-feet year is lost by seeping into the ground and is not returned to a surface water source.

- b. 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 water losses from the open irrigation canal are being lost to seepage to the underlying groundwater aquifer. The aquifer is classified as an Alluvium or Alluvial Terrace. From the Montana Groundwater Information Center (GWIC) there are a few groundwater private groundwater wells in the area serving local residences and farms.

- c. Are there any known benefits associated with where the current losses are going? For example, is seepage water providing additional habitat for fish or animal species?

Seepage losses from the canal that are being conveyed to the groundwater aquifer may be providing some aquifer recharge. There have not been any documented concerns related to the groundwater level in this area so the aquifer recharge benefit from the seepage losses is likely minimal. The lateral's proximity to the Yellowstone River also would lessen any positive impacts to groundwater.

3) Describe the support/documentation of estimated water savings:

Please provide sufficient detail supporting how the estimate was determined, including all supporting calculations. Note: projects that do not provide sufficient supporting detail/calculations may not receive credit under this section. Please be sure to consider the questions associated with your project type (listed below) when determining the estimated water savings, along with the necessary support needed for a full review of your proposal.

In addition, note that the use of visual observations alone to calculate water savings, without additional documentation/data, are 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.

Field measurements performed by KID and calculations performed by WWC indicate that the Hammerbacker Lateral loses an average of 7 cfs, or 2,124 acre-feet of water each year. Field flow measurements by the KID have been substantiated by seepage loss calculations using Darcy's Law to document water loss due to seepage and evapotranspiration. A closed pipeline will reduce seepage and increase water flow rates in the canal.

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

See Appendix A: *Benefit Quantification and Performance Measure Guidance* for additional guidance on quantifying water savings.

(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:

- a. 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.

Kinsey Irrigation District performed field flow measurements on Hammerbacker Lateral. These field flow measurements showed that 1.44 miles of the Hammerbacker Lateral was losing 7.0 cfs to seepage. Water loss measurements were substantiated by WWC Engineering utilizing seepage loss calculations using Darcy's Law to document water loss due to seepage and evapotranspiration. A closed pipeline will reduce seepage and increase water flow rates in the canal.

The existing Hammerbacker Lateral loses a significant amount of water due to the porous underlying soils and proximity to the Yellowstone River. The water loss calculations used to substantiate the previous water measurements were principals derived from Darcy's Law ($Q = K \cdot i \cdot A$). The gravelly loam identified through the Web Soil Survey along the existing lateral alignment produces a saturated hydraulic conductivity (Ksat) of 3.1 inches/hour (6.27 feet/day), as determined by the NRCS Web Soil Survey. Using these values, the seepage loss (Q) through the 1.44-mile section was calculated to be 7.0 cfs using a modest hydraulic conductivity of the ditch section on average of 6.27 ft/day, as shown in the seepage calculations provided in Appendix A.

- b. 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.

Kinsey Irrigation District performed field flow measurements on Hammerbacker Lateral. Field tests performed by the KID have shown that 7 cfs can be turned down the lateral from the headgate (measured at the headgate) with no deliveries being taken, and the water does not quite reach the end of the lateral system. These field flow measurements showed that 1.44 miles of the Hammerbacker Lateral was losing 7.0 cfs to seepage. Flow and water loss measurements were recorded during peak flow conditions, which occurs during the majority of the irrigation season. Water loss measurements were substantiated by WWC Engineering utilizing seepage loss calculations using Darcy's Law to document water loss due to seepage and evapotranspiration. The water loss calculations used to substantiate the previous water measurements were principals derived from Darcy's Law ($Q = K \cdot i \cdot A$). The gravelly loam identified through the Web Soil Survey along the existing lateral alignment produces a saturated hydraulic conductivity (K_{sat}) of 3.1 inches/hour (6.27 feet/day), as determined by the NRCS Web Soil Survey. Using these values, the seepage loss (Q) through the 1.44-mile section was calculated to be 7.0 cfs using a modest hydraulic conductivity of the ditch section on average of 6 ft/day, as shown in the seepage calculations provided in Appendix A.

- c. 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)?

Implementation of the pipeline conversion project would eliminate all seepage and evapotranspiration losses through existing open canal section. The plastic irrigation pipe that would be installed will have watertight joints and will be buried and properly compacted. The impermeable pipe installation would result in the conservation of 7 cfs or 2,124 acre-feet each year.

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

The proposed project involves replacing a 1.44-mile-long section of the Hammerbacker Lateral to a closed pipeline system. Applying the proposed water conservation value of 2,124 acre-feet to the 1.44-mile section of the canal would results in an anticipated annual transit loss reduction of 1,475 acre-feet per mile for the overall project.

- e. How will actual canal loss seepage reductions be verified?

Flow measurements of the Hammerbacker Lateral will be recorded by KID staff. The measurements will be taken at the headgate for the lateral with a velocity meter to calculate the velocity and measurement of the flow height in the culvert to determine the cross-sectional area ($Q=VA$). Flow measurements at the diversion into the lateral and at the end of the newly installed pipe section will show the actual canal losses and can be used to verify the water savings as a result of the pipeline conversion.

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

The project involves converting the 7,600-foot section of the Hammerbacker Lateral to a closed pipeline system using a 15-inch Plastic Irrigation Pipe. The canal cross-section would be cleared of any debris and organic material, and the existing canal bottom would be graded to a consistent channel slope and compacted to provide adequate pipe bedding. After pipeline and appurtenances installation, the canal would be backfilled and compacted. The pipe is sized to pump the flows required to meet all downstream user's needs.

(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 savings, including references to documented savings from similar previously implemented projects. Applicants proposing municipal metering projects should address the following:

- a. 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

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

N/A

- c. 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

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

N/A

- e. 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:

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

The estimated quantity of additional supply the project will provide is 2,124 acre-feet of water per year as an average annual benefit over the next 30 years. Based on field flow measurements from KID and calculations by WWC

Engineering, the calculated seepage loss is 7 cfs through the existing open irrigation canal. Over the 153-day irrigation season, this results in a total leakage of 2,124 acre-feet. Flow loss calculations are provided in Appendix A.

- b. 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.

Please see the explanation above in 3a.

- c. 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?

There are not currently any permanently established flow measurement devices at the proposed site. The KID uses a velocity meter device at existing culverts or ditch control sections to calculate flows through the canal.

- d. Provide detailed descriptions of all proposed flow measurement devices, including accuracy and the basis for the accuracy.

No proposed flow measurement devices will be installed as part of this project.

- e. Will annual farm delivery volumes be reduced by more efficient and timely deliveries? If so, how has this reduction been estimated?

Yes, the annual farm delivery volumes will be reduced as the current practice is to convey more water into the lateral and divert more water than is necessary into the turnouts. The proposed pipeline conversion project will eliminate the water losses through the 1.44-mile section of the Hammerbacker Lateral. The reduction of the 7 cfs lost through the open canal will be eliminated. The KID ditch riders account for this water loss by diverting additional flows into the lateral, usually above the 7 cfs loss to ensure users are not left short of water, and subsequently the turnouts along the lateral tend to divert additional water to spread the excess water out so that it does not overwhelm the wasteway and drain system and the end of the lateral.

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

Flow measurements of the Hammerbacker Lateral will be recorded at the headgate and end of the piped section. The measurements will be taken using a flow meter to calculate the velocity in the pipe. Knowing the cross-sectional area of the pipe, the amount of flow can be determined ($Q=VA$). Flow measurements at the diversion into the lateral and at the end of the newly installed pipe section will show the actual canal losses and can be used to verify the water savings as a result of the pipeline conversion.

(4) Turf Removal: Applicants proposing turf removal projects should address:

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

N/A

- b. 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

- c. 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

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

N/A

- e. 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:

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

N/A

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

N/A

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

N/A

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

N/A

- e. Will site audits be performed before and after installation?

N/A

- f. 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:

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

N/A

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

N/A

- c. 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

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

N/A

- e. 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:

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

N/A

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

N/A

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

N/A

Note that an agreement will not be awarded for an improvement to conserve irrigation water unless the applicant agrees to the terms of Public Law 111-11 § 9504(a)(3)(B) (see Section F.2.7. *Requirements for Agricultural Operations under P.L. 111-11 §9504(a)(3)(B)*).

The KID understands and will agree to the terms of Section 9504(a)(3)(B) of Public Law 111-11.

E.1.2 Evaluation Criterion B—Renewable Energy (20 points)

Up to 20 points may be awarded based on the extent to which the project increases the use of renewable energy or otherwise results in increased energy efficiency and reduced greenhouse gas emissions.

For projects that include constructing or installing renewable energy components, please respond to Subcriterion No. B.1: Implementing Renewable Energy Projects Related to Water Management and Delivery. If the project does not implement a renewable energy project but will increase energy efficiency, please respond to Subcriterion No. B.2. Increasing Energy Efficiency in Water Management. If the project has separate components that will result in both implementing a renewable energy project and increasing energy efficiency, an applicant may respond to both.

Note: an applicant may receive points under both Subcriteria No.B.1 and B.2 if the project consists of an energy efficiency component separate from the renewable energy component of the project. However, an applicant may receive no more than 20 points total under both Subcriteria No. B.1 and B.2.

E.1.2.1 Subcriterion No. B.1: Implementing Renewable Energy Projects Related to Water Management and Delivery

Up to 20 points may be awarded for projects that include constructing or installing renewable energy components (e.g., hydroelectric units, solar-electric facilities, wind energy systems, or facilities that otherwise enable the use of renewable energy). Projects such as small-scale solar resulting in minimal energy savings or production will be considered under Subcriterion No. B.2.

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.

N/A

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 brining 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

See answer to E.1.2.2 below.

- Expected environmental benefits of the renewable energy system

Implementing the proposed pipeline project would allow the KID to control flows within the Hammerbacker Lateral and convey only the necessary flows in the delivery system to eliminate or significantly reduce the amount of water discharged back into the Yellowstone River. As a result, excess discharges from the KID irrigation system to the Yellowstone River would be minimized and would reduce the amounts of sediment, nitrogen, phosphorous and chemicals discharged to the Yellowstone River to effectively facilitate better spawning habitat, aquatic life, fish populations and water quality.

- Any expected reduction in the use of energy currently supplied through a Reclamation project.

See answer to E.1.2.2 below.

- Anticipated benefits to other sectors/entities.

The proposed project will have a beneficial impact on the local economy by furnishing short-term work during construction of the project and long-term allotments for sustainable agricultural production. Sustaining agricultural production and increasing ag-driven revenue generation are crucial to maintaining rural communities in Montana. All the KID users rely heavily on ag-based commerce. The proposed project will protect the source of water supply to the KID system to preserve the agricultural crops and revenue. The protection of this revenue generated by the project will tie back into the local economy by way of commercial trucking, local implement dealers, and local businesses. The project will also prevent significant revenue losses to KID Hammerbacker Lateral users in typical annual revenue by providing a consistent flow of water for irrigation and providing the necessary amount of water to 166 acres that is

currently underserved. Consistent flows from the proposed project will facilitate improved crop production, increase revenues to producers, and stimulate the local and regional economies. The KID Hammerbacker Lateral users primarily grow alfalfa hay. Discussions with local growers within the area indicate that the locally grown hay will be distributed throughout the State of Montana. Increases in crop production will have a direct impact on a statewide basis, as the crops produced are used throughout the State and contribute to the local and state tax bases from increased revenues.

The proposed rehabilitation project will provide significant financial, safety, and operational improvements to the KID users. The conversion of the open canal to a closed pipeline system will generate an estimated \$454,334 in annual revenue as improved irrigation efficiencies provide increased crop productions for agricultural users. The proposed pipeline conversion project will reduce the number of trips that ditch riders must make to operate the headgate and visually inspect the canal for debris/blockage. The proposed project will significantly reduce the amount of time that the KID spends on operation and maintenance, allowing them to focus on other improvements and operations within the KID system that need their attention. Additional local benefits include boosting the local economy through workers, material suppliers, truckers, and other temporary workers contributing to local stores, restaurants, and gas stations during construction of the proposed project.

- Expected water needs, if any, of the system.

N/A

AND/OR

E.1.2.2 Subcriterion No. B.2: Increasing Energy Efficiency in Water Management

Up to 6 points may be awarded for projects that address energy demands and reduce greenhouse gas emissions by retrofitting equipment to increase energy efficiency and/or through water conservation improvements that result in reduced pumping or diversions.

Describe any energy efficiencies that are expected to result from 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.

The significant water losses occurring within the 1.44-mile section of the Hammerbacker Lateral reduces available water levels and the corresponding pressure head within the lateral delivery system. While no irrigation along the Hammerbacker Lateral is currently pumped, potential upgrades to pumped systems may occur, which would be more easily implemented with a piped lateral. Based on preliminary calculations, increased pressure head created by the pipeline at downstream turnouts will subsequently provide a 10% power

savings for any pumps installed along the piped lateral. Conversations with district personnel indicate that if the lateral is piped, several landowners would consider installing pumps and switching to a sprinkler irrigation system. Converting the existing lateral to a pipeline and providing enough flow to pressurize the pipeline will increase pressure head to approximately 2 psi, which will improve potential pump performance downstream. The increase in pressure head was calculated using an estimated vertical drop of 5 ft for the length of the Hammerbacker Lateral. A conversion of 2.31 feet per 1 PSI was used for this estimate.

Pumping demand will decrease when compared to an open channel lateral because of reduced suction head at the pump. New pumps installed within the current open channel condition would require pumps to use suction pressure to lift water out of the lateral and into a pipeline to feed sprinkler irrigation systems. If the suction lift is eliminated and the pressure head is increased to 2 psi, then the pump needs less pressure to force water out to the sprinkler lines. For example, a typical center pivot needs to run at approximately 45 psi. The relative head differential for the existing pump requirement is to deliver 45 psi + 2 psi (the elevation of the suction lift) = 47 psi. After the pipeline is installed, the pump requirement will be reduced to 43 psi (45 psi – 2 psi with no suction lift requirement). Therefore, the proposed improvements would provide an **electricity conservation** of up to 10% for any newly installed downstream irrigation pumps.

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

The proposed project will provide a pressurized pipeline that will reduce the energy consumption of pumps along the 1.44-mile Hammerbacker Lateral. In addition, the more efficient use of the water within the KID system will reduce the amount of waste from the system that will also reduce the amount of sediment and nutrients that are transported back to the Yellowstone River.

The proposed project reduces greenhouse gas emissions in three ways. First the additional water that is saved can be utilized by downstream water users with the KID system to increase crop production which will create more vegetation to sequester carbon. Second, the pressurized pipeline will increase pumping efficiency and along with the reduction in the pump flow rate of the pump that conveys water from the KID main canal to the Hammerbacker Lateral will reduce the electricity use which has a direct correlation to less carbon dioxide production. Third, the KID will not have to make as many trips to the Hammerbacker Lateral headgate to make adjustments and check the canal for debris and blockages, saving vehicle miles that will burn less overall fuel and lower carbon dioxide emissions from KID vehicles.

- 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?

The proposed project will result in reduced pumping at the main canal during non-peak flow conditions. The Hammerbacker Lateral currently have no pumps at turnouts to service irrigated fields, therefore, piping of the canal will reduce flows required to service downstream turnouts but will not reduce pumping along lateral. The conversion of the 1.44-mile section of the Hammerbacker Lateral from an open canal to a closed pipeline will result in the eliminate of 7 cfs of seepage. Based on preliminary calculations, increased pressure head created by the pipeline at downstream turnouts and any pumps installed in the future will subsequently reduce pumping power consumption by 10% through the generation of up to 2-psi in the new pipeline system. The current condition requires additional water to be diverted to the Hammerbacker Lateral from the main canal system, which increases pumping demand at the KID pumphouses. Piping of the Hammerbacker Lateral would allow for reduced pump demand to meet the water deliveries to 166 acres.

If the suction lift is eliminated and the pressure head is reduced, then any newly installed pumps will no longer be needed to be as large to convey pressurized flow to the sprinkler lines. Therefore, the proposed improvements will provide an electricity conservation of up to 10% for any proposed pump installations along the lateral when compared to pumps utilizing open channel flow.

The conservation benefits will be measured through pump run-time records and kWh electricity use for the KID pump stations. The conservation benefits will be realized throughout the entire 30-year design life of the project and beyond.

- 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.

The energy savings would be realized at the point of diversion that conveys flows from the KID lower canal to the Hammerbacker Lateral along with any proposed pumps located along the 1.44-mile section of the Hammerbacker Lateral.

- 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.

Implementation of the proposed improvements will significantly benefit the KID's management of the irrigation water delivery network. The existing open canal is experiencing operational difficulties, unsafe conditions and is in a remote location along the bank of the Yellowstone River. By converting the open canal to a closed pipeline, the KID's management issues would be greatly reduced. Currently, KID staff are required to frequently check on flows within the Hammerbacker Lateral. The installation of a new closed pipeline system will allow KID staff to reduce their travel to the lateral system an average of once per day. Over a 153-day irrigation season, this will lead to a savings of

approximately 153 man-hours. The current O&M trips result in the production of unnecessary CO₂ emissions being discharged into the atmosphere. Total round trip mileage per trip is approximately 15 miles, therefore the installation of a new closed pipeline system will reduce the mileage driven in the irrigation system by approximately 2,295 miles. Using the Environmental Protection Agency's CO₂ emissions per mile for an average passenger vehicle (404 grams CO₂/mile), KID will emit approximately 927,180 grams of CO₂ on Hammerbacker Lateral observations during an irrigation season. Implementation of the proposed project will eliminate this carbon emission to the environment, saving 1.0 tons of CO₂ emissions to the environment.

- 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).

N/A

E.1.3 Evaluation Criterion C—Other Project Benefits (15 points)

Up to **15 points** may be awarded under this criterion. This criterion prioritizes projects that address a specific water and/or energy concern(s), including enhancing drought resilience and sustainability, addressing the current and future impacts of climate change, and providing ecological benefits.

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

- Explain and provide detail of the specific issue(s) in the area that is impacting water resilience and sustainability. Consider the following:

The proposed conversion of the 1.44-mile section of the Hammerbacker Lateral from an open canal to a closed pipeline will provide a significant water savings of an average of 7 cfs or 2,124 acre-feet per year. By saving this water, the KID will have an additional 2,124 acre-feet that will be available for crops during peak irrigation demand and periods of drought and will restore flows to the downstream end of the lateral. The Hammerbacker Lateral provides water to 166 acres, with existing water users not receiving their full water allotment due to water losses. Converting the existing lateral to a pipeline will increase water volumes and pressure head within the lateral, which in turn, will elevate irrigation efficiency for downstream users. This increased efficiency will provide the necessary amount of irrigation water to 166 acres of prime agricultural farmland that currently cannot be fully served by the lateral.

The KID irrigation system is comprised of 6,720 acres of irrigable lands with an allowable water use of 155.5 cfs (Water Right 42K 40388-00). The proposed project will allow the KID to maximize water delivery efficiency, leading to increased crop production and on-farm irrigation efficiency. An assessment on crop returns was performed for the district. With the implementation of the proposed Hammerbacker Lateral to Pipeline Conversion Project, it is estimated that an increase in crop production will occur because of increased delivery efficiency due to the ability to provide adequate flows to these fields as well

as conserved water that will be used for on-farm irrigation. During drought years with below average snowpack and precipitation or other water challenging years, the available water may not be adequate to provide the full allotment of water to the irrigators. During these drought years the water users would be left short of water and not be able fully develop their crops. The additional water saved from this project would help facilitate water delivery to other areas within the KID during drought years.

- o Describe recent, existing, or potential drought or water scarcity conditions in the project area.

One of the prominent features of climate change that we have noticed and that has been scientifically proven is that as climate change continues to occur, winter months are shortened, and runoff tends to occur earlier than it did in the previous decade (documented in the 2017 Montana Climate Assessment located <https://montanaclimate.org/chapter/water>). When this happens, river flows fall off earlier than previously and water rationing within irrigation districts becomes more prevalent as river flows drop off going into the hotter summer months of July, August, and September. The KID has focused on irrigation efficiency as their primary defense against drought and climate change. As the KID system becomes more efficient, more water is available to the KID users to reduce the impacts of water rationing due to drought. Although water rationing will not be completely avoided, the more water that is saved will result in less water rationing that has to occur.

- o Is the project in an area that is experiencing, or recently experienced, drought or water scarcity?

Yes, see response immediately above.

- 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).

One of the prominent features of climate change that we have noticed and that has been scientifically proven is that as climate change continues to occur, winter months are shortened, and runoff tends to occur earlier than it did in the previous decade (documented in the 2017 Montana Climate Assessment <https://montanaclimate.org/chapter/water>). When this happens, river flows fall off earlier than previously and water rationing within irrigation districts becomes more prevalent as river flows drop off going into the hotter summer months of July, August, and September.

The impacts to water supply availability due to climate change has been documented in the 2017 Montana Climate Assessment, which is located <https://montanaclimate.org/chapter/water>. Based on this report, there are several major findings that include:

- Montana's snowpack has declined over the observational record, since the 1930s.
- Continued warming temperatures will reduce snowpack at mid and low elevations.
- Historical observations show a shift toward earlier snowmelt and an earlier peak in spring runoff.
- Earlier onset of snowmelt and spring runoff will reduce late-summer water availability.
- Multi-year and decadal-scale droughts have been and will continue to be a natural feature of Montana's climate.

Changes in snowpack and runoff timing will likely increase the frequency and duration of drought during late summer and early fall.

- 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.

The proposed project includes both green and sustainable infrastructure to improve community climate resilience. This project will save precious water that can be used to mitigate the magnitude of downstream water rationing and underserved acres during periods of peak demand in the late summer when water levels in the river are lower. The KID delivery system will need to be as efficient as possible to combat the ongoing water rationing and reduced crop production issues to reduce the interruption of water delivery to the producers served by the system.

- Please describe how the project will directly address the concern(s) stated above.

The KID has focused on irrigation efficiency as their primary defense against drought and climate change. As the KID system becomes more efficient, more water is available to the KID users to reduce the impacts of water rationing due to drought and the inability to efficiently deliver water to the downstream users. Although water rationing will not be completely avoided, the more water that is saved will result in less water rationing that has to occur. This project will save water consistently that will leave more water available to downstream KID users to protect against rationing due to drought and/or climate change.

- 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?

In recent years, drought conditions and climate change have had a significant impact on the users within the KID system. Water rationing and the underserving of the acres at the downstream end of the Hammerbacker Lateral has become an annual occurrence within the KID, as water demands continue to increase due to increased heat index and warmer weather conditions while the water availability continues to decrease due to climate change which continues to result in earlier runoff and longer periods of low-flow conditions in the river. The KID has turned its focus to making its system more efficient to be able to

reduce the impact of water rationing and make more water available to downstream users by not wasting or losing water in the system.

The proposed pipeline conversion project for the 1.44-mile length of the Hammerbacker Lateral would conserve water through the elimination of seepage losses or irrigation water flowing through the open canal with underlying porous soils. The KID has historically had to divert extra water from the KID main canal as the water loss due to seepage through the canal had to be accounted for. The KID operators would release additional flows at the headgate into the Hammerbacker Lateral to make sure the users had adequate water, even though it resulted in the wasting of additional water at the end of the system. The proposed improvements will provide the KID with the infrastructure to properly manage the water resource and be able to make decisions on where the 2,124 acre-feet of conserved water will go (left in the Yellowstone River or put to beneficial use).

The proposed project will significantly benefit the KID's management of the irrigation water delivery network through decreased operation and maintenance tasks, debris removal, and trying to offset for the seepage losses. The additional management demands require unnecessary trips to the headgate and open canal system and the experienced KID ditch riders spend approximately 7 additional hours per week on the operation of the ditch. The time that ditch riders would save through the implementation of the project would allow the KID to put these resources to use on other areas of KID's delivery system to improve the water delivery efficiency of the entire system.

- 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.

The proposed project will provide water conservation benefits that can be left in the rest of the KID system or remain in the Yellowstone River. Due to the severe seepage losses that occur through the 1.44-mile section of the Hammerbacker Lateral, the downstream acres are left underserved. The installation of a closed pipeline system through this section of the existing canal will eliminate the seepage losses and allow for these 166 acres downstream to receive adequate irrigation water to achieve full crop production.

- o Indicate the quantity of conserved water that will be used for the intended purpose(s).

The estimated quantity of additional supply the project will provide is 2,124 acre-feet of water per year as an average annual benefit to the KID over the next 30 years. Based on flow measurements performed by Kinsey Irrigation District, the seepage rate through the porous soils of the 1.44-mile portion of the Hammerbacker Lateral is 7.0 cfs. The total leakage amounts to approximately 2,124 acre-feet of water wasted annually based on a 153-day

irrigation season. The installation of a closed pipeline system will allow the KID to more efficiently deliver water to the downstream users of the Hammerbacker Lateral. The conserved water can be utilized by the KID elsewhere in the system to satisfy water demands of the users or released back to the Yellowstone River.

- o Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use.

The installation of a closed pipeline system is the key mechanism that the KID will utilize to leave the conserved water in the Yellowstone River or utilize the conserved water to alleviate water demands further downstream in the KID delivery system. The pipeline also allows for the currently underserved acres at the downstream end of the Hammerbacker Lateral to receive the necessary amount of water achieve full crop production.

- Will the project assist States and water users in complying with interstate compacts?

The proposed project will not impact interstate water compacts.

- Will the project help to prevent a water-related crisis or conflict? Is there frequently tension or litigation over water in the basin?

The water users at the end of the Hammerbacker Lateral are currently not being served their full water allotment due to the inability lateral to convey it due to the severe seepage losses. While there is currently no litigation over these underserved acres, as drought conditions continue to worsen litigation could be used against the KID as a means to mitigate these adverse effects. The proposed project will eliminate the seepage losses and allow the KID to provide the full water allotment to these 166 acres and help prevent any future water-related conflicts.

Ecological Benefits. In addition to the separate WaterSMART Environmental Water Resources Projects NOFO, this NOFO places a priority on projects that 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).

The proposed project will provide water conservation benefits that can be left in the Yellowstone River outside of peak irrigation demand periods. The additional water will benefit the Yellowstone River ecology by leaving cleaner water in the river system to support fish and wildlife habitat. The Pallid Sturgeon is an endangered species that has been in the media spotlight for some time in the Yellowstone River. The new diversion bypass at Intake that has been

constructed will allow the Pallid Sturgeon to migrate further upstream to promote the natural spawning of this species. Additional river flows during the spring and fall months can facilitate more water through the bypass system that will promote Pallid Sturgeon spawning and recovery.

- 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.).

The proposed project will involve water conservation and a management improvement component that will promote healthy lands and soils that will also protect the KID's water supply. The proposed pipeline conversion improvements will allow the KID to eliminate the significant water losses flowing through the Hammerbacker Lateral and providing an adequate water supply to the downstream users, promoting healthy agricultural crop production, and minimizing the amount of waste flows from the system which will minimize the amount of erosion that occurs from discharges into drains and wasteways. The KID system relies on Yellowstone River flows for diversion into their system. The conservation of 2,124 acre-feet as a result of this project will allow this volume of water to be used elsewhere in the system or remain in the Yellowstone River.

The proposed project provides a unique opportunity to save water seepage losses through the canal due to the porous underlying soils. The KID is required to supply more water to the Hammerbacker lateral because they do not have the ability to supply the exact amount of water that is needed along with having to account for the seepage losses. Thus, during certain periods of the year that are outside of the peak irrigation demand, more water is diverted from the Yellowstone River than is necessary to fulfill the demand. When this happens, much of this water is spilled from the system and is lost to evaporation and seepage. The remaining water is discharged back to the Yellowstone River in the form of higher temperature water that contains significant amounts of nutrients and sediment. The proposed project will minimize discharges back to the river by being able to supply the exact amount of water to downstream users more efficiently without having to account for seepage losses.

- Will the proposed project reduce the likelihood of a species listing or otherwise improve the species status?

N/A

- Please describe any other ecosystem benefits as a direct result of the project.

This project will improve water quality in the Yellowstone River. Nutrient standards for many of Montana's rivers and streams are documented by MDEQ and expressed as total ammonia nitrogen in DEQ-7 that is dependent on river pH. Phosphorous is identified under ARM 17-30.637(1)(e) as to "create condition which produce undesirable aquatic life". Irrigation water draining into the Yellowstone River from the KID irrigation system waste flows may be higher in temperature and contain sediment, nitrogen, phosphorous and spray chemicals.

Fertilizer containing nitrogen and phosphorous is a common practice on agricultural fields. Nutrients such as nitrogen and phosphorous are introduced by farmers who are fertilizing their fields and chemicals are introduced by both the farmers and the KID as necessary tools to manage weeds and moss. The irrigation of these fields may lead to high concentrations of these nutrients to return to the canal system, which discharges directly into the river. Temperature is also important, as warmer temperatures create toxic conditions for fish and wildlife and facilitate toxic algal blooms. Water temperatures in irrigation canals tend to be warmer than the natural stream channels due to slower moving water and shallow depths that contributes to warming water temperatures. Concentrations of these pollutants may increase within the KID system and may be significant contributors at the KID irrigation system discharge locations. Implementing the proposed pipeline project would allow the KID to control flows within the Hammerbacker Lateral and convey only the necessary flows in the lateral system to eliminate or significantly reduce the amount of water discharged back into the Yellowstone River. As a result, excess discharges from the KID irrigation system to the Yellowstone River would be minimized and would reduce the amounts of sediment, nitrogen, phosphorous and chemicals discharged to the Yellowstone River to effectively facilitate better spawning habitat, aquatic life, fish populations and water quality.

Note: Projects that are intended to improve streamflows or aquatic habit, and that are requesting \$500,000 or more in Federal funding, must include information about plans to monitor the benefits of the project. Please describe the plan to monitor improved streamflows or aquatic habit benefits over a five-year period once the project has been completed. Provide detail on the steps to be taken to carry out the plan.

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 adapt to bolster drought resilience?

The proposed conversion of the 1.44-mile section of the Hammerbacker Lateral from an open canal to a closed pipeline will provide a significant water savings of an average of 7.0 cfs or 2,124 acre-feet per year. By saving this water, the KID will have an additional 2,124 acre-feet that will be available for crops during peak irrigation demand and periods of drought and will restore flows to the downstream end of the lateral. The lateral provides water to 166 acres of which a majority can be underserved during peak demand. Converting the existing lateral to a pipeline will increase water volumes and pressure head within the lateral, which in turn, will elevate irrigation efficiency for downstream users. This increased efficiency will provide the necessary amount of irrigation water to 166 acres of prime agricultural farmland that currently cannot be fully served by the lateral.

The KID irrigation system is comprised of 6,720 acres of irrigable lands with an allowable water use of 155.5 cfs (Water Right 42K 40388-00). The proposed

project will allow the KID to maximize water delivery efficiency, leading to increased crop production and on-farm irrigation efficiency. An assessment on crop returns was performed for the district. With the implementation of the proposed Hammerbacker Lateral to Pipeline Conversion Project, it is estimated that an increase in crop production will occur because of increased delivery efficiency due to the ability to provide adequate flows to these fields as well as conserved water that will be used for on-farm irrigation. During drought years with below average snowpack and precipitation or other water challenging years, the available water may not be adequate to provide the full allotment of water to the irrigators. During these drought years the water users would be left short of water and not be able fully develop their crops. The additional water saved from this project would help facilitate water delivery to other areas within the KID during drought years.

- Does the project seek to improve ecological resiliency to climate change?

Yes, the proposed project will reduce diversions from the Yellowstone River during non-peak irrigation demand and allow the conserved water volume to remain within the Yellowstone River. The installation of a pipeline within the existing open canal section will eliminate the significant seepage losses of 7.0 cfs or 2,124 acre-feet each year that is occurring as water is conveyed through the canal. This conserved volume can be utilized within the KID system can remain in the Yellowstone River. Potential drought impacts of reduced snowpack, earlier spring runoff, and warmer temperatures may cause the KID to ration water or implement earlier water shutoff of the system than what is desirable to get a third cutting of alfalfa hay.

- Does the proposed project seek to reduce or mitigate climate pollutions such as air or water pollution?

The proposed project reduces greenhouse gas emissions in three ways. First the additional water that is saved can be utilized by downstream water users with the KID system to increase crop production which will create more vegetation to sequester carbon. Second, the pressurized pipeline will increase pumping efficiency that will reduce the electricity use which has a direct correlation to less carbon dioxide production. Third, the KID will not have to make as many trips to the Hammerbacker Lateral headgate to adjust and check the canal for debris and blockages, saving vehicle miles that will burn less overall fuel and lower carbon dioxide emissions from KID vehicles.

- Does the proposed project include green or sustainable infrastructure to improve community climate resilience?

The proposed project includes both green and sustainable infrastructure to improve community climate resilience. This project will save precious water that can be used to mitigate the magnitude of downstream water rationing and mitigating negative effects of the underserved acres. In addition, the more efficient use of the water within the KID delivery system will reduce the amount of waste from the system that will also reduce the amount of sediment and

nutrients that are transported back to the Yellowstone River via wasteways and drains.

- Does the proposed project contribute to climate change resiliency in other ways not described above?

The proposed project is part of a larger planned project by the KID to modernize their irrigation system and make it more efficient to address the sustainability of the water supply. The more water that can be saved within the system will allow the KID to reduce and minimize the overall impact of drought conditions throughout the Yellowstone River Basin.

The proposed project will provide water via conservation that can be used for agriculture, downstream industrial use, environmental uses such as the preservation of fish and wildlife habitat, and to facilitate recreation and navigation in the Yellowstone River.

E.1.4 Evaluation Criterion D—Disadvantaged Communities, Insular Areas, and Tribal Benefits (15 points)

Up to **15 points** may be awarded based on the extent that the project demonstrates support for the Biden-Harris Administration's priorities, including E.O. 14008: *Tackling the Climate Crisis at Home and Abroad* and the President's memorandum, *Tribal Consultation and Strengthening Nation-to-Nation Relationships*.

Please address only those priorities that are applicable to your project. It is not necessary to address priorities that are not applicable to your project. A project will not necessarily receive more points simply because multiple priorities are addressed. Points will be allocated based on the degree to which the project supports one or more of the priorities listed, and whether the connection to the priority(ies) is well supported in the application.

E.1.4.1 Subcriterion D.1. Disadvantaged Communities

E.O. 14008 affirms the advancement of environmental justice for all through the development and funding of programs to invest in disadvantaged communities. This criterion, which is used to identify projects that advance the Justice 40 Initiative, includes all Federally recognized Tribes and Tribal entities, and any disadvantaged communities in insular areas (American Samoa, Guam, the Northern Mariana Islands, or the Virgin Islands) identified pursuant to the following criteria.

- Please use the White House Council on Environmental Quality's interactive Climate and Economic Justice Screening Tool (CEJST), available online at [Explore the map - Climate & Economic Justice Screening Tool \(screeningtool.geoplatform.gov/en/#17.59/36.63278/-105.181329\)](https://www.ejscreeningtool.gov/en/#17.59/36.63278/-105.181329) to identify any disadvantaged communities that will benefit from your project. The 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 includes 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.²

Identified Disadvantaged Community: Prairie County

- If applicable, describe how the proposed project will serve or benefit a disadvantaged 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 disadvantaged community?

The proposed project will conserve water upstream of Prairie County and as such, will make more water available to the communities and irrigation in the area. The Yellowstone River Basin is a highly regulated, and often water-short basin. The proposed project will conserve up to 7.0 cfs which at times will be left in the Yellowstone River, providing an opportunity for the downstream communities to benefit from the increased water availability in the Yellowstone River.

E.1.4.2 Subcriterion D.2. Tribal Benefits

The Department 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. 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?

N/A

- Does the proposed project support Tribal led conservation and restoration priorities, and/or incorporate or benefit indigenous traditional knowledge and practices?

N/A

- 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?

N/A

E.1.5 Evaluation Criterion E—Complementing On-Farm Irrigation Improvements (8 points)

Up to 8 points may be awarded for projects that describe in detail how they will complement on-farm irrigation improvements eligible for NRCS financial or technical assistance.

Note: Scoring under this criterion is based on an overall assessment of the extent to which the WaterSMART Grant project will complement ongoing or future on-farm improvements. Applicants should describe any proposal made to NRCS, or any plans to seek assistance from NRCS in the future, and how an NRCS-assisted activity would complement the WaterSMART Grant project. Financial assistance through EQIP is the most commonly used program by which NRCS helps producers implement improvements to irrigation systems, but NRCS does have additional technical or financial assistance programs that may be available. Applicants may

receive maximum points under this criterion by providing the information described in the bullet points below. *Applicants are not required to have assurances of NRCS assistance by the application deadline to be awarded the maximum number of points under this sub- criterion.* Reclamation may contact applicants during the review process to gather additional information about pending applications for NRCS assistance if necessary.

Note: On-farm improvements themselves are not eligible activities for funding under this NOFO. This criterion is intended to focus on how the WaterSMART Grant project will complement ongoing or future on-farm improvements. NRCS will have a separate application process for the on-farm components of selected projects that may be undertaken in the future, separate of the WaterSMART Grant project.

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.
 - o Provide a detailed description of the on-farm efficiency improvements.

The Hammerbacker Lateral that is part of KID's delivery system provide water to approximately 166 underserved acres for irrigation. KID currently has no farmers who are working with the local NRCS to put in on-farm improvements. However, several farmers have taken advantage of the NRCS EQIP program in the past to install center pivots on lands served by the KID and many of the farmers within the KID are open to the potential support through NRCS programs. The installation of a closed pipeline will provide pressured flows through the pipeline which are more conducive to the installation of a center pivot with the water being pumped from the pipeline. The pressured flows allow for more efficient pumping and reduced energy consumption.

- o Have the farmers requested technical or financial assistance from NRCS for the on-farm efficiency projects, or do they plan to in the future?

The farmers typically request technical and financial assistance from the NRCS for their on-farm efficiency projects. The local NRCS either performs the technical assistance with in-house staff or utilizes Technical Service Providers. We are not aware of any request for technical or financial assistance from the NRCS at the present time, but the KID users remain open to potential support through NRCS programs.

- o 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.

After speaking with Pat Hagemeister (November 7, 2024), a local NRCS District engineer in Miles City, past projects involving the construction of pressurized pipelines, land leveling, and center pivots have been completed through assistance from the NRCS to implement these on-farm conservation and efficiency projects through the EQIP program. The proposed pipeline

conversion of the Hammerbacker Lateral would allow for additional pressurized flow that on-farm projects could utilize to make improvements.

- o Applicants should provide letters of intent from farmers/ranchers in the affected project areas.

None available at this time.

- Describe how the proposed WaterSMART project would complement any ongoing or planned on-farm improvement.
 - o 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.

The conversion of the open canal to a closed pipeline system will provide pressurized flows for the 1.44-mile section of the project and could directly facilitate on-farm improvements such as center pivots. The pressurized flow in the pipeline would allow for more efficient pumping operations from reduced pressure head requirements and result in less energy being required to run the pump.

OR

- o Will the proposed WaterSMART project complement the on-farm project by maximizing efficiency in the area? If so, how?

The pipeline conversion project will maximize efficiency in this area by providing mitigation to conserve 2,124 acre-feet per year, provide an increase to water delivery efficiency, and provide pressured water delivery to facilitate on-farm efficiency.

- Describe the on-farm water conservation or water use efficiency benefits that are expected to result from any on-farm work.
 - o 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.

A conservative estimate of energy conservation indicates the proposed improvements will reduce pump electricity demand by 10% for any newly installed on-farm systems. Converting the existing lateral to a pipeline and providing enough flow to pressurize the pipeline will increase pressure head to approximately 2 psi, which will significantly improve potential pump performance along the pipeline. Pumping demand will decrease when compared to an open channel lateral because of reduced suction head at the pump. New pumps installed within the current open channel condition would require pumps to use suction pressure to lift water out of the lateral and into a pipeline to feed sprinkler irrigation systems. If the suction lift is eliminated and the pressure head is increased to 2 psi, then the pump needs less pressure to force water out to the sprinkler lines. For example, a typical center pivot needs to run at approximately 45 psi. The relative head

differential for the existing pump requirement is to deliver 45 psi + 2 psi (the elevation of the suction lift) = 47 psi. After the pipeline is installed, the pump requirement will be reduced to 43 psi (45 psi – 2 psi with no suction lift requirement).

- 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.

A map of the proposed project area is included as Figure 1. The water service area boundary is not provided on the map.

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, <http://www.nrcs.usda.gov/conservation-basics/conservation-by-state/state-offices>.

E.1.6 Evaluation Criterion F - Readiness to Proceed (8 points)

Up to 8 points may be awarded for this criterion.

Points may be awarded based upon the extent to which the proposed project is capable of proceeding upon entering into a financial assistance agreement. Please note, if your project is selected, responses provided in this section will be used to develop the scope of work that will be included in the financial assistance agreement.

Applications that include a detailed project implementation plan (e.g., 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.

The proposed Pipeline Conversion Project will consist of the following tasks:

- Planning – The project will require a planning level effort to coordinate activities for the project up-front following award and contracting with Reclamation.
- Site Survey – The proposed pipeline conversion project will need the existing irrigation canal and structure located along the canal to have a topographic survey performed. The proposed pipeline in some locations will deviate from the current location of the irrigation canal and require a new easement document to be created. The necessary public land survey corners will be surveyed to facilitate the development of the easement documents.
- Design – The proposed pipeline conversion project will need to be designed to reflect the proper alignment and grade, hydraulic profile,

and size requirements. A set of plans and specifications will be developed and submitted to KID and Reclamation for approval.

- Permitting – The necessary permits will need to be obtained to facilitate construction of the project. A copy of the permit documents will be submitted to KID and Reclamation. Permitting will include environmental and cultural resource compliance.
 - Construction – The project will be publicly advertised, and a General Contractor will be hired to perform all construction work. The Contractor will be responsible for securing the materials, equipment, and labor necessary for completing the project according to the plans and specifications.
 - Construction Administration – An Engineer will be needed to provide construction administration, inspection of the work, and ensure compliance with the plans and specifications. Photos, submittal approvals, daily logs and other construction information will be saved and compiled throughout the project.
 - As-Built Documentation – An Engineer will be needed to perform an as-built verification of the new pipeline. A construction completion report will be submitted to KID and Reclamation.
 - Construction and Grant Close-Out – The KID or consultant will be required to ensure that all the requirements of the construction and WaterSmart grant have been completed and submitted to Reclamation for approval.
- Describe any permits that will be required, along with the process for obtaining such permits.

For each of the permits listed below, the KID or General Contractor will work with each permitting agency to determine whether a formal permit is needed for the construction of the proposed project. Although it is not anticipated that any permits will be needed except for the SWPPP, we have provided the following list of permits that the KID will follow up on if the grant is awarded. If needed, the following permits may be obtained with assistance from the engineer during the design process:

SPA 124 Permit – The Montana Department of Fish, Wildlife & Parks requires a permit for any activity that physically alters or modifies the bed or banks of a perennially flowing stream for a legal public entity. Consultation will be performed, but the activities proposed herein are likely exempt from this rule as the construction will take place in existing manmade irrigation canals. A Montana joint application form will need to be filled out and submitted to FWP for review.

404 Permit – The Army Corps of Engineers (USACE) requires a permit for any activity that will result in the discharge or placement of dredged or fill material into waters of the United States, including wetlands. Consultation will be performed, but the activities proposed herein are likely exempt as stated in

CRF 323.4(a)3. A Montana joint application form will need to be filled out and submitted to the USACE for a determination.

318 Authorization – The Short-Term Water Quality Standard for Turbidity requires a permit for any construction activities that will cause temporary violations of state surface water quality standards for turbidity. Since no water will be in the irrigation canals at the time of construction, no turbidity permit will be required.

Storm Water Discharge General Permit – State Storm Water Rules require a storm water discharge permit under the requirements of the 2018 General Permit for any construction project over one acre in total disturbance that discharges into State waters. A Notice of Intent form and Stormwater Pollution Prevention Plan Form along with all attachments and supplements will need to be submitted to the Montana Department of Environmental Quality.

Montana Sage Grouse Habitat Conservation Program - The program's role is to implement Montana's Sage Grouse Conservation Strategy including the conservation, restoration, and mitigation of changes to sage grouse habitat because of development. Montana has a website <https://sagegrouse.mt.gov/ProgramMap> that will need to be consulted prior to construction activities. The project is inside the Executive Order (EO) General Habitat, but it is not a core area. Thus, permitting is not necessary.

- Identify and describe any engineering or design work performed specifically in support of the proposed project.

The proposed project will require the assistance of an engineer for the design of the new pipeline system. A site visit/topographic survey to inspect and take measurements of the exiting irrigation canal and proposed pipeline route will need to be completed, followed by the design of the proposed pipeline (including hydraulics, geometric layout of the pipeline, connection details, earthwork grading, road crossings, structure details if necessary, and details, etc.), followed by the development of plans and specifications for the proposed pipeline project.

- Describe any new policies or administrative actions required to implement the project.

N/A

- 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.

The project is currently in the process of procuring funding and preliminary evaluation of alternatives. A timeline for completing the work is included below.

- 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?

Activity	Date(s)
WaterSmart Grant Due Date	Nov 13, 2024 – Jun 2025
Evaluate Grant Applications -- BOR	Nov 13, 2024 – Jun 2025
Grant Award	July 2025
Contract Execution	Aug 2025 – Nov 2025
Project Initiation	Dec 2025
Project Kickoff Meeting	Jan 2026
Project Site Survey	Jan 2026
Project Design	Jan 2026 – June 2026
Environmental/Cultural Resource Compliance	Mar 2026 – Jul 2026
KID and Reclamation Plans Review	Jul 2026 – Aug 2026
Final Plans & Specifications	Sep 2026
General Contractor Advertisement and Contracting	Sep 2026 – Oct 2026
Begin Construction	Nov 2026
Mid-Point Construction (50%)	Jan 2027
End Construction (100%)	Apr 2027
Construction Administration	Nov 2026 – Apr 2027
Construction Closeout	May 2027
As-Built Verification	Jun 2027
Construction Completion Report	Jul 2027
Grant Closeout	September 2027
Project Completion	September 2027

E.1.7 Evaluation Criterion G—Collaboration (5 points)

Up to 5 points may be awarded for projects that promote and encourage collaboration among parties in a way that helps increase the sustainability of the water supply.

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

The KID manager attends and actively participates in training seminars, courses, and conferences such as Montana Water Resources Association (MWRA), and watershed symposiums throughout Montana where they collaborate and share information. The KID is committed to sharing the success and implementation of this project with other districts and water user associations throughout the region to assist them in their planning and water delivery efforts.

- 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?

The KID Board, its water users, Custer County, the Custer County Conservation District and the NRCS have all shown support for this project. The KID Board will make financial, procurement, and contracting decisions as well as provide overall management of the project. The Custer County CD and NRCS have been consulted on the project and will continue to be consulted throughout the project.

- What is the significance of the collaboration/support?

The Custer County Conservation District works with not only other water users in the area but also shares their success stories with the other conservation districts throughout the State through the Montana Association of Conservation Districts. This information will be shared with the other conservation districts who in turn will share this information with nearly all the remaining irrigation districts and water user associations throughout the State of Montana.

The NRCS is watching this project closely to determine the actual benefits of the proposed pipeline conversion project will extend the benefits of the previously installed section of pipeline that the NRCS helped to design and fund construction of. The NRCS is a national organization that provides training and knowledge sharing throughout the US, and this information would be shared with the national program and neighboring states that could benefit a broad audience of water users.

- Will this project increase the possibility/likelihood of future water conservation improvements by other water users?

The implementation of this project and the sharing of its benefits through the Montana Association of Dams and Canal Systems (MADCS), Montana Water Resources Association, the Montana Association of Conservation Districts, and the NRCS provides a large audience to share this information within order for them to learn from the project and evaluate pipeline conversion project designs for a number of irrigation districts and water users' associations throughout the western US.

- Will the project benefit multiple sectors and/or users (e.g., agriculture, municipal, and industrial, environmental, recreation, or others?)

The implementation of this project and the sharing of its benefits through the Montana Association of Dams and Canal Systems (MADCS), Montana Water Resources Association, the Montana Association of Conservation Districts, and the NRCS provides a large audience to share this information with, in order for them to learn from the project and evaluate pipeline conversion project designs for a number of irrigation districts and water users associations throughout the western US.

- Please attach any relevant supporting documents (e.g., letters of support or memorandum of understanding).

Letters of support are attached as Appendix C.

E.1.8 Evaluation Criterion H—Nexus to Reclamation (4 points)

Up to 4 points may be awarded if the proposed project is connected to a Reclamation project or Reclamation activity. No points will be awarded for proposals without connection to a Reclamation project or Reclamation activity.

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

The Kinsey irrigation District has worked with the Bureau of Reclamation on previous occasions to provide water conservation, preservation, and Irrigation efficiency improvements for their irrigation projects. KID intends to continue their working relationship with the BOR while continuing dialogue about potential future projects and systematic infrastructure improvements.

- Does the applicant have a water service, repayment, or operations and maintenance (O&M) contract with Reclamation?

The KID does not currently have a contract with Reclamation.

- 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, the proposed project will benefit Reclamation activities that are ongoing to continue working on improving irrigation infrastructure.

- Is the applicant a Tribe?

No

D.2.2.2.7 PERFORMANCE MEASURES

Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (e.g., water saved or better managed, energy generated or saved). For more information calculating performance measure, see Appendix A: Benefit Quantification and Performance Measure Guidance.

All Water and Energy Efficiency Grants applicants are required to propose a “performance measure” (a method of quantifying the actual benefits of their project once it is completed). A provision will be included in all assistance agreements with Water and Energy Efficiency Grants recipients describing the performance measure and requiring the recipient to quantify the actual project benefits in their final report to Reclamation upon completion of the project. If information regarding project benefits is not available immediately upon completion of the project, the financial assistance agreement may be modified to remain open until such information is available and until a Final Report is submitted. Quantifying project benefits is an important means to determine the relative effectiveness of various water management efforts, as well as the overall effectiveness of Water and Energy Efficiency Grants.

Note: program funding may be used to install necessary equipment to monitor progress. However, program funding may not be used to measure performance after project

construction is complete (these costs are considered normal operation and maintenance costs and are the responsibility of the applicant).

Flow measurements of the Hammerbacker Lateral will be taken at the same locations where measurements were taken for the initial water loss calculations. The measurements will be taken where the culverts are not submerged using a velocity meter to calculate the velocity and measurement of the flow height in the culvert to determine the cross-sectional area ($Q=VA$). Flow measurements at the diversion into the lateral and at the end of the newly installed pipe section will show the actual canal losses and can be used to verify the water savings as a result of the pipeline conversion.

The proposed project is estimated to result in the conservation of 2,124 acre-feet of water through the elimination of seepage losses through the existing porous soils in the 1.44-mile section of the Hammerbacker Lateral. There are 166 acres that are currently underserved due to the inability of the KID to convey enough water due to the severe seepage losses. Crop production on the current 166 acres that are underserved will provide a performance measure on how well the pipeline conversion project will provide adequate water for agriculture.

In addition, please ensure that the budget proposal includes any project costs that may be incurred prior to award. For each cost, describe:

- The project expenditure and amount

There are no pre-award costs

- The date of cost incurrence

There are no pre-award costs

- How the expenditure benefits the project

There are no pre-award costs

ATTACHMENT A
BUDGET DETAIL AND NARRATIVE TEMPLATE

Summary			
6. Budget Object Category	Total Cost	Federal Estimated Amount	Non-Federal Estimated Amount
a. Personnel	\$0		
b. Fringe Benefits	\$0		
c. Travel	\$0		
d. Equipment	\$0		
e. Supplies	\$0		
f. Contractual	\$133,190		
g. Construction	\$817,734		
h. Other Direct Costs	\$0		
i. Total Direct Costs	\$950,924		
i. Indirect Charges	\$0		
Total Costs	\$950,924	\$475,462	\$475,462
Cost Share Percentage		50%	50%

D.2.2.1. Title Page

Hammerbacker Lateral Pipeline Conversion Project

Project Location: Custer County, Montana

BUREAU OF RECLAMATION

WaterSMART GRANT APPLICATION

Water and Energy Efficiency Grants for Fiscal Year 2025

Funding Opportunity Announcement No. R24AS00052

Applicant:

Kinsey Irrigation District

29 Mastin Road

Kinsey, MT 59338

Email: Kinseyirrigation@gmail.com

Phone: (406) 951-2640

Project Manager:

Doug Martin

29 Mastin Road

Kinsey, MT 59338

Phone: (406) 951-2640

Email: Kinseyirrigation@gmail.com

Congressional District of Applicant: MT-002

Congressional Districts of Project Area: MT-002

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- Appendix B KID Commitment Letter
- Appendix C Letters of Support
- Appendix D KID Resolution

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- Figure 1 Location Map

EXHIBITS

- Exhibit 1 Hammerbacker Lateral Proposed Alignment
- Exhibit 2 Hammerbacker Lateral Typical Section

Kinsey Irrigation District



29 Mastin Rd.



Kinsey, MT 59338

kinseyirrigationco@gmail.com

November 8, 2024

Letter of Support

To whom it may concern:

KID has been actively tackling infrastructure improvement projects and automation/monitoring of the system. KID has been successful in obtaining grant several grants for Preliminary Engineering Reports. We have partnered with the Montana DNRC, NRCS and the Yellowstone River Conservation District Council to identify problems and seek solutions from an infrastructure and a management point of view.

KID is committed to improving the system as funding is available. In 2017- 2019, KID installed the Cement Ditch pipeline, replacing the leaking and crumbling cement ditch. This project was funded from reserve funds, specifically earmarked for improvements. This project put 12,500 feet of pipe in the ground that served 490 acres.

NRCS has provided funds for KID to obtain a PIFR through engineering firm Jones & Demille. The PIFR data collection is complete and final submission of the document is in process. The PIFR concluded that this potential PL-566 watershed operations project checked all boxes for feasibility.

The Yellowstone River Conservation Council has provided much guidance in developing a Strategic Plan to assist KID with management and improvement of the system. They have provided information on grant opportunities and been instrumental in putting Irrigation Districts in contact with elected officials to convey the need for funding for improvements and the benefit to the region.

The Montana DNRC Water Resource Staff conducted a flow survey of three main KID canals to determine seepage loss over a 2 year period. This information will help KID identify and focus on problem seepage areas, conserving precious water being pumped from the Yellowstone River.

As you can see, KID is committed to the continuation and improvement of beneficial agriculture in the Yellowstone River valley.

Respectfully,

Doug Martin

Kinsey Irrigation District Manager

D.2.2.11 LETTERS OF SUPPORT

Please include letters from interested stakeholders supporting the proposed project. To ensure your proposal is accurately reviewed, please attach all letters of support/partnership letters as an appendix. Letters of support received after the application deadline for this NOFO will not be considered in evaluating your proposed project. These letters do not count within the 100 page maximum.

Letters of support for the project are included in Appendix C.

D.2.2.12 LETTER OF PARTNERSHIP

Category B applicants must submit a letter from the Category A partner(s), stating that they are acting in partnership with the applicant and agree to the submittal and content of the proposal (see Section C.1. Eligible Applicants). However, if the project is selected, a Letter of Partnership must be received prior to award.

N/A

D.2.2.13 OFFICIAL RESOLUTION

Include an official resolution adopted by your organization's board of directors or governing body, or, for state government entities, an official authorized to commit the applicant to the financial and legal obligations associated with receipt of a financial assistance award under this NOFO, verifying:

- The identity of the official with legal authority to enter into an agreement
- The board of directors, governing body, or appropriate official who has reviewed and supports the application submitted
- That your organization will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement

An official resolution meeting the requirements set forth above is mandatory. If you are unable to submit the official resolution by the application deadline because of the timing of board meetings or other justifiable reasons, the official resolution may be submitted to sha-dro-fafoa@usbr.gov up to 30 days after the application deadline. This resolution does not count within the 100 page maximum for the application.

An official resolution from the KID Board is provided in Appendix D.

D.2.2.11 LETTERS OF SUPPORT

Please include letters from interested stakeholders supporting the proposed project. To ensure your proposal is accurately reviewed, please attach all letters of support/partnership letters as an appendix. Letters of support received after the application deadline for this NOFO will not be considered in evaluating your proposed project. These letters do not count within the 100 page maximum.

Letters of support for the project are included in Appendix C.

D.2.2.12 LETTER OF PARTNERSHIP

Category B applicants must submit a letter from the Category A partner(s), stating that they are acting in partnership with the applicant and agree to the submittal and content of the proposal (see Section C.1. Eligible Applicants). However, if the project is selected, a Letter of Partnership must be received prior to award.

N/A

D.2.2.13 OFFICIAL RESOLUTION

Include an official resolution adopted by your organization's board of directors or governing body, or, for state government entities, an official authorized to commit the applicant to the financial and legal obligations associated with receipt of a financial assistance award under this NOFO, verifying:

- The identity of the official with legal authority to enter into an agreement
- The board of directors, governing body, or appropriate official who has reviewed and supports the application submitted
- That your organization will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement

An official resolution meeting the requirements set forth above is mandatory. If you are unable to submit the official resolution by the application deadline because of the timing of board meetings or other justifiable reasons, the official resolution may be submitted to sha-dro-fafoa@usbr.gov up to 30 days after the application deadline. This resolution does not count within the 100 page maximum for the application.

An official resolution from the KID Board is provided in Appendix D.

KINSEY IRRIGATION DISTRICT

Resolution #2024-01

Hammerbacker Lateral Piping Project WaterSmart Grant Application

WHEREAS; the Kinsey Irrigation District has the legal authority to enter into an agreement, and intends to submit a Water Efficiency Grant to the United States Bureau of Reclamation's (USBR) WaterSMART Program in November 2024, and;

WHEREAS; the Kinsey Irrigation District, located in Kinsey, MT commits to assisting in the funding of, implementation of, the construction of, operation of, and to performing the future maintenance for the Hammerbacker Lateral Piping Project per the stipulations of the foregoing grant application (if successful and awarded), and;

WHEREAS; the Kinsey Irrigation District contributions of cash and in-kind management, labor, and equipment services for the preferred alternative of the aforementioned grant application have been estimated at up to 51% of the total projects per the budgeting calculation forms included in the WaterSMART Grant Application, and;

WHEREAS; the Kinsey Irrigation District hereby appoints Doug Martin, Manager, as the official with legal authority to enter into an agreement (if successful and awarded);

THEREFORE, BE IT RESOLVED: The Kinsey Irrigation District Board supports the application and hereby commits to the supply of in-kind labor, management, equipment, and/or cash to satisfy the required match as stipulated in the Funding Plan of the WaterSMART Grant Application submittal for the Hammerbacker Lateral Piping Project. The Kinsey Irrigation District has budgeted for the planned capital and resource expenditures and will work with Reclamation to meet the established deadlines for entering into a grant or cooperative agreement.

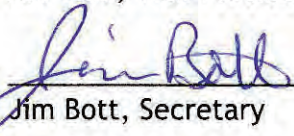
BOARD OF DIRECTORS KINSEY IRRIGATION DISTRICT

Signed: 
Cade Bott, Commission President

Date: 11/11/2024

Signed: 
Art Viall, Vice President

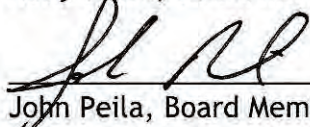
Date: 11/11/2024

Signed: 
Jim Bott, Secretary

Date: 11/11/2024

Signed: 
Kelly Steen, Board Member

Date: 11/12/2024

Signed: 
John Peila, Board Member

Date: 11/11/2024

D.2.2.14 LETTERS OF FUNDING COMMITMENT

If a project is selected for award under this funding opportunity and cost share funding is anticipated to be provided by a source other than the applicant, the third-party cost share must be supported with letters of commitment prior to award. Letters of commitment should identify the following elements:

N/A

- The amount of funding commitment

N/A

- The date the funds will be available to the applicant

N/A

- Any time constraints on the availability of funds

N/A

- Any other contingencies associated with the funding commitment

N/A

Cost-share funding from sources outside the applicant's organization (e.g., loans or State grants) should be secured and available to the applicant prior to award.

The KID has applied for a \$125,000 grant from the Montana Department of Natural Resources and Conservation Renewable Resource Grant & Loan Program. The grant is currently pending, and the award notification date is May 2025.

Reclamation will not execute a financial assistance agreement until non-Federal funding has been secured or Reclamation determines that there is enough evidence and likelihood that non-Federal funds will be available to the applicant after executing the agreement.