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*Salmon River Canal Company  
Canal Piping Project*

**Reclamation WaterSMART  
Water and Energy Efficiency  
Grant Proposal**

**Funding Opportunity Announcement No. R24AS00052**

Prepared by

SALMON RIVER CANAL COMPANY

2700 Highway 93  
Twin Falls, Idaho 83301

Office Phone: 208-655-4220

Fax: 208-655-4288

Manager: John Shetler  
srcc1911@gmail.com

February 16, 2024

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# Technical Proposal

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## 1.1 Executive Summary

**Date:** February 16, 2024

**Applicant:** Salmon River Canal Company

**City/County/State:** Twin Falls, Twin Falls County, Idaho

This application is for funding by the U.S. Bureau of Reclamation's (Reclamation) WaterSMART: Water and Energy Efficiency Grants for Fiscal Year (FY) 2024 Funding Opportunity Announcement (FOA) No. R24AS00052. This application from the Salmon River Canal Company (Canal Company) is seeking \$250,000 in federal funding assistance from Federal Funding Group I. The funding will be used to convert an open, earthen lined irrigation canal in the Canal Company's system to a 9,790 linear-foot (LF) polyvinyl chloride (PVC) pipeline. The project will significantly improve water conservation and efficiency by reducing seepage and evaporative losses. Additionally, the project will allow 700 acres of farmland (5.4% of the 13,000 total acres included in the Canal Company's service area) to benefit from increased energy efficiency through the replacement of 10 centrifugal electric power pumps with a gravity pressure system for irrigation, thus offering significant cost savings to the agricultural producers that the Canal Company serves. The project will provide notable benefits within Elevation Criteria A – Quantifiable Water Savings and B.2 – Increasing Energy Efficiency in Water Management as defined by Reclamation's FOA. When complete, the project will save an estimated 540 acre-feet (AF) of water per year and eliminate the need for electric powered pumps by pivoting to a more sustainable method of delivery through the use of gravity pressure irrigation. The requested funds (\$250,000) make up 49.8% of the total project cost and will provide the resources needed to assist the Canal Company with implementing the project. Construction of the pipeline is proposed to start in October 2024 and would be finished by March 2026.

## 1.2 Background Data

The Canal Company is located in what is known as Magic Valley south of Twin Falls, Idaho and was formed in 1910 to operate the Salmon Falls Dam and Reservoir. The Canal Company is a non-profit company and has 169 shareholders, who hold a total of 60,050.65 shares, and currently irrigates approximately 13,000 acres. The Canal Company's operations have expanded over the years to include a network of irrigation canals across Twin Falls County, where agriculture drives the economy by generating over \$680 million in farm-gate revenue. Twin Falls County ranks third in the state for agriculture revenue, according to the U.S. Department of Agriculture's (USDA) (USDA 2017). The Canal Company's primary purpose is to deliver irrigation water to its shareholders on the irrigation project known as the Salmon Tract. The Salmon Tract is located south of Twin Falls and is known for its fertile soils and agricultural resources. Primary crops grown in the region include hay, barley, beans, grains, corn, and wheat (Westerhold et al 2021; Ellis 2023). Irrigation water is provided to farmlands using a combination of pivots, sprinklers, and gravity irrigation systems.

Water supplies used for irrigation flow from Salmon Falls Dam, a concrete gravity arch dam 223.5 feet high with a crest length of 450 feet that is owned and operated by the Canal Company. When full, the reservoir has an area of about 3,400 acres and a length of approximately 15 miles, with a total capacity of 230,650 AF of water. The main purpose of Salmon Falls Dam is for irrigation storage, but it also provides numerous recreational benefits, including fishing opportunities because it supports healthy populations of trout, Chinook, and kokanee salmon.

The water conserved by constructing the proposed project will be used to satisfy existing irrigation demands in the northeast part of the Canal Company’s system. The Canal Company has not expanded beyond historical service area boundaries and has no intention to expand in the future.

### 1.2.1 Water Supply, Water Rights, and Water Delivery System

This section provides background information on the Canal Company’s water supply, water rights, and current water delivery system.

#### 1.2.1.1 Water Supply

The Canal Company’s water supply comes from surface water sources, most of which is derived from the Salmon Falls Creek basin, draining into portions of Elko County in Nevada and Owyhee and Twin Falls Counties in Idaho. The Salmon Falls Creek watershed spreads across approximately 2,103 square miles.

The typical growing season is 120 days. During growing season, water is delivered from May 1 through mid-September. In dry water years, such as in 2014, water deliveries can end as early as mid-July. Table 1 summarizes the Canal Company’s annual water supply from 2004 through 2023.

TABLE 1  
**Canal Company Annual Water Supply**

<b>Year</b>	<b>Annual Supply (AF)</b>
2004	51,796
2005	63,780
2006	81,669
2007	83,772
2008	69,654
2009	73,107
2010	72,898
2011	85,243
2012	81,661
2013	57,290
2014	40,253
2015	47,091
2016	77,252
2017	90,679
2018	83,529

**TABLE 1**  
**Canal Company Annual Water Supply**

<b>Year</b>	<b>Annual Supply (AF)</b>
2019	160,960
2020	92,880
2021	42,400
2022	33,700
2023	58,260
<b>AVERAGE</b>	<b>72,394</b>

### 1.2.1.2 Water Rights

As of 2020, the Canal Company has water rights and is obligated to deliver 1.25 AF per share of stock when water is available. Prior to 2020, the Canal Company had water rights and was obligated to delivered 1.167 AF per share of stock. Table 2 shows the Canal Company’s historical water allotment details for past 5-year, 10-year, 25-year, and 50-year timeframes. The Canal Company-owned surface water rights are summarized in Table 3.

**TABLE 2**  
**Canal Company Historical Water Allotments**

	<b>Allotment Delivered (AF per share)</b>	<b>Percentage of Full Water Allotment</b>	<b>Number of Years Full Allotment Was Delivered</b>
5-year average allotment (2019 to 2023)	0.839	68	1 of 5
10-year average allotment (2014 to 2023)	0.794	66	2 of 10
25-year average allotment (2004 to 2023)	0.716	61	4 of 25
50-year average allotment (1974 to 2023)	0.819	70	16 of 50

Note: The maximum allotment changed from 1.167 AF to 1.25 AF in March 2020.

**TABLE 3**  
**Canal Company Surface Water Rights**

<b>Type</b>	<b>Source</b>	<b>Diversion Rate (cfs)</b>	<b>Diversion Volume (AF)</b>	<b>Priority</b>
Natural flow	Salmon Falls Creek	1.55	388	1874
Natural flow	Salmon Falls Creek	19.414	4,629	1894
Natural flow	Salmon Falls Creek	7.321	2,447	1874
Natural flow	Salmon Falls Creek	2.744	542	1874

TABLE 3  
**Canal Company Surface Water Rights**

Type	Source	Diversion Rate (cfs)	Diversion Volume (AF)	Priority
Natural flow	Salmon Falls Creek	10.17	3,061	1874
Natural flow	Salmon Falls Creek	25.786	9,910	1897
Natural flow	Salmon Falls Creek	8.583	2,189	1894
Natural flow	Salmon Falls Creek	1,250	-	December 29, 1906
Natural flow	Salmon Falls Creek	500	-	August 22, 1906
Natural flow	Salmon Falls Creek	1,000	-	September 7, 1909

cfs = cubic feet per second

### 1.2.1.3 Water Delivery System

The Canal Company diverts water for irrigation from the Salmon Falls Creek at the Salmon Falls Dam and Reservoir. From the Salmon Falls Creek Reservoir, water is diverted through a tunnel and into a canal system that combines earthen and concrete-lined channels, as well as closed pressurized pipelines. Currently, the canal system is 10% pipelines and 3% lined canals (2 miles of which are concrete lines from a 1966 project; the rest are earthen). There are approximately 300 miles of main line canal and laterals that deliver water to approximately 13,000 acres that are served by the Canal Company. As the water flows through the main line canals and diversion laterals, it is delivered to farmland via metal headgates with either open concrete structures or closed pipeline systems. All headgates are equipped with a weir measuring system or a flow meter. Any unused water not attributed to loss is stored at one of three storage ponds at the tail end of the canal system.

## 1.2.2 Existing and Previous Reclamation Partnerships

The Canal Company first partnered with Reclamation in 1966 for a loan under the Small Reclamation Projects Act and again in 2015 and 2019 for grant assistance from the WaterSMART: Water and Energy Efficiency Grant Program. The three partnerships with Reclamation are described in the sections below.

### 1.2.2.1 Small Reclamation Projects Act

In 1966, the Canal Company applied and was approved for a \$900,000 loan from Reclamation under the Small Reclamation Projects Act. The funds were released by Congress in 1970 and were subsequently used to construct a new siphon and improvements on the A-line Canal through Deep Creek as well as to install several miles of concrete lining and a Parshall flume at the beginning of the Canal Company's system. Construction was completed in the fall of 1973 and the loan was paid in full in June 1988.

### 1.2.2.2 WaterSMART Grants

In 2015, the Canal Company applied for and was awarded \$300,000 in federal funding through Reclamation's WaterSMART: Water and Energy Efficiency Grant Program. The funding was used to line 16,916 LF of earthen canal to increase water conservation. As part of the project, the flow

capacity of the canal segments was also increased to facilitate future improvements that were estimated to double the water savings of the original canal lateral (Lateral 213) and increase energy efficiency by eliminating the need for pumping following the installation of pressure pipelines. Canal lining and grading were completed in spring 2016. Following the 2015 Canal Lining and Energy Conservation Project, pressurized pipelines were installed and paid for by the Canal Company and its shareholders outside of the WaterSMART grant; however, pipeline construction was made possible through the completion of grading (increased canal capacity of the 2015 project). Following completion of the 2015 canal lining project and associated canal improvements, the Canal Company estimates the annual water savings is 3,801 AF/year, in addition to reducing pumping costs.

In 2019, the Canal Company was approved for \$300,000 in federal funding through Reclamation’s WaterSMART: Water and Energy Efficiency Grant Program. The funding was used to line 10,694 LF of the Main Canal to increase water conservation and water-use efficient by reducing seepage losses. The project began in the fall of 2020 and was completed in January of 2022. The project was estimated to conserve at least 3,919 AF on an annual basis.

## 1.3 Technical Project Description

This section includes a detailed description of the proposed project. The project will significantly reduce seepage and evaporative losses in the canal system and provide the opportunity for agricultural producers to reap water conservation benefits and cost savings by eliminating 10 centrifugal electric pumps in favor of a pressurized gravity irrigation system. Water conservation benefits from the project will be immediate and expected savings will result in enhanced water management across the Canal Company’s service area.

### 1.3.1 Project Description

The project will take place at the Canal Company’s Lateral 110 located in the northeastern section of the canal system. Lateral 110 is currently an open ditch lateral, spanning 2.7 miles with an earthen lined bottom. The lateral is composed of dirt banks with some vegetation and rock riprap. Seepage losses in the lateral have occurred over many years based on annual water measurements, visual observations of seepage through canal banks and frequent bank repair, and vegetation growth downslope of the canal banks.

The proposed project would re-route and convert Lateral 110 to a gravity pressurized pipe and reduce the length of the lateral to 9,790 LF or 1.9 miles, adding more efficient water delivery. The project would consist of installing multiple sections of PVC schedule 80 pipe. The conversion for the open ditch lateral to a pressurized pipeline would save an estimated 4.5 AF of water loss per day, or 540 AF per season. Additionally, approximately 700 acres of farmland would be able to eliminate use of 10 centrifugal electric powered pumps and replace them with gravity pressure irrigation, passing along increased efficiencies and cost savings to the Canal Company’s customers.

### 1.3.2 Project Location

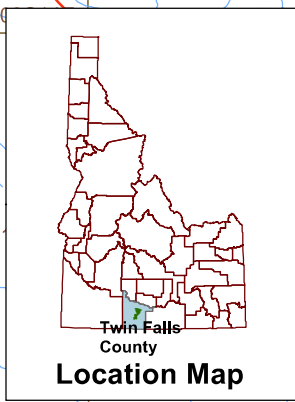
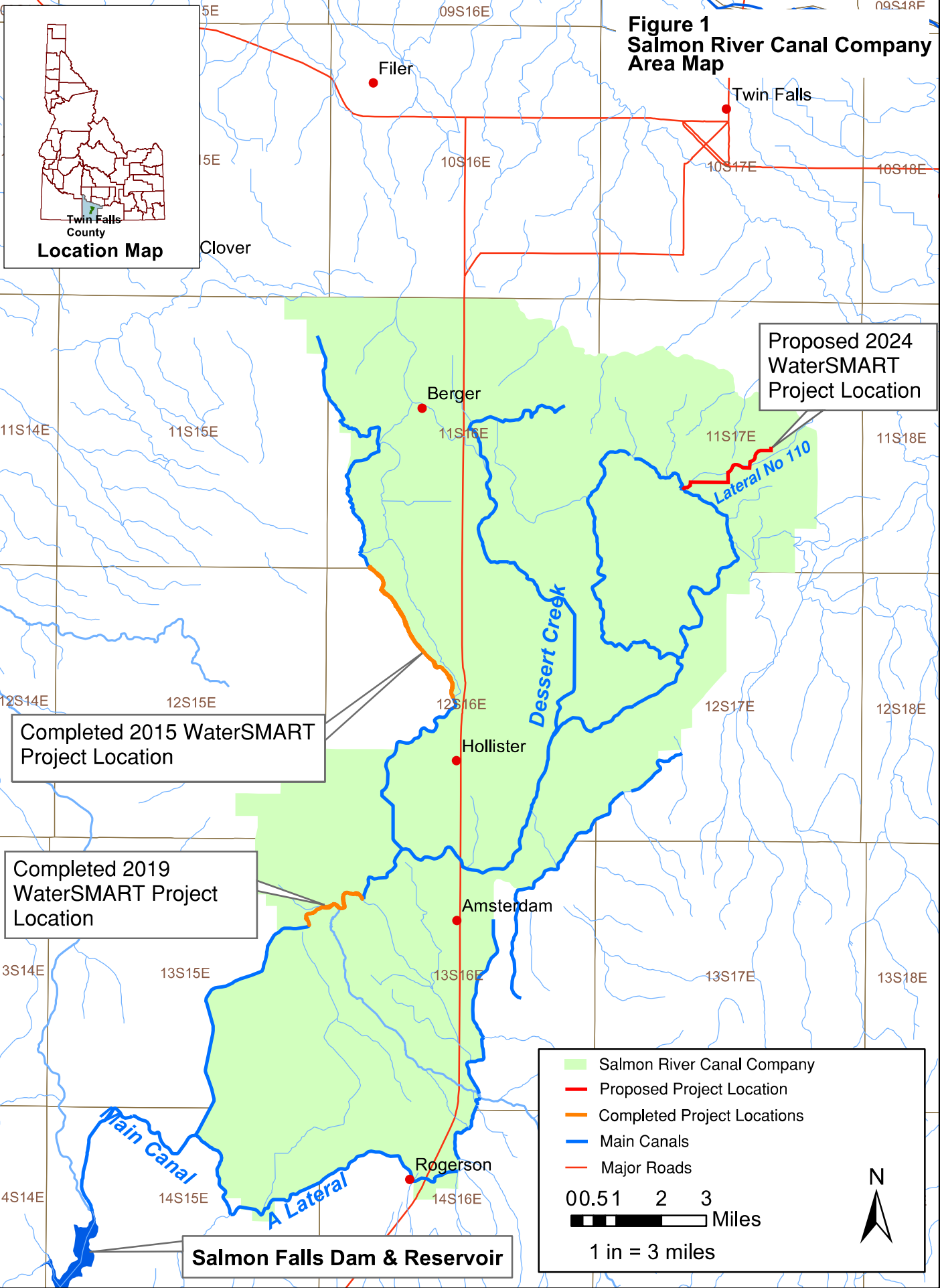
The project is located near the intersection of North 3000 East Street and East 3100 North Street in the City of Twin Falls, Idaho.

The project latitude is 42°44’98” N and longitude is -114°45’53” W.

Figure 1 shows the Canal Company’s area map with the completed and proposed WaterSMART grant project locations. Figure 2 shows the location of the existing Lateral 110 and the proposed project pipeline.



**Figure 1  
Salmon River Canal Company  
Area Map**



Proposed 2024  
WaterSMART  
Project Location

Completed 2015 WaterSMART  
Project Location

Completed 2019  
WaterSMART Project  
Location

**Salmon Falls Dam & Reservoir**

- Salmon River Canal Company
- Proposed Project Location
- Completed Project Locations
- Main Canals
- Major Roads

0 0.5 1 2 3  
Miles

1 in = 3 miles



**Figure 2: Proposed Project Pipeline**

## 1.4 Evaluation Criteria

### 1.4.1 Evaluation Criterion A: Quantifiable Water Savings

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

The project is expected to conserve 4.5 AF of water loss per day, or 540 AF per year. The one-time investment of \$501,853 is expected to save approximately 27,000 AF of water loss over a 50-year period.

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

Lateral 110 is currently an open discharge lateral composed of dirt banks with some vegetation and riprap. Water losses are going back into the ground through canal seepage. In addition to canal seepage, evaporation accounts for minor water losses. Any used water in the lateral not lost to seepage or evaporation is collected at one of three storage ponds at the tail end of the system. At the tail end of the canal system, no water is spilled or returned for beneficial use by other water users. The water saved will also have recreational benefits for the community by increasing the water quality at the Salmon Falls Creek Reservoir, which is a popular destination for fishing, boating, and other recreational activities.

Table 4 shows the monthly water supply, delivery, and calculated seepage and evaporation losses for Lateral 110.

**Describe the support/documentation of estimated water savings. Please provide sufficient detail supporting how the estimate was determined, including all supporting calculations.**

The estimated water savings were calculated using monthly water supply and delivery data in Lateral 110 during the 2023 irrigation season. During 2023, the total water supply was 845.5 cfs (1,664 AF) and the total water delivered was 564 cfs (1,119 AF). The Canal Company delivered water for 126 days during the 2023 season. The total water loss for 2023 was 2.24 cfs/day or approximately 4.5 AF/day. Additional information on monthly supply, delivery, and water loss can be found in Table 4.

**Please address the following questions according to the type of infrastructure improvement you are proposing for funding. [Canal Lining/Piping]**

- **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.**

As previously described and presented in Table 4, the Lateral 110 seepage rate is estimated to be 4.5 AF per day, which equates to 540 AF/year. Because the project will eliminate any groundwater seepage and prevent evaporation, the 4.5 AF per day of water loss currently lost in the lateral is expected to be conserved with the construction of the proposed project.

- **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.**

The Canal Company recorded the daily discharge (supply) data during the 2023 irrigation season. The supply data were compared with the monthly delivered data to determine the total loss from the irrigation lateral.

- **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)?**

Because the proposed project consists of converting the earthen lined Lateral 110 into a pressurized pipeline, seepage losses in this section of the canal system are expected to be eliminated. In addition, because the water in the pipeline will no longer be exposed to the intense sun, high temperatures, low humidity, and wind velocities that are typical for this arid region, evaporation losses will be eliminated.

The Canal Company will continue to track the supply and delivery data post-project to confirm the water savings quantity.

- **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 anticipated annual transit loss reduction by converting the open earthen canal to a pressurized pipe system associated with this project is 4.5 AF/day for the 9,790 LF segment of canal based on an annual water savings of 540 AF/year.

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

The water savings from the proposed project will be confirmed by taking daily discharge measurements using a McCrometer electromagnetic flow meter.

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

The pipeline proposed for this project will be made of PVC schedule 80.

TABLE 4

**2023 Monthly Water Supply, Delivery, and Calculated Losses Following Completion of Lateral 110 Canal Pipeline Project**

Lateral 110	Supply (AF)	Deliveries (AF)	Total Losses (AF)	Average Pan Evaporation (inches/day)	Evaporation Losses (AF)	Seepage Losses (AF)	Seepage Rate (gal/ft <sup>2</sup> /d)
May	274	144	130	0.28	5.9	124	2.73
June	239	135	104	0.31	6.7	97	2.07
July	496	358	138	0.33	7.5	131	2.70
August	401	291	110	0.29	6.7	104	2.13
September	254	191	63	0.22	4.9	58	1.23
<b>ANNUAL</b>	1664	1119	545	-	31.7	514	10.9
<b>AVERAGE</b>	-	-	-	-	-	-	2.2

gal/ft<sup>2</sup>/d = gallon(s) per square foot per day

## 1.4.2 Evaluation Criterion B: Renewable Energy

### Subcriterion: B.2 – Increasing Energy Efficiency in Water Management

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 are 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 day.**

This project would allow 700 acres of farmland (5.4% of the 13,000 total acres of service area) to eliminate 10 centrifugal electric power pumps and use a more energy efficient option of gravity pressure irrigation. According to Idaho Power, the elimination of the 10 centrifugal pumps would decrease energy use by 157 kilowatts per hour (kW/hour) or 3768 kW/day.

Over the last 5 years, the Canal Company has averaged 132 days of irrigation per season. The pumps are used on average 100 days per year. With the elimination of the pumps, the project is expected to save 376,800 kW of energy per year.

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

Idaho Power provides 100% of the electricity in Hollister and the surrounding communities in Twin Falls County where the project is located. Non-renewable energy production sources account for 3.2% of Idaho Power's energy (Find Energy LLC 2024).

With the energy savings of 157 kW/hour and the average carbon dioxide (CO<sub>2</sub>) emissions in Twin Falls County at 52.83 kilograms (kg) per kW/hour, the emissions reduction is 8,294 kg (18,286 pounds) of CO<sub>2</sub>.

- **If the project will result in reduced pumping, please describe the current pumping requirements and types of pumps (e.g., size) currently being used. How would the proposed project impact the current pumping requirements and energy usage?**

Currently, there are 10 centrifugal pumps that pull from Lateral 110 and use 157 kW of energy/hour. The project would allow for the 10 centrifugal pumps to be replaced with gravity pressure irrigation.

- **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 originates from the pumps that farmlands use to pull irrigation water from Lateral 110.

- **Does the calculation include any energy required to treat the water, if applicable?**

The energy savings for the proposed project is calculated for the elimination of electric power pumps. The water in the canal system is not treated; therefore, there is no energy required for treatment.

- **Will the project result in reduced vehicle miles driven, in turn reducing greenhouse gas emissions? Please provide supporting details and calculations.**

Because the lateral is currently earthen, the conversion to a pipeline would require less operation and maintenance of this section of the canal system. The reduction in operation and maintenance will reduce the number of vehicles driven by maintenance staff to and from the canal section. The Canal Company's office is located 13 miles (one way) from the project site location.

- **Describe any renewable energy components that will result in minimal energy savings/production (e.g., installing small-scale solar as part of a SCADA system).**

The project does not incorporate any renewable energy components.

### 1.4.3 Evaluation Criterion C: Other Project Benefits

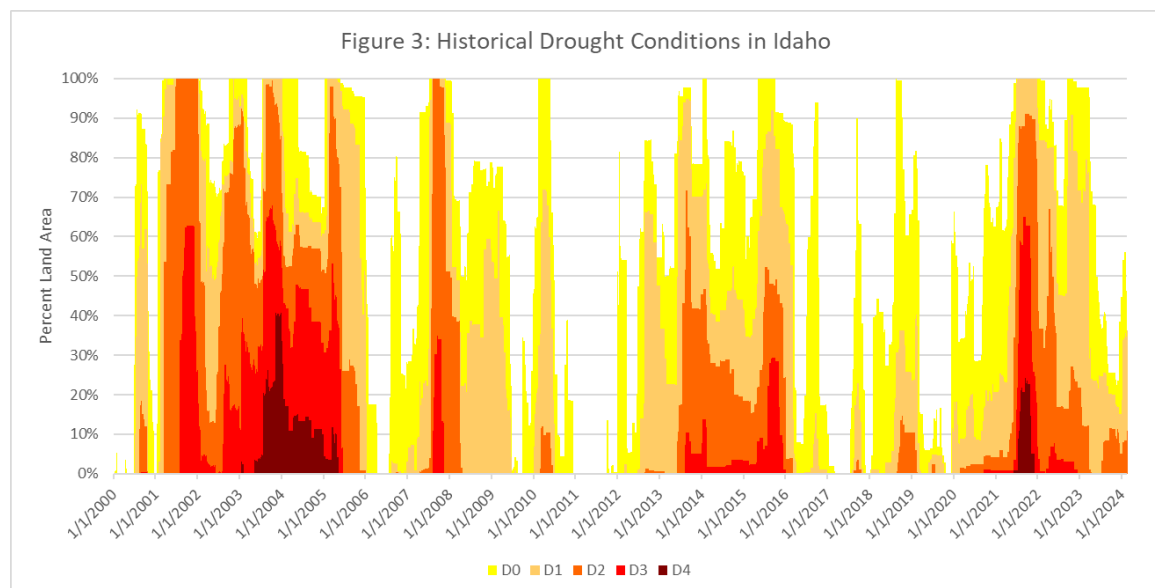
#### Resilience and Sustainability Benefits

**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 sustainability. Consider the following:**
  - **Describe recent, existing, or potential drought or water scarcity conditions in the project area.**

The State of Idaho frequently experiences drought conditions, greatly affecting agricultural communities across the state. Figure 3 shows drought conditions in Idaho since 2000. According to the U.S. Drought Monitor (National Integrated Drought Information System 2024), Abnormally Dry (D0) indicates a region that is going into or coming out of drought, Moderate Drought (D1) is the first of four drought conditions, Severe Drought (D2) is the second of four droughts, Extreme Drought (D3) is the third of four droughts, and Exceptional Drought (D4) is the most intense drought. The State of Idaho has experienced D4 conditions in 2003, 2004, 2005, and 2021.

**Figure 3: Historical Drought Conditions in Idaho**



Specifically in Twin Falls County, since the year 2000, the Idaho Department of Water Resources has declared drought conditions in 2001, 2004, 2005, and 2021 (IDWR 2024).

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

Yes, the project is in an area that has experienced drought. Drought conditions continue to affect water users across the Magic Valley. Early irrigation water shutoffs due to water shortages are not uncommon. The Canal Company has water rights for and is obligated to deliver 1.25 AF per share of stock when water is available. As shown in Table 2 in Section 1.2.1.2, in the last 10 years, the Canal Company has delivered only 66% of the full water allotment to its water users. Over the last 25 years, the Canal Company has delivered a full allotment only 4 out of the 25 years. In addition, since 1999, water shutoff has occurred as early as July three times.

- **Describe any projected increases to the severity or duration of drought or water scarcity in the project area. Provide support for your response (e.g., reference a recent climate informed analysis, if available).**

According to the State of Idaho Hazard Mitigation Plan 2018, over the past 100 years, most of Idaho has warmed by 1 to 2 degrees Fahrenheit (State of Idaho, 2018). The changing climate has caused snowpack to melt earlier in the year, reducing the amount of water available during the summer months. According to the U.S. Environmental Protection Agency (EPA), Idaho is expected to experience warmer streams and waterways, decline in several fish species, increase in wildfires, expanding deserts, and less water available for irrigation (EPA 2016).

According to the USDA's Census of Agriculture, Twin Falls County is in the top five counties in Idaho with the greatest market value of products sold. By 2050, Idaho is projected to see a 110% increase in drought threat, greatly affecting the state's agricultural community (State of Idaho 2018). With the large agricultural community in Twin Falls County, resilient water supply is key to supporting a \$680 million agribusiness growing food for the community and supporting the local economy, according to the 2017 Census of Agriculture (USDA 2017).

- **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.**

As mentioned previously, interruptions in service due to low water level are a concern for the Canal Company moving forward in an ever-changing climate with an increased risk of drought and its impacts on irrigation water supply. Information on delivered allotments over 5-year, 10-year, 25-year, and 50-year average time periods can be found in Table 2 in Section 1.2.12. Agribusiness by its very nature is energy intensive, especially in regions reliant upon water pumping for their irrigation systems and the transportation costs associated with traveling many miles to undertake the ongoing cleaning, maintenance, and repair of pumps and open earthen channels.

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

The project will address the interruptions in service and long-term sustainability concerns by increasing resilience in the Canal Company's system. The Lateral 110 piping project will reduce seepage and evaporation losses in the 9,790 LF pipeline. Water would remain in the storage

system longer, extending the length of the irrigation water system for irrigation users. This project is a continuation of the Canal Company’s commitment to adopting efficient water management practices and modernizing its delivery system to reduce overall energy consumption, thus providing a measurable cost savings to its customers. Converting to a pressurized pipeline system with gravity feed is a sustainable option that mitigates the reliance on electrical power production, ensuring 700 acres of cropland are properly irrigated even when those systems are offline.

- **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?**

The proposed project will provide greater flexibility to water managers through the 540 AF/year water savings. The water savings will result in more irrigation water in the system, allowing water managers to have more flexibility in how they use the water. A gravity pressure irrigation system also simplifies and slashes annual operations and maintenance costs needed to ensure optimal operation and continuous, unimpeded flow velocity. The cost savings realized by the Canal Company’s agricultural producers may provide them with the financial resources to further adopt energy and water efficient practices and technologies across their individual operations.

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

The project is expected to conserve 540 AF per year, or 0.75% of water used within the Canal Company’s service area. The total annual water supply is based on the average annual water supply over the last 15 years.

$$\frac{\text{Estimated Amount of Water Conserved} = 540 \text{ AF}}{\text{Average Annual Water Supply} = 72,394 \text{ AF}} = 0.75\%$$

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

By conserving water that would normally be lost to seepage and evaporation, the project will increase the Canal Company’s overall redundancy by making more water available to alleviate water supply shortages in times of intense drought.

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

Idaho is part of two interstate water compacts: the Bear River Compact with Utah and Wyoming, and the Snake River Compact with Wyoming. The Snake River Compact includes the Snake River from its headwaters to the Wyoming-Idaho boundary and all tributaries flowing into it within the boundaries of Wyoming, as well as the Salt River and all its tributaries. The interstate compacts do not appear to affect the water supplies or the users within the Canal Company’s service area or Salmon Creek Reservoir.



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

Within the watershed basin, there is widespread support to increase water conservation. In low-water years, there is tension among water users. A fragile peace exists between the Magic Valley canal irrigators and the groundwater irrigators of Eastern Idaho holding senior and junior water rights, respectively. The threat of drought jeopardizes this peace, as well as the farmers and crops reliant upon critical water supplies (Clark 2022). The project will reduce tension by decreasing water losses and improving resiliency in water management within the basin.

### **Ecological Benefits**

**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).**

Federally threatened or endangered species that have been observed in Twin Falls County include the yellow-billed cuckoo (threatened), Canada lynx (threatened), wolverine (threatened), Bliss Rapids snail (threatened), and Snake River physa (endangered) (Idaho Department of Fish and Game 2024). The project is not expected to adversely affect the federally threatened or endangered species.

The project is expected to increase the water level in the Salmon Falls Creek Reservoir, which is beneficial to species including brown trout, Chinook salmon, kokanee salmon (landlocked sockeye), yellow perch, black crappie, channel catfish, and smallmouth bass, which are important for recreational fishing.

- **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.)**

Along with providing increased resiliency in the Canal Company's water system, less draw on stored water will enhance recreational activities for the community. The Salmon Falls Creek Reservoir is a popular destination for fishing, boating, and other recreational activities developed by the Twin Falls County Parks and Waterways along with the Bureau of Land Management. The Salmon Falls Creek Reservoir is stocked with fish mentioned previously for recreational fishing.

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

As previously mentioned, the reduction in water loss from the project will allow less draw on the stored water in the Salmon Falls Creek Reservoir. The increased water level in the Salmon Falls Creek Reservoir will aid in providing a healthy habit for fish and aquatic species in the area by helping to reduce water temperature, which impacts dissolved oxygen levels, photosynthesis of aquatic plants, and metabolic rates of aquatic organisms. By increasing water levels in the

reservoir, this project will not only increase water supply availability, but also maintain the ecological balance of this ecosystem.

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

Along with providing an increase in water quantity in the Canal Company's system, the project is expected to improve the quality of the water delivered. The conversion of an open earthen lined channel to a gravity pressure pipeline will mitigate the formation of gullies resulting from uncontrolled surface flow, and erosion of the canal banks, preventing soil and sediment from entering the canal system and often leading to the development of sediment bars. This approach may also mitigate the proliferation of known invasive plant species like flowering rush that often choke open irrigation channels (University of Idaho 2019). By minimizing land disturbance associated with the cycle of cleaning and maintenance required for open earthen channels, this project will help to preserve natural habitats across the Magic Valley area, which is essential for native plant and animal species to thrive.

### **Climate Change**

- **Describe how the project addresses climate change and increases resiliency. For example, does the project help communities respond to or recover from drought?**

The project helps the surrounding community recover from droughts by increasing the resiliency of the Canal Company's water system. The reduction in seepage and evaporation water losses as a result of the project will increase available water supply, which will help support the community in low-water years.

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

The project seeks to reduce water losses in the Canal Company's water system. This will provide the Salmon Falls Creek Reservoir with additional water storage, which improves habitat for fish and aquatic species and maintains the ecological balance of a rich ecosystem supporting a diverse wildlife population. Because the project will eliminate reliance upon the electrical grid to deliver precious water to 700 acres of productive farmland, these crops have a better chance of survival in the event of heat dome events that stress the power grid and delivery systems, and may result in loss of power.

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

The project converting Lateral 110 from an open earthen canal to a gravity pressure pipeline will eliminate erosion and sedimentation caused by erosion of channel banks, leading to sediment transport to downstream waterbodies and reservoirs. Through the construction of pipeline, the project will reduce sedimentation transport and improve water quality within the lateral. A pressurized pipe system will minimize exposure to contaminants introduced by agricultural runoff and other nonpoint source contaminants that impair surface waters and degrade water quality.

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

The project would eliminate the need for 10 electric centrifugal pumps, allowing farmlands to use the more sustainable solution of pressurized gravity irrigation. This project is expected to

reduce demand by 157 kW/hour, thus preventing 8294 kg (18,286 pounds) of CO<sub>2</sub> emissions annually in the Twin Falls County region.

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

The Canal Company’s continued commitment to building the resilience of its irrigation system to meet the challenge of an ever-changing climate allows its customers to better adapt to fluctuating water availability and drought by mitigating the risks associated with water shortages. Converting to a pressurized pipe system will optimize land use by offering more flexible placement and routing not otherwise achievable using open earthen channels. Overall, the long-term cost savings realized by the Canal Company’s customers may be reinvested into their agribusiness operations, resulting in improved crop yields and the further adoption of sustainable and adaptable water management practices for years to come.

#### **1.4.4 Evaluation Criterion D: Disadvantaged Communities and Tribal Benefits**

##### **Subcriterion D.1: Disadvantaged or Underserved Communities**

**Please use the White House Council on Environmental Quality’s interactive Climate and Economic Justice Screening Tool to identify any disadvantaged communities that will benefit from your project. If applicable, describe how the proposed project will serve or benefit a disadvantaged or underserved community identified using the tool.**

According to the White House Council on Environmental Quality’s interactive Climate and Economic Justice Screening Tool, the project is located within a disadvantaged community. The community where the project is located ranks in the 67th percentile for households where income is less than or equal to twice the federal poverty level and in the 97th percentile for economic loss to building value resulting from natural hazards each year. Additionally, 13% of people in the community ages 25 years and older have an education less than a high school diploma.

The project will benefit the community through improving the resiliency of the irrigation water supply system, supporting the foundations of the regional economy, providing long-term operational and maintenance cost savings, and encouraging the adoption of sustainable agricultural. Additional information on how the project will address climate change and benefit the community is described in the previous section.

##### **Subcriterion D.2: Tribal Benefits**

**Please address the following, if applicable:**

- **Does the proposed project directly serve and/or benefit a Tribe? Will the project increase water supply sustainability for an Indian Tribe? Will the project provide renewable energy for an Indian Tribe?**
- **Does the proposed project support Tribally led conservation and restoration priorities, and/or incorporate or benefit Indigenous Traditional Knowledge and practices?**
- **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 responsibility or a Reclamation activity with a Tribe?**

The Shoshone-Bannock Tribes of the Fort Hall Indian Reservation, the State of Idaho, the United States, and certain Idaho water users including Twin Falls County hold a 1990 Fort Hall Indian Water Rights Agreement and a 1987 Commencement Order commencing the Snake River Basin Adjudication for water rights in the Snake River Basin. Although the project does not directly serve or benefit the Shoshone-Bannock Tribes of the Fort Hall Indian Reservation, the project indirectly supports the tribal resilience to climate change and drought impacts. The project, located within the Snake River Basin, downstream of the Shoshone-Bannock Tribes of the Fort Hall Indian Reservation, support resilient water supply updates to the system by reducing seepage and evaporation.

#### **1.4.5 Evaluation Criterion E: Complementing On-farm Irrigation Improvements**

**Describe in detail how the project will complement on-farm irrigation improvements eligible for NRCS financial or technical assistance.**

At this time, there are no known Canal Company customers pursuing NRCS grant funding.

#### **1.4.6 Evaluation Criterion F: Readiness to Proceed**

**Identify and provide a summary description of the major tasks necessary to complete the project.**

A \$1.00-per-share assessment was implemented in 2004 to save funds for future improvements. In 2023, the pipeline fund assessment was raised to \$2.50. If awarded the WaterSMART grant, the Canal Company will have the required funds to complete this project.

If awarded the WaterSMART grant, the Canal Company will obtain permits and have the funding for construction of the pipeline by fall 2024. The Canal Company will have the pipeline project completed by spring 2026.

**Describe any permits that will be required, along with the process for obtaining such permits.**

Federal approvals for the project include National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), and ESA compliance. If successful in obtaining the WaterSMART grant, the Canal Company will work with Reclamation to determine the appropriate level of NEPA compliance. The project will take place in the Canal Company's right-of-way or on private property. The private property owners have given the Canal Company permission to conduct work on their land. No known environmental or cultural resources of special value exist.

There are no state or local permitting requirements.

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

Engineering for this project has been completed by a local engineering firm.

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

There are no new policies or administrative actions required.

**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.**

The Canal Company is planning to start construction on October 1, 2024. Construction will be completed by March 1, 2026.

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**Please also include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.**

If awarded the WaterSMART grant, the Canal Company will obtain permits and have the funding for construction by fall 2024. Construction of the pipeline would begin on October 1, 2024. The construction of the pipeline project will be completed by March 1, 2026.

#### **1.4.7 Evaluation Criterion G: Collaboration**

**Please describe how the project promotes and encourages collaboration.**

The project would benefit agricultural, environmental, and recreational sectors of the community. There is widespread support to increase water conservation efforts to increase the reliability of the water supply among the 165 agricultural producers that rely upon irrigation provided by the Canal Company.

#### **1.4.8 Evaluation Criterion H: Nexus to Reclamation**

**Describe the nexus between the proposed project and a Reclamation project or Reclamation activity.**

The project is located on private property and the Canal Company does not have storage rights in any Reclamation facilities; however, the Canal Company's water conservation mission is consistent with the U.S. Department of the Interior's mission to stretch scarce water supplies and avoid conflicts over water resources and management practices.

# Budget Narrative

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## 2.1 Budget Proposal

The assembled cost of the project has been estimated to be \$501,853. The project estimate is based on reasonable and allowable costs, quotes from a local equipment rental company, input from engineering professions, and historical costs and production rates. These costs were assembled with the intent for construction to begin in the fall of 2024 and be completed by March 2026.

Table 5 shows a summary of the non-federal and federal funding sources for the project.

TABLE 5  
**Summary of Non-federal and Federal Funding Sources**

<b>Funding Sources</b>	<b>Percent of Total Project Cost</b>	<b>Total Cost by Source</b>
Recipient funding	49.8%	\$250,000
Reclamation funding	50.2%	\$251,853
Total project funding	100%	\$501,853

## 2.2 Budget Details

A detailed project budget for the pipeline project can be found in Attachment A. Additional information and assumptions for each budget category is described in the text that follows.

### 2.2.1 Personnel

The Canal Company expects to make an in-kind investment of \$20,078 in salaries and wages. The cost includes personnel hours for construction of the project and reporting requirements (SF-425 Federal Financial Report, interim performance reports and final performance report). Refer to Attachment A for more details on the personnel cost.

### 2.2.2 Fringe Benefits

The Canal Company expects to make an in-kind investment of \$18,578 in fringe benefits. These investments provide for Social Security, Medicare, state pension, workers compensation, housing, mileage, phone allowance (where applicable), sick leave, and health insurance premiums. Refer to Attachment A for more details on the fringe benefit costs.

### 2.2.3 Travel

There are no travel-related costs associated with the project.

### 2.2.4 Equipment

The Canal Company owns all equipment necessary to complete the project. Refer to the Construction Cost (Recipient-owned Equipment Use Costs) for the cost to use the equipment necessary for the project.

## 2.2.5 Supplies

The supplies needed to complete the project include:

- PVC pipeline: \$317,367
- Meters and valves: \$60,000

The total supplies cost for the project is \$377,367. Refer to Attachment A for more details on the supplies costs.

## 2.2.6 Contractual

The trenching work for the project will be contracted out to a third party. The contractual costs for trenching by Lafferty Construction Co. will be \$41,000.

## 2.2.7 Construction

The construction budget for the project includes:

- Recipient-owned equipment (total cost: \$24,047)
  - Excavator (John Deere 130)
  - Excavator (John Deere 240 D)
  - Loader (John Deere 644 J)
  - Grader (John Deere 570 A)
- Construction materials (total cost: \$15,872)
  - Road crossings and culverts: \$13,372
  - Concrete structures: \$2,500

The total construction cost for the project is \$39,919. Refer to Attachment A for more details on the construction costs. The costs of PVC pipe, meters, and valves are included under the supplies cost.

## 2.2.8 Other – Environmental and Regulatory Costs

For purposes of this budget proposal, environmental and regulatory compliance costs are estimated at approximately 1% of the total project cost. The Canal Company anticipates minimal environmental and regulatory compliance costs. The total budgeted amount for the environmental and regulatory compliance costs for the project is \$4,911.

## 2.2.9 Indirect Costs

There are no indirect costs associated with the project. All costs associated with the project are direct and can be documented as such.

## 2.2.10 Total Costs

Total cost for the project is \$501,853.

## Environmental and Cultural Resources Compliance

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**Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.**

The project will have minimal impacts on the surrounding environment. The project site will be accessed, and all work will occur within the Canal Company's right-of-way or on private property. Excavation in soil and rock will be required to install the pipeline. During construction, best management practices, such as sprinkling the ground surface for dust control, will be maintained in ground-disturbance areas.

**Are you aware of any species listed or proposed to be listed as a federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?**

No known environmental resources of special value occur, including rivers, streams, lakes, fisheries, threatened plant and animal communities, spawning grounds, or flyways.

**Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States"? If so, please describe and estimate any impacts the proposed project may have.**

No wetlands or other surface waters that could fall under Clean Water Act jurisdiction exist in the project area.

**When was the water delivery system constructed?**

Construction of Salmon Falls Dam began in 1908 and the first delivery was in 1911. System improvements have been made to the present day.

**Will the proposed project result in any modification of or effects to individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.**

As part of this project, Lateral 110 will be converted from an earthen lined canal to a pressurized pipeline for irrigation water conveyance. No modifications to individual features outside the canal are proposed.

**Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.**

The land adjacent to this project has been grazed or cultivated in prior years and does not likely represent historic conditions. No aboveground features are present in the project area.



**Are there any known archeological sites in the proposed project area?**

No identified or known cultural resources of significance exist within the Canal Company service area.

**Will the proposed project have a disproportionate and adverse effect on any communities with environmental justice concerns?**

The project will not have a disproportionately or adverse effect on any communities with environmental justice concerns.

**Will the proposed project limit access to, and ceremonial use of, Indian sacred sites or result in other impacts on Tribal lands?**

The project will not limit access to or ceremonial use of Indian sacred sites or result in other impacts on Tribal lands.

**Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?**

The project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area.

## Required Permits or Approvals

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### 4.1 Federal Permitting

Federal approvals for the project include NEPA, NHPA, and ESA compliance. Earthwork will be limited to the right-of-way and there are no known environmental or cultural resources of special value; therefore, it is expected that activities required for NEPA, NHPA, and ESA compliance will be minimal.

- It is anticipated that the project does not have significant impacts on the environment and will fit within a recognized categorical exclusion to NEPA. Environmental impacts will be minimized during construction using best management practices.
- Federal cultural resource laws and regulations, including the NHPA and Native American Trust Assets, must also be reviewed prior to project construction. The costs to conduct all necessary field surveys and literature reviews will be shared between the Canal Company and Reclamation. It is anticipated that the project will not have the potential to cause effects to historic properties and that the findings will be concluded in the Section 106 process.
- It is anticipated that there are no endangered or threatened species or designated critical habitat in the project area and that no further compliance measures are required.

If awarded the WaterSMART grant by August 2024, the Canal Company is confident that necessary approvals can be secured by fall 2024.

### 4.2 State Permitting

There are no state permitting requirements.

### 4.3 Local Permitting

There are no local permitting requirements.

SECTION 5

## Office Resolution

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The Canal Company is committed to the financial and legal obligations associated with the receipt of financial assistance under the WaterSMART Grants Program. The Canal Company has the resources and capability to provide the amount of funding for contributions specified in the funding plan. The Canal Company will work with Reclamation to meet the established deadlines to enter into a cooperative agreement.

An official resolution that identifies the official with legal authority to enter into agreement was adopted by the Canal Company Board of Directors at its meeting on January 3, 2024 (Attachment B).

## References

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**OFFICIAL RESOLUTION OF THE  
SALMON RIVER CANAL COMPANY**

Resolution NO.2024-02

**WHEREAS**, the United States Department of Interior, Bureau of Reclamation, has announced the WaterSMART Grants for Water and Energy Efficiency Projects for Fiscal Year 2024 to provide financial assistance to water managers.

**WHEREAS**, Salmon River Canal Company has a present need for funding to install an irrigation pipeline to conserve water and energy.

**WHEREAS**, The Salmon River Canal Company will work with the Bureau of Reclamation to meet all established deadlines for entering into a cooperative agreement.

**NOW, THEREFORE, BE IT RESOLVED** that the Salmon River Canal Company Directors agree to and authorize the following:

- The Salmon River Canal Company Directors have reviewed and support the proposal submitted.
- The Salmon River Canal Company is capable of providing the amount of funding needed for the matching grant from the WaterSMART Grant.
- If selected for a WaterSMART Grant, Salmon River Canal Company will work with the Bureau of Reclamation to meet the established deadlines for entering into a cooperative agreement.

DATED: January 3, 2024



Orrin Parrott, President  
Salmon River Canal Company

ATTEST:



Alex Joslin, Secretary  
Salmon River Canal Company