Larimer County Canal Automation and Efficiency Project

BUREAU OF RECLAMATION

WaterSMART Grants: Water and Energy Efficiency Grant Application

FISCAL YEAR 2024

R24AS00052

Water Supply and Storage Company (WSSC)

Title Page

WaterSMART Grants: Water and Energy Efficiency Grants (WEEG) Fiscal Year 2024 and 2025

Notice of Funding Opportunity No. R24AS00052

Project Name

Larimer County Canal Automation and Efficiency Project

Project Location

Larimer County Canal, Colorado

Applicant

Water Supply and Storage Company (WSSC)
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February 22nd, 2024

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Executive Summary

Date:	February 22, 2024
Applicant Name:	Water Supply and Storage Company (WSSC)
City, County, State:	Fort Collins, Larimer and Weld Counties, Colorado
Applicant Category:	Category A (Mutual Ditch Company – with water delivery authority)
Estimated Project Duration:	15 Months
Estimated Completion Date:	September 2025
Federal Facility:	No

Project Summary

The Water Supply and Storage Company (WSSC), near Fort Collins, CO, plans to enhance water management through the implementation of three in-canal SCADA (Supervisory Control and Data Acquisition)-controlled check structures, within the Larimer County Canal (LCC), aiming to refine measurement and regulation of water distribution, through canal automation and irrigation monitoring. The LCC, pivotal in WSSC's distribution network, spans approximately 40,000 acres across Larimer and Weld Counties within the South Platte Basin and is connected to Reclamation by WSSC's deliveries from the Colorado-Big Thompson Project. This project will revolutionize water management by introducing remote monitoring capabilities, and gate control access, thereby introducing a mechanism for efficient water management while minimizing resource use and environmental impacts.

The expected benefits include increased water use efficiency for both agricultural and municipal uses, reduced water waste, and improved resilience to climate change. This project is strategically aligned with the 2023 Colorado Water Plan's objectives - Meeting Future Water Need, Wise Water Use, and Robust Agriculture. This this project also resonates with the *2022 South Platte Basin Implementation Plan's* goal of maximizing existing storage utility through real-time automation and delivery optimization. Collaborating closely with local agricultural, municipal, and water district partners the WSSC has gained support from a full spectrum of stakeholders, the proposed LCC water delivery efficiency project will substantially benefit its stockholders and reinforce sustainable water practices in the region. Additionally, this project addresses the critical need for modernized water infrastructure to support agricultural productivity, urban water supply, and the overall sustainability of water use in the region.

The project, with a total cost of $2,677,605, seeks $1,200,000 in federal funding through the WaterSMART Water and Energy Efficiency Grant, with WSSC contributing the remaining 55% of the funding. This leveraging of funds highlights WSSC's commitment to enhancing water deliveries across over 6,500 acres, significantly impacting stockholders and the region's agricultural landscape.

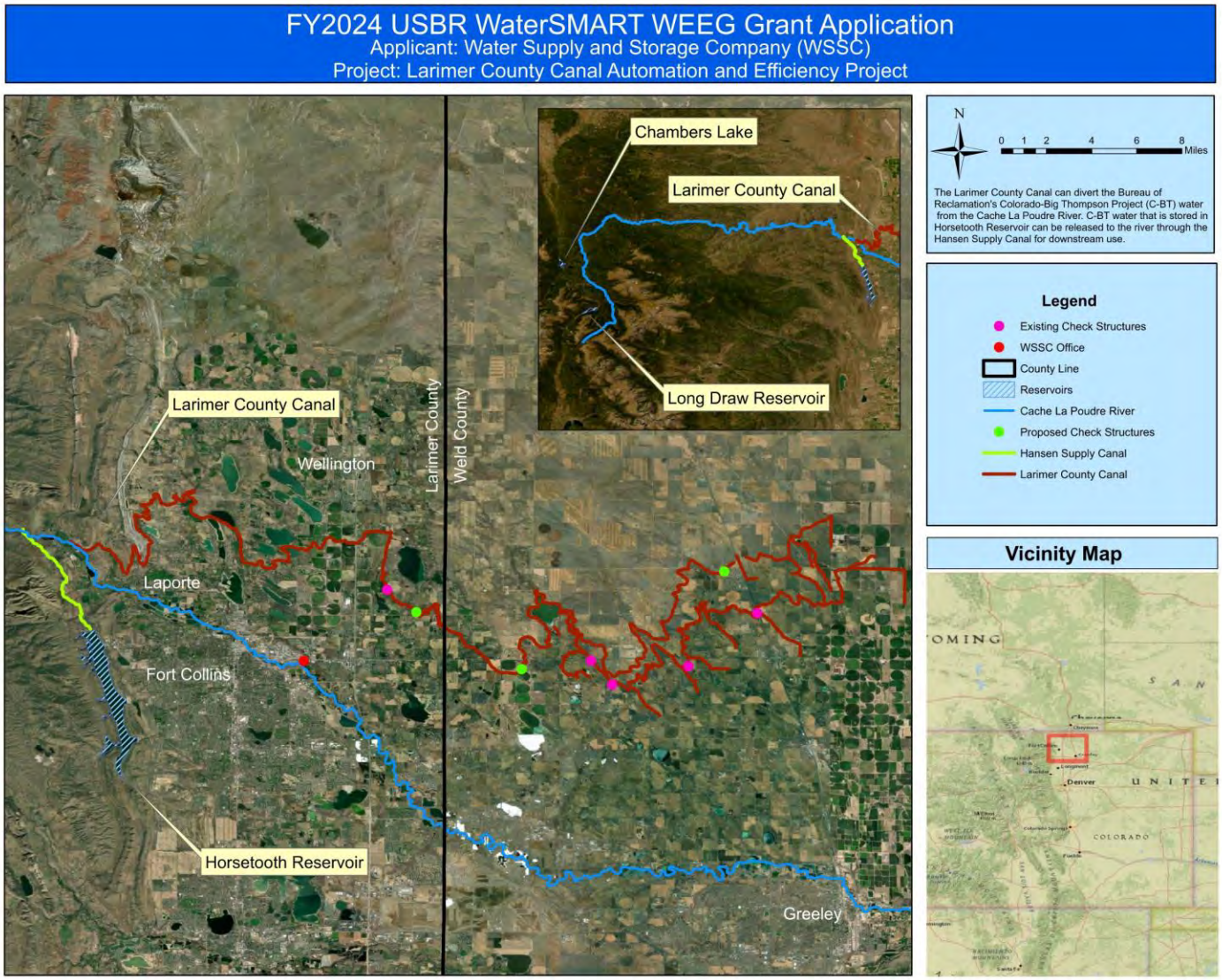
Project Location

The project is just east of Fort Collins, Colorado, in Larimer and Weld counties, and consist of three (3) distinct locations within WSSC's service area. One of the three in-canal SCADA-controlled check structures will be situated in Larimer County, while the other two will be constructed in strategic locations in Weld County. The project is located in both the Cache la Poudre River Basin, and in the South Platte River Basin. The specific project latitudes and longitudes are in **Table 1.** Also see the **Project Vicinity Map** in **Figure 1**.

Table 1. Project Location

Project Location		
Site Name/Designation	Latitude	Longitude
3A	40°36'42.08"N	104°57'43.81"W
3C	40°34'30.53"N	104°53'40.19"W
Pierce-D	40°38'15.95"N	104°45'52.13"W

Figure 1. Project Vicinity Map



Project Description

Project Overview

Water Supply Storage Company (WSSC) is initiating a transformative project within its system to simultaneously serve both agricultural and municipal shareholders. The Larimer County Canal (LCC) is the principal water distribution channel serving approximately 40,000 acres in Larimer and Weld Counties and has been for nearly 150 years. This project proposes installing three (3) automated Rubicon FlumeGates within the LCC, designed to precisely regulate water surface elevations within the canal. This strategic upgrade will enhance the efficiency of water deliveries to agricultural users and ensure the delivery of water to municipalities, while upholding historical water deliveries to irrigated farmlands. By implementing these advanced water control gates, WSSC will be able to significantly improve water management practices, supporting both agricultural and urban water needs in a sustainable and efficient manner.

Proposed Water Delivery Improvements

The project involves the installation of three (3) in-channel hydraulic check structures with automated Rubicon FlumeGates. The project will increase the efficiency of water deliveries at three key locations while maintaining the viability of irrigation deliveries through existing farm headgates. Each location's work will progress through design, contracting, and construction phases.

Figure 2. 2023 Double FlumeGate Installation with Concrete Work Complete and Backfill Commencing

Project Approach

Construction work consisting of excavation, earthwork, and gate installation will be performed in sections and work will advance incrementally along the canal. As discussed in the **Budget Narrative**, all construction work will be performed by a general contractor that is qualified and experienced in earthwork and concrete installation projects. Contractor selection will be made as part of a bid selection process. All staff, equipment, and materials required to complete the construction work will be provided by the selected contractor.

Mr. Donald Frick, P.E., General Manager, will manage this project for WSSC. Mr. Frick will be the point person for all design and construction activities, and he will be responsible for ensuring each of the following tasks are completed on time and within the proposed budget.

WSSC has selected Schnabel Engineering, on a qualifications basis to develop the final design. As the Lead Engineer, Brianna Crotty, P.E. will serve as the technical lead for this project. They will also work closely with the project managers and the designated construction manager.

Project Task Summary

1. Surveying and Design
A detailed topographic survey will be completed in order to identify existing high-water marks, document data needed to define the canal geometry, and identify other critical topographic data necessary for final design. The survey data will be used by the engineer to develop a hydraulic model and design drawings.

By the time the proposed project moves forward, the Company will have designed and constructed four similar structures along the length of its main delivery canal. The structures comprising the proposed project are similar in scope and scale and so the Company expects the design process to proceed quickly.

Each design consists of concrete foundation, wing walls, and, for double-gate installations, a center armored pillar section. The structures are sized with hydraulic analysis (HEC-RAS) to maintain upstream water levels and still provide adequate freeboard. The sizing analysis takes into consideration the hydraulic analysis combined with the selection of gate sizes offered by Rubicon Water.

The design phase is expected to begin in June 2024 and be completed by September 2024. An example design from past projects is included with this application.

2. Environmental and Cultural Resources Compliance
WSSC will work with Reclamation's local area office to ensure all environmental and cultural resource compliance requirements are completed prior to project construction.

3. Permitting and Approvals

The permitting and approval process is expected to be minimal and straightforward because the project will be located exclusively within WSSC's existing canal easement. While no permits are anticipated to be required for this project, WSSC will ensure any required permits or approvals are completed prior to project construction.

4. Easements and Right-of-Way

The project work will occur within WSSC's existing canal easement, and no additional easements or rights-of-way will be required.

5. Contracting

Once the engineering design is completed, the design will be sent to contractors for bid. The process for selecting a contractor and contract execution is expected to take about 45 days.

6. Construction Installation of Field Headgates and Measurement Devices

Construction usually begins with dewatering the site, as necessary. Some locations along the canal do not normally drain after the irrigation season or have standing water from storms.

Following dewatering, the contractor will use a large excavator to over-excavate the site. Road base material will then be brought in and compacted to form the base for the foundation. Once the base is compacted, crews will form up the foundation and lay rebar and water stop material for the joints to the wing-walls. The concrete foundation will then be poured, formwork removed, and new formwork installed for the wing-walls and center pillar section. After the wing-walls are poured, and strength testing on concrete samples from the pours shows adequate strength, the structure will be backfilled and compacted. Once backfill is complete, rip rap will be installed on the upstream and downstream ends of the structure and grouted into place as necessary.

Rubicon Water will next install the frames for the FlumeGates, followed by installation of the gates themselves. A walkway will be installed across the structure, along with solar panels, control pillar, and cellular communication hardware. The gates will then be tested and commissioned.

Finally, for security purposes, fencing will be installed around the structure on both sides of the canal.

Figure 3. 2023 Single Flumegate Installation with Concrete Work Complete and Backfill Commencing

System Overview

WSSC diverts water from the Cache la Poudre River as natural flow to irrigate approximately 40,000 acres of productive agricultural land in Larimer and Weld Counties near Fort Collins, Colorado. The canal system begins at the main diversion structure near Laporte, CO, and continues east past Pierce and Ault, CO.

WSSC is a contract allottee with the Northern Colorado Water Conservancy District (Northern Water). Norther Water operates the Colorado-Big Thompson (C-BT) Project, which diverts water from the Colorado River, and imports it for agricultural, municipal and industrial uses on the Front Range of Colorado. WSSC is the allottee of 1,425 units of C-BT. Additionally, WSSC participates in trades related to the C-BT project water all totaling approximately 5,000 acre-feet of water per year. WSSC's shareholders are located in the Northern Colorado Water Conservancy District and pay annual property taxes to the District. The proposed Project will increase the efficiency of WSSC's use of water from the CBT Project.

Improvement Needs

Municipalities have purchased roughly 75% of the outstanding shares in WSSC, with plans to remove the water associated with the shares from Larimer County Canal over time. The removal of water from the canal will render the remaining headgates serviced by the canal incapable of drawing adequate supplies of water. In order to maintain the viability of deliveries under the Larimer County Canal, WSSC has opted to approach the problem in a manner that has the dual benefit of maintaining deliveries and improving overall system efficiency through canal automation.

Sources of Water Supply

WSSC's primary source of water and the source of the Larimer County Canal is the Cache la Poudre River (**Figure 4**). Water is also delivered to the Poudre River from trans basin and reservoir sources upstream of the main diversion canal.

Figure 4. Source of Water Supply (Cache la Poudre River)

Water Rights

WSSC manages an incredibly complex portfolio of water rights, including direct flow, trans-basin and storage basins. The primary sources for these rights stem from the Cache la Poudre River,

Colorado River, and Laramie River. These rights are crucial for meeting the agricultural and municipal water needs within the region, illustrating the depth of water resource management required. For detailed information on WSSC's water rights and specific allocations, refer to the **Appendix A**.

Historical Diversion Rates

The average diversion from the main headgate at the Cache la Poudre River, as mentioned in the project narrative, is over 69,000 acre-feet. This figure is crucial for understanding the scale of water management and the potential impact of the LCC Automation and Efficiency Project on water conservation and efficiency. The historical diversion rates provide a baseline against which the effectiveness of the project in reducing water waste and improving delivery efficiency can be measured. The historical diversion table can be found in the **Appendix A**.

Evaluation Criteria

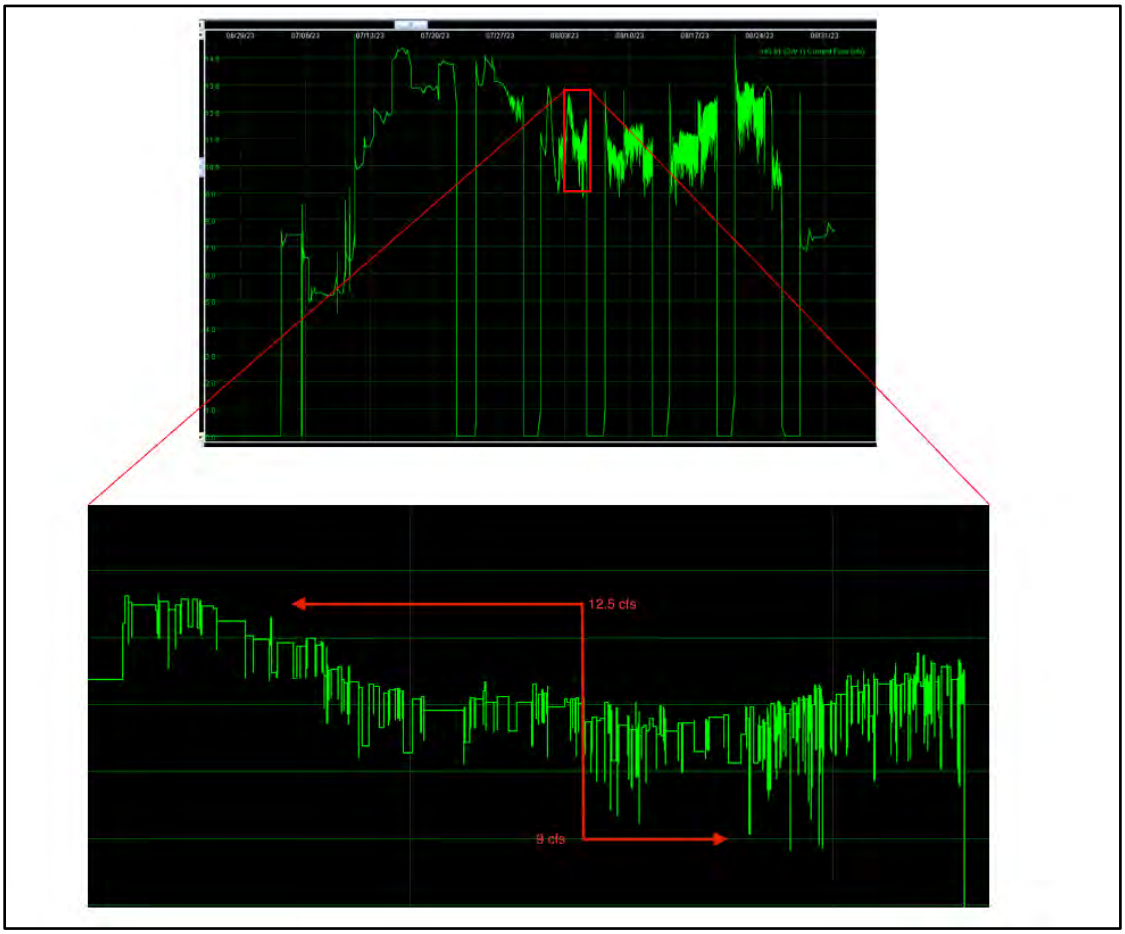
A. Criterion A—Quantifiable Water Savings

Through this project WSSC aims to address the issue of variable water deliveries for irrigation, which leads to significant on farm water waste. The variability stems from the manual adjustment of farm headgates along the LCC, compounded by, intra-day flow fluctuations causing highly variable water surface elevations which, in turn, results in highly variable delivery rates. The minor fluctuation in water surface elevations can lead to a substantial difference in delivery rate, illustrating the inefficiency of the current system. For example, using the standard orifice equation for discharge through a standard 12-inch gate, a fluctuation in water surface elevation of just 0.5 feet can result in a delivery rate difference of +/- 0.6 cfs, or 1.19 acre-feet per day (roughly 10%). When shareholders set their fields for delivery based on the morning set-point and the flow increases, this results in water running off the fields unused and wasted.

The City of Thornton's comprehensive analysis of the historical water use on roughly from about 47% of the farms served by WSSC from the Larimer County Canal, showed a considerable amount of water being wasted annually. Using the methodology presented in the SCS National Engineering Handbook, Section 15, Chapter 5, and on-farm investigations of irrigation practices for each individual farm, determined that an average of 6,415 acre-feet per year left the farms as wastewater at the end of the farms, or about 22 acre-feet per share. This represents 23.4% of the average annual water deliveries (22 af / 70 delivery days / 1.34 af/day). Extrapolating the analysis for the 79.25 shares that will be directly served by the proposed project, this equates to an average annual amount of wastewater leaving from the farms of 1,743.5 acre-feet that may be significantly reduced as a result of the proposed project (**Table 2**).

In order to further evaluate and quantify the water savings from the proposed project, in 2023 WSSC installed an electronic continuous flow recorder on one of its farm headgates. The recorded flow is shown below:

Figure 5. 2023 Data from Recently Completed Similar Project in Project Area



As seen in **Figure 5**, the data shows one week in August, the flow rate varied by as much as 3.5 cfs, or nearly 30%.

Using the above data for the 2023 irrigation season, WSSC completed an analysis whereby the actual flow rate was compared to the flow rate set at 7:00 AM each morning. WSSC computed the amount of water delivered in excess of the set flow rate and totaled it for the irrigation season. The volume of over deliveries totaled 15.3% over the season (**Figure 6**).

Figure 6. 2023 Data Showing Percentage of Over-Deliveries

Average Daily Delivery (cfs)

Day	July	August
1	0.0	11.5
2	0.0	10.1
3	4.5	11.6
4	7.4	10.6
5	7.1	3.5
6	5.7	0.0
7	5.3	7.7
8	5.2	10.2
9	5.4	10.6
10	6.3	11.0
11	9.0	10.5
12	10.5	4.0
13	11.6	0.0
14	11.8	7.5
15	13.3	10.6
16	14.3	10.6
17	13.3	11.2
18	12.8	11.8
19	12.9	4.8
20	13.4	0.0
21	13.8	9.1
22	3.9	12.4
23	0.0	12.1
24	8.2	12.5
25	13.6	10.7
26	13.3	3.6
27	12.8	0.0
28	12.3	4.1
29	5.9	
30	0.0	
31	6.8	

			Total
Total (cfs)	260.4	222.2	482.6
Total (AF)	516.4	440.8	957.2

Average Daily Over-Delivery (cfs)

Day	July	August
1	0.0	1.1
2	0.0	1.0
3	0.0	0.3
4	0.0	0.9
5	0.4	7.1
6	1.2	3.0
7	0.4	0.0
8	0.0	0.4
9	0.2	0.2
10	0.1	0.2
11	0.0	0.8
12	0.0	6.6
13	0.0	3.0
14	0.0	0.0
15	0.0	0.0
16	0.0	0.2
17	0.7	0.1
18	0.3	0.1
19	0.1	7.1
20	0.0	3.4
21	0.0	0.0
22	8.9	0.1
23	3.6	0.3
24	0.0	0.1
25	0.0	1.6
26	0.3	6.5
27	0.3	2.7
28	0.4	0.0
29	6.5	
30	3.6	
31	0.0	

			Total
Total (cfs)	26.9	46.8	73.8
Total (AF)	53.4	92.9	146.4

Percent Over-Delivery **15.3%**

As shown above, the total annual water lost due to over-deliveries was 15.3%. WSSC sets headgates on the basis of 0.677 cfs per share, or 1.34 acre-feet per day under ideal conditions. As mentioned above, the check structures proposed under this grant application will regulate the water surface elevation in the Larimer County Canal for headgates serving a total of 79.25 shares. The number of delivery days in the WSSC system averages 70, and the average annual total deliveries for the 79.25 shares is 7,433.65 acre-feet (79.25 shares x 1.34 af/day x 70 days). Due to the unregulated nature of the water surface elevation in the ditch, WSSC estimates over deliveries for these shares at 1,137.34 acre-feet (7,433.65 af x 15.3%), which is the average annual amount of expected water savings from the proposed project.

Table 2. Water Waste and Savings Measurements

Water Waste & Savings	Measurement
Average Water Waste per Share	22 acre-feet per share
Total Annual Water Waste	6,415 acre-feet
Total Shares Affected	79.25 shares
Average Annual Water Deliveries	7,433.65 acre-feet (79.25 shares x 1.34 af/day x 70 days)
Estimated Annual Savings	1,137.34 acre-feet (15.3% of total deliveries)

1. Describe the amount of estimated water savings

WSSC will be able to conserve an estimated 1,137.34 of acre-feet annually (afa) during the typical 70-day irrigation season as a direct result of installing automated gates and measurement devices.

To put this water savings into perspective, an acre-foot of water equating to approximately 325,851 gallons, represents a substantial volume that when conserved can have a significant impact on both community water supply and agricultural practices. Based on the EPA's estimations, the average American household uses around 300 gallons of water per day, totaling about 109,500 gallons annually (EPA How We Use Water, 2023). This means the project's annual water savings of 1,137.34 acre-feet, or roughly 370 million gallons, could theoretically meet the yearly water needs of over 3,378 households.

In the context of agriculture, this volume of water saved could irrigate hundreds of acres of farmland for an additional year, depending on the crop type and irrigation practices, thereby enhancing agricultural productivity and sustainability. The efficiency improvements and water savings are crucial, especially during periods of drought, as they help ensure water availability for critical needs and support sustained agricultural output despite variable weather conditions.

Additionally, the conservation efforts have a positive impact on the river systems from which the LCC draws water from. By reducing the need for water withdrawals, this project helps maintain more consistent river stage levels, contributing to the ecological health of the river ecosystem.

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

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

The variability in water delivery rates, both within a day and across the week, leads to challenges in managing water distribution precisely. As a result, excess water often leaves individual farms, constituting wasted water. This wasted water may flow back into nearby streams, overspill at the ends of ditches, or seep into the ground, not being utilized effectively for its intended agricultural purposes.

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?

The current losses primarily return to the stream system, where they may contribute to the overall water flow but are not directly recaptured or used for other specific purposes within the immediate area. This return flow may potentially benefit downstream users by increasing the available water volume. However, without targeted management or treatment, these losses do not directly address water quality issues or support specific needs such as replenishing groundwater tables or enhancing habitat quality.

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?

No.

3. Describe the support and documentation of estimated water savings.

The support and documentation of estimated water savings is based upon WSSC's proactive measures and empirical data collection. WSSC has already demonstrated its commitment to improving water efficiency by installing an electronic continuous flow recorder on one of its farm headgates in 2023. This installation provided valuable data on water flow rates. The analysis of this data for the entire 2023 irrigation season allowed WSSC to identify and quantify the extent of over-deliveries, which amounted to 15.3% of the season's total water distribution.

Further support for the estimated water savings comes from a comprehensive analysis conducted by the City of Thornton, which examined the historical consumptive use of water from about half of the farms served by WSSC through the LCC. This analysis, utilizing methodologies from the SCS National Engineering Handbook and on-farm irrigation practice investigations, revealed that an average of 6,415 acre-feet per year was wasted. Through this analysis and the 79.25 shares directly served by the proposed project, WSSC estimates that the implementation of automated headgates and measurement devices could result in annual water savings of 1,137.34 acre-feet. This figure represents a significant reduction in water wastage, supporting the project's goal of enhancing water delivery efficiency and sustainability across the system.

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

(3) Irrigation Flow Measurement:

a. How have average annual water savings estimates been determined? Please provide all relevant calculations, assumptions, and supporting data.
The estimated annual water savings of 1,137.34 acre-feet by WSSC is based on empirical data collection and proactive measures. Installation of an electronic continuous flow recorder at a farm headgate in 2023 provided data on water flow rates, identifying over-deliveries amounting to 15.3% of the season's total water distribution. Additionally, a comprehensive analysis by the City of Thornton on historical consumptive use revealed an average waste of 6,415 acre-feet per year across about half of the farms served. Utilizing methodologies from the SCS National Engineering Handbook and on-farm irrigation practice investigations, this analysis, along with the direct data from the electronic recorder, supports the estimated savings.

Calculations and Assumptions

- Over-deliveries: 15.3% of total season distribution.
- Historical Waste: 6,415 acre-feet/year across 47% of the farms in the overall system.
- Projected Savings: Implementation of automated headgates and measurement devices leads to an estimate of 1,137.34 acre-feet in annual water savings.

b. Have current operational losses been determined?
Operational losses have been quantified through the variability in water deliveries, attributed to manual adjustments and intra-day flow fluctuations. This variability results in over-deliveries and wastage. The specific example previously described, shows that 0.5 feet fluctuation in water surface elevation through a standard 12-inch gate, can cause a delivery rate difference of +/- 0.6 cfs, or roughly 1.19 acre-feet per day. This represents about 10% variability, which significantly contributes to operational inefficiency. The comprehensive analysis by the City of Thornton highlighted an average annual waste of 6,415 acre-feet or about 22 acre-feet per share, further substantiating the current operational losses.

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?
The flows at the proposed sites are not currently measured in a manner that would align with the objectives of the proposed project. The introduction of electronic continuous flow recorders, as demonstrated by the 2023 pilot installation on one of the farm headgates, represents a shift towards more precise and data-driven water management practices.

d. Provide detailed descriptions of all proposed flow measurement devices, including accuracy and the basis for the accuracy.
The accuracy of these newly proposed measurement devices, the Rubicon FlumeGates, is expected to be within +/- 2.5%, adhering to standards outlined by ISO 4064/OILM R 49. This level of accuracy has been established through the manufacturer's specifications and industry standards, ensuring reliable data for water management decisions.

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

While the total volume of water delivered to farms annually might not decrease, the efficiency improvements from the proposed project are expected to enhance the utilization of water for agricultural purposes. By optimizing delivery times and reducing losses, more of the water supplied can be directly used by crops, effectively increasing water use efficiency. This enhanced efficiency means that water is used more productively, leading to potential improvements in crop yield and agricultural health without necessarily increasing the total volume of water used.

f. How will actual water savings be verified upon completion of the project?
To verify actual water savings upon completion of the project, WSSC will utilize the electronic continuous flow recorder installed on farm headgates, which provides detailed data on water flow rates. This device, coupled with the methodologies from the SCS National Engineering Handbook and on-farm irrigation practice investigations, will be instrumental in comparing pre- and post-implementation water usage. Monitoring adjustments, flow rates, and delivery efficiencies, along with comparing these metrics against historical data, will enable WSSC to quantify the actual water savings achieved. This approach ensures a data-driven verification of the project's impact on water conservation.

B. Criterion B—Renewable Energy

Subcriterion B.1—Implementing Renewable Energy Projects Related to Water Management and Delivery
Subcriterion B.1 does not apply to this project.

Subcriterion B.2—Increasing Energy Efficiency in Water Management

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

a. How will the energy efficiency improvement combat/offset the impacts of climate change, including an expected reduction in greenhouse gas emissions.
Regional electric supply is generated in part by a coal fired power plant. The use of solar energy will not require any additional coal emissions. The gates operate on 160 watt solar panels, and are expected to operate two hours per day during the irrigation season. The expected power savings using solar power is 67.2 KWH per year (3 gates x 2 hours/day x 70 days x 160 watts).

b. 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.
Our energy savings estimate is derived from the operational efficiencies gained by installing automated gates, which notably decrease the necessity for daily manual adjustments by ditch riders. Specifically, the automation will halve the number of trips required to adjust farm headgates along approximately 16 miles. The energy savings is based on eliminating the need for the watermaster to make daily trips to each of the field headgates. These trips are estimated

at approximately 16 miles per day each way for a total reduction of 2,240 miles driven per 70-day irrigation season. The assumed gas millage is 21.6 miles per gallon as per EPA estimates, the estimated gallons of fuel saved is approximately 104 gallons annually.

Calculation:

- 16 miles each way equated to 32 miles per day
- 70 irrigations days
- Total miles annually: (70 days * 32 miles) = 2,240 miles driven annually
- Assumed gas mileage is 21.6 mpg
- Total gallons consumed annually: (2,240 miles /21.6 mpg) = 103.7 gallons per year

c. Will the project result in reduced vehicle miles driven, in turn reducing greenhouse gas emissions? Please provide supporting details and calculations.
Yes, the project will indeed lead to a reduction in vehicle miles driven, subsequently decreasing greenhouse gas emissions. The implementation of automated headgates eliminates the necessity for the watermaster to conduct daily visits to the canal structure for manual adjustments. Utilizing the U.S. EPA's Greenhouse Gas Equivalencies Calculator (U.S. Environmental Protection Agency, 2023) as a reference, the project is forecasted to conserve around 84 gallons of gasoline annually. This reduction in fuel consumption translates to a decrease of approximately one metric ton, or 922 kg, of carbon emissions each year, as per the U.S. Environmental Protection Agency's 2023 guidelines. Moreover, the initiative to power the headgates with solar arrays not only decreases energy consumption but also negates the requirement for installing additional infrastructure, such as power poles, for their operation.

Calculation:

- 103.7 gallons per year in fuel saved
- Emissions per gallon: 8.887 kg of CO2 per gallon (based on EPA estimates)
- Total emissions saved annually (103.7 * 8.887) = 921.6 kg of CO2
- Total 0.9216 Metric Tons of CO2

d. 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).
This project includes installing small-scale solar arrays as part of a SCADA system to power the automated gates and measurement devices. This will result in minimal energy savings and eliminate the need for power lines to be installed at each headgate.

C. Criterion C—Other Project Benefits

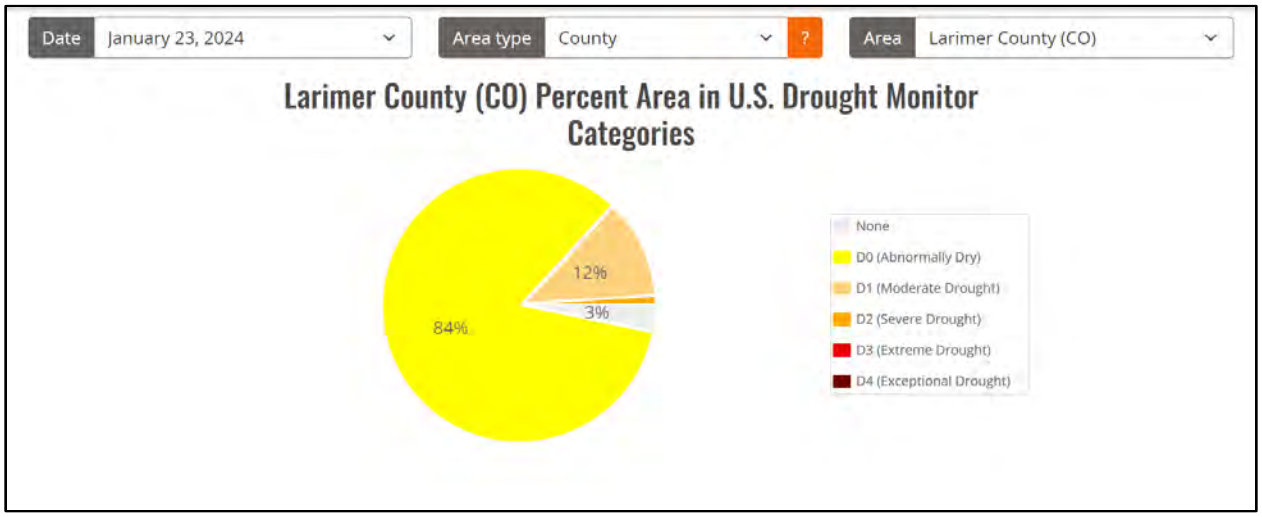
1. Resilience and Sustainability Benefits. Will the project address a specific water and/or energy sustainability concerns?

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

Recent, existing, or potential drought or water scarcity conditions in the project area

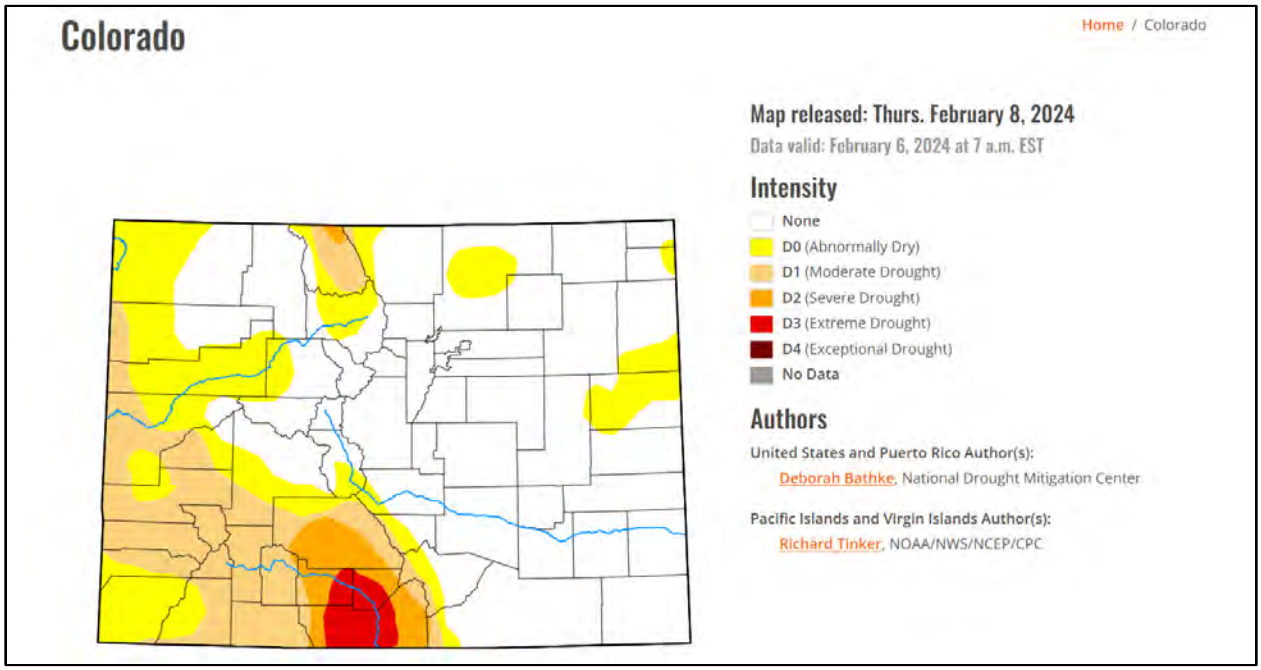
Ongoing drought conditions continue to be a critical problem throughout Colorado. The U.S. Drought Monitor currently describes 84% of Larimer County, Colorado as D0 (Abnormally Dry), 12% D1 (Moderate Drought), and 3% D2 (Severe Drought) (U.S. Drought Monitor, 2024). The area of Fort Collins, CO experienced an extreme drought in 2020 and following the effects of wildfires and the Horsetooth Outlet Project, enacted water restrictions to help lower water demand (City of Fort Collins, 2024), seen in **Figure 7.**

Figure 7. Drought Conditions in Larimer County, CO



Throughout the State of Colorado, there are currently areas of D3 (Extreme Drought) (U.S. Drought Monitor, 2024), see current drought map below in **Figure 8**. Historically observed impacts in D0 areas include decreased hay production and dry rangeland. In D1 areas, dryland crops suffer, Pheasant population declines, rangeland growth is stunted, very little hay is available, and wildfires increase. In D2 areas, farmers reduce planting, fire season is extended, and surface water levels are low. Once drought rises to D3 levels (currently in the state of Colorado), grasshopper and insect infestations are noted, large fires develop, pasture conditions worsen, reservoirs are extremely low, mandatory water restrictions are implemented, and the water temperature increases. Finally, in D4 areas, agricultural and recreational economic losses are large, and dust storms and topsoil removal are widespread.

Figure 8. Drought conditions in Colorado



Given Colorado's history experiencing multiple droughts impacting agriculture, water supply, hydropower, tourism and recreation, fisheries, and wildland fire incidents, there is a high potential for future drought conditions and water scarcity in the project area.

Project in an area that is experiencing, or recently experienced, drought or water scarcity
In most years, the irrigation system is water short, meaning that demands generally exceed the available water supply. This condition is only exacerbated during drought years. This project will increase the overall efficiency of the system allowing more water to be beneficially used each year, increasing agricultural productivity and yields.

Projected increases to the severity or duration of drought or water scarcity in the project area.
The Company's water supplies derive principally from runoff from snowmelt. It is predicted that by 2050, there will a 5-30% reduction in both April 1 snow-water equivalent and a 5-30% reduction in streamflow (Climate Change in Colorado Report, 2023). These changes will directly and adversely affect the available water supply for the Company.

b. 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 extreme drought experienced in Fort Collins in 2020, compounded by wildfires and the Horsetooth Outlet Project, previously necessitated water restrictions to mitigate demand. The state's reliance on snowmelt runoff for water supplies is under threat due to climate change predictions indicating a significant reduction in snow-water equivalent and streamflow by 2050. This reduction poses a direct challenge to the available water supply, exacerbating water

scarcity, especially during drought years when the irrigation system faces shortages, with demands often exceeding supply. However, the project this project is a step in the right direction to improve water management, reduce waste, and conserve the natural resources.

c. Please describe how the project will directly address the concern(s) stated above.
Once implemented the project will enhance the overall efficiency of the water management system, allowing for more beneficial use of water each year and mitigating the impacts of drought and water scarcity. By improving the precision in water distribution and management, the project contributes to energy sustainability by reducing the need for energy-intensive water supply and treatment processes, addressing both water and energy sustainability concerns in the face of changing climatic conditions.

d. 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 addition to increasing efficiency of farm deliveries, the project will allow WSSC to make more efficient use of water as it is released from reservoirs. Currently, when releases begin or end for an irrigation run, increases in the releases have to be staggered over several hours to achieve the proper overall delivery rate and volume. The project will allow automated control of water levels directly in the canal, reducing the need for the inefficient staggered reservoir releases.

e. 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 main benefit of the increase in efficiency is gained by reducing wastewater leaving individual farms; thus, the initial benefit will be increases in on-farm efficiency thereby increasing the beneficial use of the water delivered to the farms, thereby increasing agricultural production and yields.

Indicate the quantity of conserved water that will be used for the intended purpose(s).
This project is expected to result in an estimated water savings 1,137.34 acre-feet per year.

Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use
The increases in delivery efficiency will effectively result in reduced releases from the Company's reservoirs. That water will be reallocated to shareholders thereby increasing the overall beneficial use of water in the system and increasing agricultural production and yields.

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f. Will the project assist States and water users in complying with interstate compacts?
Not applicable.

g. Will the project help to prevent a water-related crisis or conflict? Is there frequently tension or litigation over water in the basin?
The project is necessary to permit simultaneous use of WSSC's water supplies for both irrigation and municipal purposes. The water used for municipal purposes is delivered higher in the system than it was historically when it was used for irrigation purposes. The removal of the water from the lower end of the system means that deliveries cannot continue to be made for irrigation purposes unless the water elevation in the canal is artificially increased through the use of check structures that are the subject of this application.

2. Ecological Benefits

a. 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 project's impact on species, particularly those that are federally threatened, endangered, or of significant recreational or economic importance, hinges on its ability to improve water management and habitat conditions. While specific species and their relationships to the water supply are not quantifiable through this project, enhanced water efficiency and stability could indirectly benefit species dependent on aquatic and riparian ecosystems. This improvement might support species currently affected by water management practices or those under conservation plans, contributing to their recovery and sustainability within the ecosystem.

b. 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 project is designed to improve water management efficiency, potentially allowing water to remain in the system for more consistent periods. This could result in more stable water temperatures and levels, enhancing recreational activities such as rafting, which rely on the release schedule of high mountain reservoirs, and benefiting ecosystem health. While the precise duration of increased water retention and its full benefits are not detailed, these efforts are in line with the project's goals to bolster water use sustainability and ecological well-being.

c. Will the proposed project reduce the likelihood of a species listing or otherwise improve the species status?
It's currently unknown whether this project will directly reduce the likelihood of species listing or improve the status of specific species. However, there could be indirect impacts on local ecosystems and species through improved water management and habitat conditions. Enhanced water efficiency and stability may contribute to healthier aquatic and riparian habitats, potentially benefiting species indirectly.

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

An additional benefit may include the revitalization of a 15-mile stretch of the Cache la Poudre River, between Black Hollow and Poudre Park, which currently lacks wildlife, including fish, due to the Cameron Peak fire of 2020. By enhancing water management practices, WSSC will better monitor high mountain reservoir release schedules that affect river flows and levels, and thus water into the LCC. Ultimately, this project is expected to benefit by helping to restore the wildlife ecosystem damaged by the wildfire, contributing to the restoration of natural habitats and biodiversity in this affected area.

3. Climate Change

a. Describe how the project addresses climate change and increases resiliency. For example, does the project help communities adapt to bolster drought resilience?
This project significantly enhances long-term drought resiliency for the agricultural sector dependent on WSSC by optimizing water management practices. By conserving water, it alleviates pressure on local water supplies, crucial for community sustenance during drought conditions. Given the high demand on the Cache la Poudre River, conserving surface water addresses the critical needs of regional water users.

The project aligns with the *2022 South Platte Basin Implementation Plan's* strategies for drought resilience and water efficiency. Through the installation of automation, this project will address basin priorities, as outlined in the *2022 South Platte Basin Implementation Plan* (pages 24-40). The proposed project maximizes the use of finite water supplies, which aligns with basin Priority #2 Maximum Development of Native South Platte Supplies. It also aligns with basin Priority #3 Maintaining and Improving Water Conservation and Efficiency through improved water delivery efficiency.

The remote monitoring capability, remote gate control access, and increased water supply efficiency provided by the project also aligns with the partner action categories in the *2023 Colorado Water Plan* (pages 175-181). The project aligns with the following Water Plan Funding Categories: Water Storage and Supply Projects (partner actions: Thoughtful Storage and Meeting Future Water Need), Conservation and Land Use Projects (partner action: Wise Water Use), and Agriculture Projects (partner actions: Robust Agriculture).

b. Does the project seek to improve ecological resiliency to climate change?
This project will improve ecological resilience to climate change by increasing the consistency of the natural flows in the Cache la Poudre River, which can mitigate conditions that foster harmful algae growth and pollution. The ability to better regulate river elevations in cooperation with local watershed health experts supports the survival of fish, wildlife, and plant communities during extended droughts and other climate impacts, contributing to a heathier and more resilient ecosystem.

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

An additional benefit of this project is the enhancement of water quality in the Cache la Poudre River by regulating river levels through a precise release schedule from high mountain reservoirs. This approach addresses the issues of water quality degradation by being able to prevent low flows that can lead to higher temperatures and harmful algae growth. The local fish and wildlife populations may benefit from consistent stream flows, elevations, and improved water quality.

By reducing the need for daily manual adjustment at canal structures through automation, the project lower air pollution related to transportation emission, further benefitting the environment.

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

Yes, this project includes installing solar-powered automated gates and measurement devices which will result in improved water management, reduced energy demand, and reduced greenhouse gas emissions. This is especially important during the summer months when high demand and high temperatures already strain the region's electricity grid.

Installing automated gates will also help reduce impacts of flooding events on the Cache la Poudre River by providing WSSC with the ability to divert flood flows quickly and efficiently into the canal to lower flood risk while maintaining consistent deliveries. The flood flows can then be dispersed throughout the delivery network and onto fields.

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

Yes, the project indirectly contributes to climate change resiliency by promoting a more adaptive water management system. This system can quickly respond to changing climate conditions, ensuring a reliable water supply during extreme weather events. By enhancing the efficiency of water use and distribution, it indirectly supports the broader goal of sustainable water resource management in the face of climate variability.

D. Criterion D—Disadvantaged Communities, Insular Areas, and Tribal Benefits

1. Disadvantaged Communities

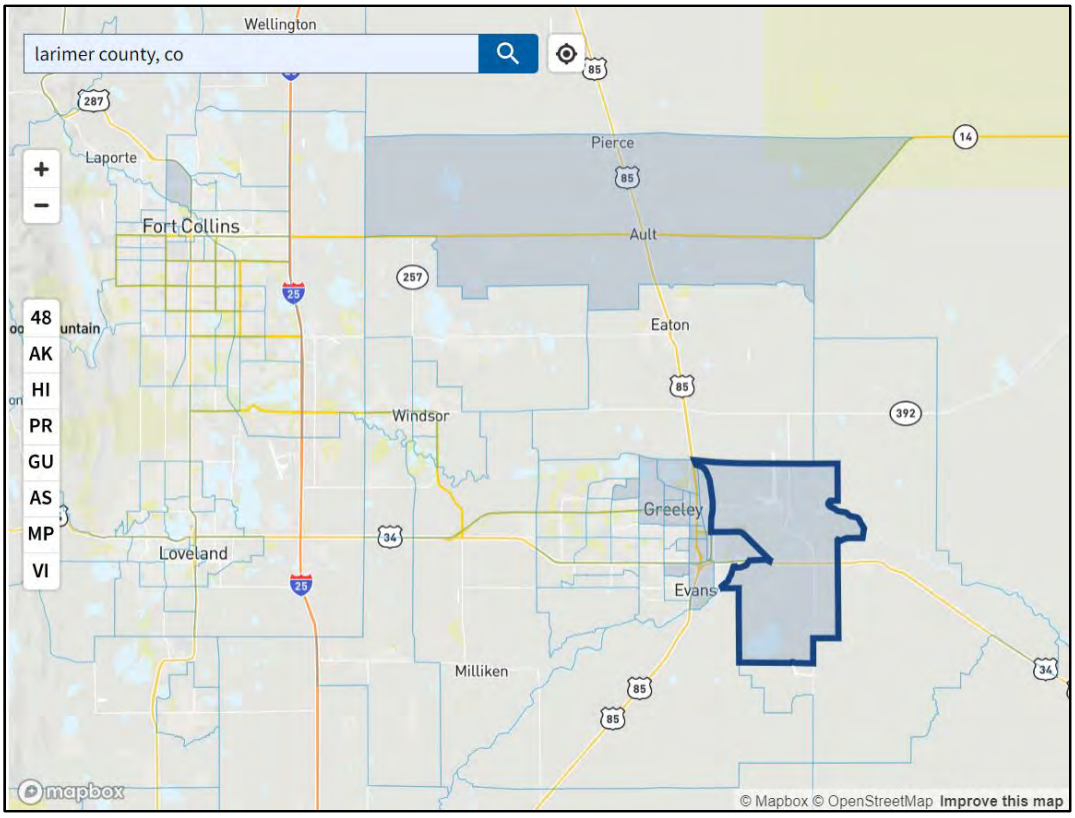
This project is vitally necessary for the delivery of water to WSSC's municipal shareholders. Additionally, this water efficiency improvement project is expected to result in an estimated water savings 1,137.34 acre-feet per year. Conserving this water will result in substantial benefits for the state, region, and especially for users along the canal. This project will increase the water supply, improve water quality, and provide numerous economic benefits for several nearby disadvantaged communities which include areas of Larimer, Weld, and Adams Counties.

The project area covers several census tracts that are considered disadvantaged (Climate and Economic Justice Screening Tool, 2024), please see **Table 3** and **Figures 9 and 10**.

Table 3. Disadvantaged Census Tracts in Project Area

Disadvantaged Census Tracts in Project Area		
Larimer County	**Weld County**	**Adams County**
08069001304	08123002300	08001008603
	08123001417	08001008506
	08123001300	08001009203
	08123001201	08001009202
	08123000600	08001009316
	08123000501	08001009318
	08123000705	08001009320
	08123000502	08001009309
	08123000402	
	08123000100	
	08123000703	
	08123000800	
	08123000701	
	08123001004	
	08123001004	
	08123001003	

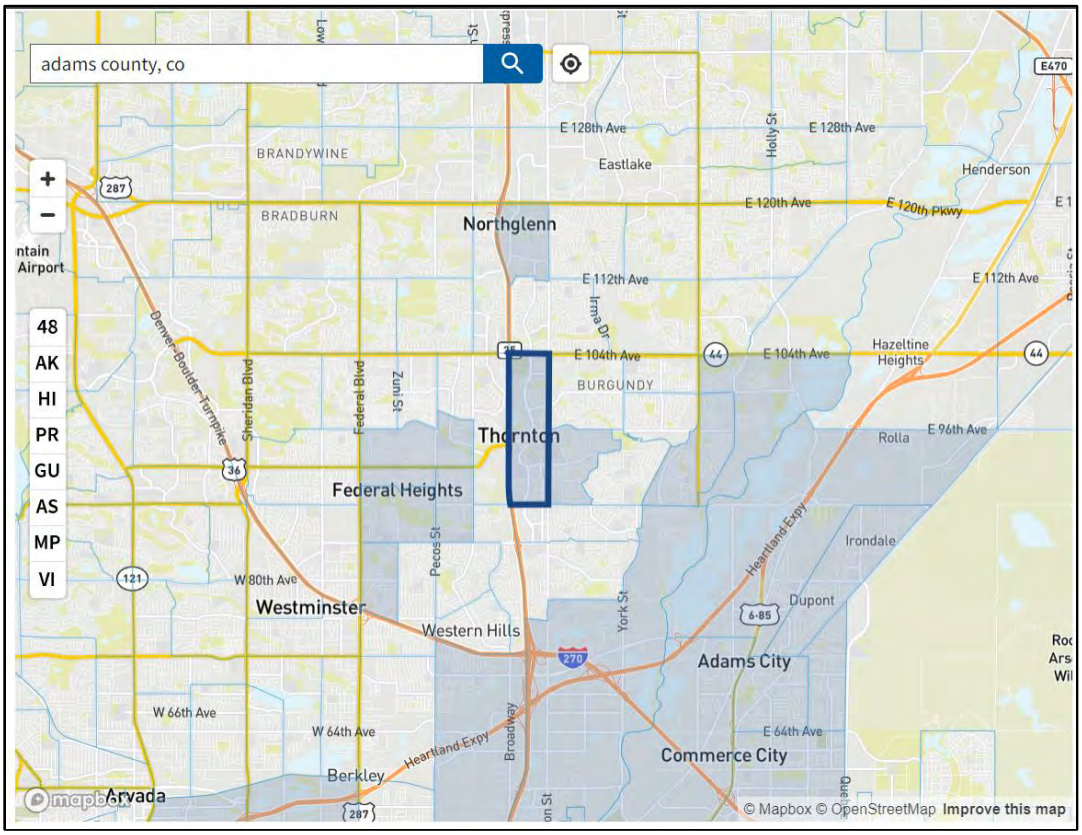
Figure 9. Disadvantaged Census Tracts for Larimer and Weld Counties (includes Fort Collins and Greeley, CO)



The total population of Larimer County is 359,066. Minority populations are as follows: American Indian or Alaska Native: 2,878, Asian: 8,538, Black or African American: 3,815, Hispanic or Latino: 44,662, Native Hawaiian or Other Pacific Islander: 325. Median Household Income (MHI) for Larimer County is $88,403, below the Colorado state MHI of $89,302. The poverty rate is 11.6%, greater than the Colorado state rate of 9.4% (US Census Bureau Profile: Larimer County, Colorado).

The total population of Weld County is 328,981. Minority populations are as follows: American Indian or Alaska Native: 4,274, Asian: 5,857, Black or African American: 4,539, Hispanic or Latino: 98,462, Native Hawaiian or Other Pacific Islander: 365. MHI for Weld County is $91,565, and poverty rate is 8.9% (US Census Bureau Profile: Weld County, Colorado).

Figure 10. Disadvantaged Census Tracts in Adams County, includes Thornton, CO



The total population of Adams County is 519,572. Minority populations are as follows: American Indian or Alaska Native: 9,520, Asian: 23,268, Black or African American: 17,463, Hispanic or Latino: 216,649, Native Hawaiian or Other Pacific Islander: 925. MHI for Adams County is $91,367, and the poverty rate is 10.2%, greater than the Colorado state rate (US Census Bureau Profile: Adams County, Colorado).

Many areas that WSSC serves, as well as the nearby disadvantaged communities, are rural areas with relatively few economic opportunities. This project will preserve local jobs and be an economic benefit to these communities. Agriculture in Colorado contributes $47 billion annually to the economy and employs more than 195,000 people (Colorado Department of Labor and Employment, 2024). Larimer, Weld, and Adams Counties are all within the top ten agricultural-producing counties in Colorado, with Larimer at #9, Weld at #1, and Adams at #10 (2017 Census of Agriculture, USDA). The reliance on agriculture in the area is steadily growing as well—in Weld County alone, the percentage of farms has increased by 15% since 2012, and 96% of farms in the County are family farms (2017 Census of Agriculture, USDA).

This project will also increase the water supply for canal users which will help reduce the likelihood of water curtailment. The economic impacts of curtailment would be devastating given the reliance of agriculture in Colorado, and one of the primary sources of income in Larimer, Weld, and Adams Counties, where the project is located.

2. Tribal Benefits

a. Does the proposed project directly serve 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?

The proposed project will indirectly benefit the Ute, Arapaho, Cheyenne, Lakota, Apache, Shoshone, and Comanche Tribes, as it will increase the amount of water available in the area.

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

The Cache la Poudre River, which is the source water for the Larimer County Canal, has been integral to the Arapaho, Cheyenne, and Ute Tribes of the area (Coloradoan, 2022).

Figure 11. Source of the Larimer County Canal (Cache la Poudre River)

c. 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?
The Cache la Poudre River, which is the source of the Larimer County Canal, was the site of the Cache la Poudre River Restoration, undertaken by the City of Fort Collins, Colorado (Urban Nature Atlas, 2021). The proposed project supports Reclamation's Tribal trust responsibilities by increasing water efficiency from the Cache la Poudre River, ensuring greater drought resiliency of the surrounding area.

E. Criterion E—Complementing On-Farm Irrigation Improvements

There are no on-farm irrigation improvements as a part of this project.

1. Describe any planned or ongoing projects by farmers/ranchers that receive water from the applicant to improve on-farm efficiencies.
Not applicable.

2. Describe how the proposed WaterSMART project would complement any ongoing or planned on-farm improvement.
Not applicable.

3. Describe the on-farm water conservation or water use efficiency benefits that are expected to result from any on-farm work.
Not applicable.

F. Criterion F—Readiness to Proceed

1. Identify and provide a summary description of the major tasks necessary to complete the project.
If selected, WSSC is prepared to proceed as soon as funding is awarded. An example design from a past, similar projects is included as **Appendix B**. The design phase is expected to begin in June 2024 and be completed by September 2024. This project is estimated to take approximately 11 months to complete, and, depending on the timing of award funding, construction could begin as soon as Spring 2025. The estimated project schedule for the major tasks is as follows:

Task 1: Project Management and Administration

WSSC will meet with Reclamation to review and finalize the project schedule, required deliverables, and sign the grant agreement. Additional project management and administration duties include ongoing communication and coordination, invoicing, and processing payments as well as budget and schedule reviews.

Expected Deliverables: Signed grant agreement, invoices, payments, and any related deliverables.

Timeline: Approximately one month has been estimated for finalizing the grant agreement. All other deliverables will be completed as required on an ongoing basis until the project is complete, and the final reports have been submitted to Reclamation.

Task 2: Environmental and Cultural Resources Compliance

Environmental documentation meeting NEPA requirements will be completed prior to beginning any ground disturbing activities. WSSC has contacted and provided the project description with Reclamation Natural Resource Specialist, Patrick McCusker, in the Eastern Colorado Area Office. Reclamation staff will review and advise WSSC in its efforts to meet all environmental and cultural resource compliance requirements. This includes completing a cultural resources assessment, a biological assessment, and consultation with the U.S. Fish and Wildlife Service (USFWS), if necessary.

Expected Deliverables: A completed Categorical Exclusion (CE) or Environmental Assessment (EA) along with a Finding of No Significant Impact (FONSI).

Timeline: Coordination with the local Reclamation office will begin shortly after the grant agreement has been finalized. If Reclamation staff determine an CE is appropriate, this task will take an estimated two months to complete. However, if this project requires an EA, this task could take an additional two months to complete. All NEPA documentation and compliance requirements should be complete February 2025.

Task 3: Permitting and Approvals

The project is located completely within WSSC's existing canal easement and therefore permits should not be required. However, should any permits be required, WSSC will obtain all required permits and approvals as required by federal, state, territorial, tribal, and local laws, regulations, and codes before performing any ground-disturbing activities. Completion of the permitting and approval process for this project should be minimal and straightforward.

Expected Deliverables: A Jurisdictional Determination regarding Waters of the United States. WSSC previously secured an approved Jurisdictional Determination in 2019 (**Appendix C**) and is currently in the process of resecuring an updated Jurisdictional Determination.

Timeline: All required permits and approvals will be obtained by February 2025.

Task 4: Planning and Design

A conceptual design has been completed and was used to estimate costs and develop the initial schedule. Preparation of the final design, budget, and schedule can begin once the grant agreement has been finalized.

Expected Deliverables: Final design documents.

Timeline: Completing the final design is estimated to take until approximately September 2024. Final documents, including budget, schedule, and Notice to Proceed, are anticipated to be completed by October 2024.

Task 5: Construction and Installation

Gate Delivery and Installation. The lead time on the Rubicon FlumeGates is estimated to be about 6 months. These can be ordered as soon as design is complete. Once delivered to the site, the gates take about a day for installation and commissioning. The bidding process is anticipated to begin in October 2024, and construction is anticipated to begin in January 2025.

Expected Deliverables: Abstract of bids received; successful bid proposal; construction progress pay estimates; start-up and testing verification; Notice of Completion; and "As-Built" drawings.

Timeline: Bid solicitation is planned to begin October 2024 with the selection process completed by December 2024. Depending on the timing of award funding, construction is anticipated to begin in the January 2025. Construction completion and project close-out is anticipated June 2025.

Task 6: Grant Reporting

WSSC is prepared to comply with these requirements as well as any additional reporting requirements specified in the grant agreement.

Expected Deliverables: Semi-annual SF-425 Federal Financial Reports; semi-annual performance reports indicating accomplishments, progress made on established milestones, and additional pertinent information; final performance report on project performance, goals and objectives, collaboration, and project photos along with the final SF-425 Federal Financial Report.

Timeline: Performance and financial reports will be submitted twice a year. Depending on when the grant agreement is finalized, these reports are anticipated for June 2024, December 2024, and June 2025 with the final report to be submitted by the end of September 2025.

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

The project will follow the existing canal easement and therefore permits should not be required.

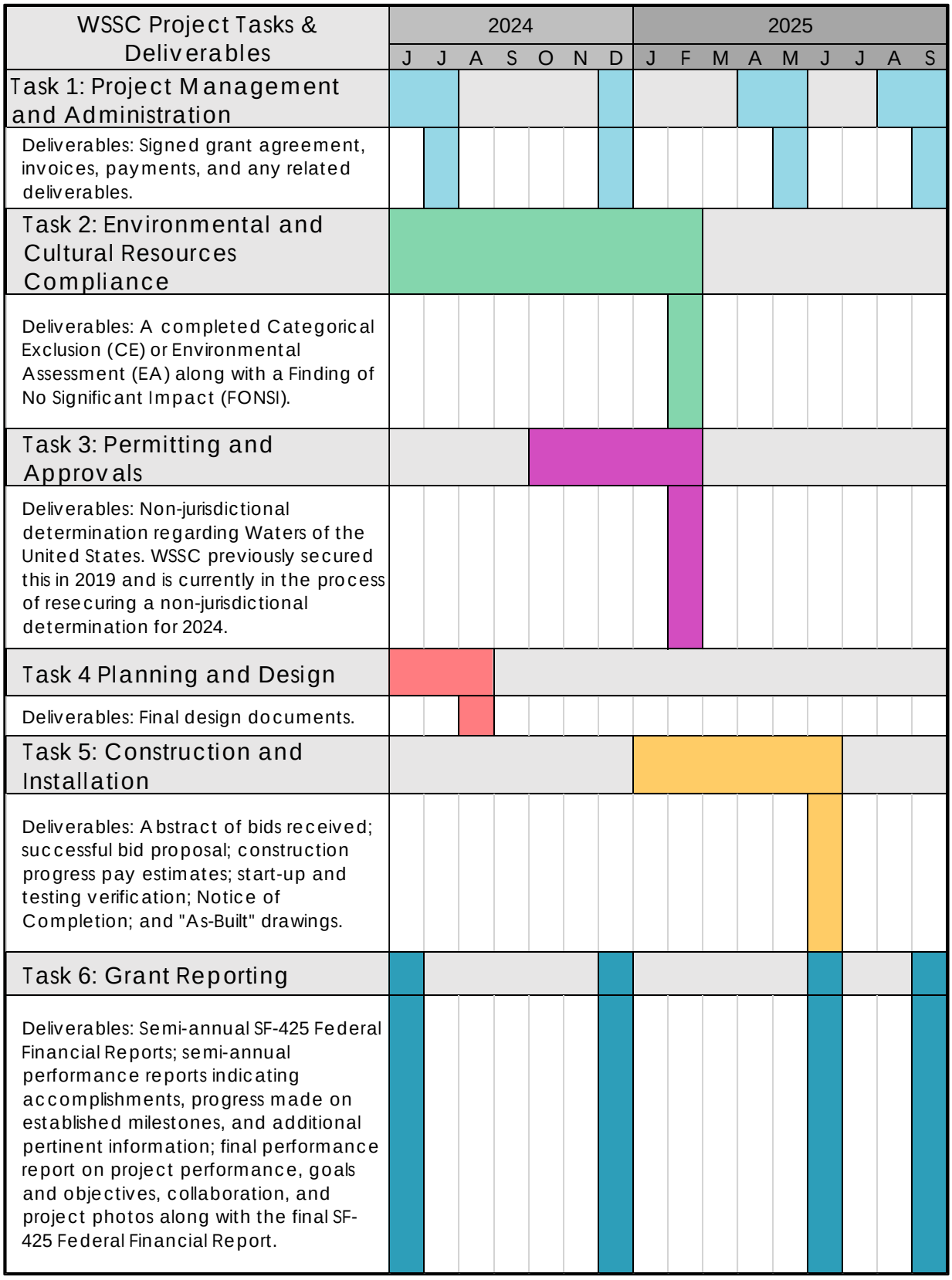
3. Identify and describe any engineering or design work performed specifically in support of the proposed project.
Design work has already been completed by a professional engineer for five (5) other similar structures in WSSC's jurisdiction, similar to the project area (**Figure 1**). Therefore, conceptional design drawings are already complete and included as reference in **Appendix B**. Based on this, final design for the proposed project is already largely complete and is estimated to be finished by September 2024.

4. Describe any new policies or administrative actions that will be required to implement the project.
No new policies or administrative actions will be required to implement this project.

5. 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.
A preliminary conceptual plan has been completed (**Appendix B**). As shown in the **Project Schedule** (**Figure 12),** additional survey and design work is required prior to construction. The survey of the project area is expected to take place between March–May of 2024. The hydraulic design is expected to take place between June–July of 2024. The civil detail design is expected to take place between August–September of 2024.

6. 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?
The expected timeline for environmental and cultural compliance discussed with the local Reclamation regional or area office. The resulting project schedule is shown in **Figure 12**. However, this schedule is dependent on award timeline.

Figure 12. Project Schedule



G. Criterion G—Collaboration

Please describe how the project promotes and encourages collaboration

1. 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 Water Supply and Storage Company (WSSC) Board and its water users fully support this project. The proposed project is a collaborative effort between agricultural and municipal water users within the WSSC system. WSSC has historically been 100% owned and controlled by agricultural water users. Beginning in the 1970's, municipal water providers in the area began purchasing shares in WSSC with the intent to convert the shares to municipal use in the future. The water represented by those shares will ultimately be removed from the Larimer County Canal (i.e., no longer delivered in the canal), thereby reducing water levels in the canal, and adversely impacting the remaining agricultural users.

WSSC and municipal shareholders have been collaborating on ways to both (1) mitigate the adverse impacts caused by the removal of water from the system, and (2) improve the overall operational efficiency of the system. As such, rather than installing 'static' or manual check structures throughout the system as has traditionally been done, the parties have adopted a strategy of installing automated Rubicon FlumeGates to serve this dual purpose.

The partners (listed below) meet monthly regarding current and future projects. Below is a description of the of the extent of involvement and types of activities each partner engages in, which serves the entire WSSC system and the specific project:

- Water Supply and Storage Company – lead on project planning, construction coordination, maintenance, and operation.
- City of Thornton – funding and lead in partner coordination.
- City of Greeley – funding and partner planner.
- East Larimer County Water District – funding and partner planner.
- North Weld County Water District – funding and partner planner.
- City of Fort Collins – funding and partner planner.

There is also broad regional and statewide support for projects in Colorado that that conserve water, as outlined in regional plan (*2022 South Platte Basin Implementation Plan)* and the state water plan (*2023 Colorado Water Plan*).

Through the installation of automation, this project will address basin priorities, as outlined in the 2022 South Platte Basin Implementation Plan (pages 24-40). The proposed project maximizes the use of finite water supplies, which aligns with basin Priority #2 Maximum Development of Native South Platte Supplies. It also aligns with basin Priority #3 Maintaining and Improving Water Conservation and Efficiency through improved water delivery efficiency.

The remote monitoring capability, remote gate control access, and increased water supply efficiency provided by the project also aligns with the partner action categories in the 2023 Colorado Water Plan (pages 175-181). The project aligns with the following Water Plan Funding Categories: Water Storage and Supply Projects (partner actions: Thoughtful Storage and Meeting Future Water Need), Conservation and Land Use Projects (partner action: Wise Water Use), and Agriculture Projects (partner actions: Robust Agriculture).

2. What is the significance of the collaboration/support?
The project will ultimately be funded completely by the municipal partners listed in the previous question. The collaboration and partnership among the parties is revolves around planning, design, and funding. For instance, WSSC, in collaboration with modeling efforts completed by the City of Thornton, identifies the location and timing of the need for these structures. Funding for the structures comes from the municipal shareholders, who, amongst themselves, are collaborating on the equitable apportionment of that funding. The structures themselves are owned, operated, and maintained by WSSC for the benefit of the remaining agricultural shareholders. All parties involved have a joint monthly meeting to discuss current projects and plan for future projects.

Furthermore, each of the parties above continue to lease some or all of their shares out for irrigation each year, and, therefore, have a vested interest in the improvements the proposed project will have on the overall efficiency of water deliveries in the system.

3. Will this project increase the possibility/likelihood of future water conservation improvements by other water users?
Yes, success of this grant application and this project will increase the likelihood of other irrigation ditch companies implementing similar water conveyance and automation improvements in the region. WSSC representatives have had discussions with other regional irrigation ditch companies who have indicated their interest in observing the benefits of the project.

4. Will the project benefit multiple sectors and/or users (e.g., agriculture, municipal and industrial, environmental, recreation, or others)?
Yes, the project will benefit multiple users, including agricultural, municipal, and recreational water users. The project will directly benefit the agricultural and municipal users who are part of the WSSC system. As discussed in Criterion C – Other Project benefits, the project will also benefit recreational water users. In the late summer, the majority of the Cache la Poudre River flow comes from WSSC's two high mountain reservoirs: Long Draw and Chambers Lake. Because of this, local rafting companies tie their rafting schedule to WSSC's reservoir release schedule to take advantage of peak river flow in late summer.

5. Please attach any relevant supporting documents (e.g., letters of support or memorandum of understanding).
Letters of support are included as **Appendix E.**

H. Criterion H—Nexus to Reclamation

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

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

WSSC does not have a water service, repayment, or operations and maintenance contract with Reclamation. However, WSSC is a contract allottee with the Northern Colorado Water Conservancy District (Northern Water).

2. If the applicant is not a Reclamation contractor, does the applicant receive Reclamation water through a Reclamation contractor or by any other contractual means?

WSSC is a contract allottee with the Northern Colorado Water Conservancy District (Northern Water). Norther Water operates the Colorado-Big Thompson (C-BT) Project, which diverts water from the Colorado River, and imports it for agricultural, municipal, and industrial uses on the Front Range of Colorado. WSSC is the allottee of 1,425 units of C-BT (a unit of C-BT is similar to a share, with approximately 310,000 total units available; the total amount of water allocated each year is divided amongst all the units). Additionally, WSSC participates in trades related to the C-BT project water all totaling approximately 5,000 acre-feet of water per year. WSSC's shareholders are located in the Northern Colorado Water Conservancy District and pay annual property taxes to the District. The proposed Project will increase the efficiency of WSSC's use of water from the CBT Project. C-BT water that is stored in the Horsetooth Reservoir can be released to the river through the Hansen Supply Canal delivery directly to the Larimer County Canal.

3. Will the proposed work benefit a Reclamation project area or activity?

No.

4. Is the applicant a Tribe?

No, the applicant is not a Tribe.

Performance Measures

Each of the Rubicon FlumeGates will be operated in upstream elevation mode during the irrigation season. This mode allows the gates to maintain a consistent water surface elevation upstream of each gate. Performance will be measured by analyzing the times and amounts of automated gate adjustments – adjustments that, but-for-the gates, would have represented fluctuations in the water surface elevation resulting in variable farm headgate deliveries. The farm headgates will that are serviced by Rubicon FlumeGates will be for size, and using flow depth fluctuations that would have been observed and using the orifice equation the difference between pre and post project delivery variability will be calculated. Furthermore, individual farmers will be asked to report on any qualitative improvements to their farming practices they observed during the 2025 irrigation season. The following Performance Measures will be assessed for post installment efficiency and conservations, economic benefits and operational metrics:

Efficiency and Conservation

- Quantify the total volume of water saved due to increased efficiency.
- Report the total reduction in GHG emissions achieved through the decreased need for vehicular travel along canals.
- Track real-time data to assess delivery improvements and reductions in wasteway flows.

Economic Benefits

- Calculate the cost savings resulting from reduced energy consumption.
- Evaluate cost savings from reduced fuel consumption and vehicle maintenance, providing an economic perspective to the environmental benefits.

Operational Metrics

- Collect data on the number of adjustments and their precision in achieving targeted upstream water elevations.
- Use flow measurements and the orifice equation pre- and post-implementation.
- Collect farmers observations and experiences regarding improvements in irrigation reliability and farming practices.

Budget Narrative

The total estimated project costs are summarized **in Table 4,** and sources of project funding are listed in **Table 5.** A detailed project budget is included as **Appendix D**.

Table 4. Budget Summary

Budget Summary			
6. Budget Object Category	**Total Cost**	**Federal Estimated Amount**	**Non-Federal Estimated Amount**
a. Personnel	$15,900		
b. Fringe Benefits	$0		
c. Travel	$0		
d. Equipment	$0		
e. Supplies	$0		
f. Contractual	$238,000		
g. Constructions	$2,423,705		
h. Other Direct Costs	$0		
Total Direct Charges	$2,677,605		
i. Indirect Charges	$0		
Total Costs	**$2,677,605**	**$1,200,000**	**$1,477,605**
Cost Share Percentage		**45%**	**55%**

Table 5. Sources of Project Funding

Sources of Project Funding		
Project Funding	**Amount**	**Percentage**
Total Project Cost	**$2,677,605**	**100%**
Non-Federal Sources		
Water Supply and Storage Company (WSSC)	$1,477,605	55%
Requested Federal Funding		
WaterSMART Water and Energy Efficiency Grant	$1,200,000	45%

a. Personnel

Total for Personnel: $15,900

The Salaries and Wages section of the project encompasses in-house engineering review, financial management, and project management as detailed below. The basis for rates are based on the current rates of the personnel listed below.

General Manager, Project Management: Mr. Donald Frick, P.E., General Manager, will be the point person for all design and construction activities. The General Manager will also perform design review and coordinate project management between WSSC personnel and the

Contractor and manage budgets and payments. Mr. Frick will dedicate 30 hours to the Project. Mr. Frick has been the General Manager for over 4 years and has overseen similar projects for WSSC in the past.
General Manager: $250 Hourly Rate x 30 Hours = $7,500

Lead Engineer: Mr. Levi Stockton, P.E., Lead Engineer, will be the main in-house review of engineering design of the Project, and will perform site visits during construction on a weekly basis or more frequently as necessary. Mr. Stockton will dedicate 30 hours to the Project. Mr. Stockton has been the Lead Engineer for 6 years and has performed the same tasks on similar projects for WSSC in the past.
Lead Engineer: $170 Hourly Rate x 30 Hours = $5,100

Field Engineer: Mr. Noah Wooldridge, E.I., Field Engineer I, will assist the Lead Engineer in design review and project management and in addition perform hydraulic modeling and review in support of the Project. Mr. Wooldridge will dedicate 30 hours to the Project. Mr. Wooldridge has performed the same tasks on similar projects for WSSC in the past.
Field Engineer: $110 Hourly Rate x 30 Hours = $3,300

b. Fringe Benefits
Total for Fringe Benefits: $0
WSSC is not seeking reimbursement for fringe benefits.

c. Travel
Total for Travel: $0
WSSC is not seeking reimbursement for travel costs.

d. Equipment
Total for Equipment: $0
No equipment will be purchased as a part of this project.

e. Supplies
Total for Supplies: $0
All materials and supplies will be purchased and installed as part of construction-related activity and are included under construction costs.

f. Contractual
Total for Contractual: $238,000

Engineering: This cost includes estimated engineering design and construction management costs provided by Schnabel Engineering. This is estimated based on the design and construction management costs associated with similar projects.

Contract Administration and Reporting: This estimate includes contract administration and reporting support from Ardurra (consultant). Ardurra will work closely with WSSC and be responsible for ensuring all reporting requirements are met. This includes submitting financial

reports, interim performance reports, and the final performance report. The consultant estimates this work to be $20,000.

Environmental and Regulatory Compliance Costs were estimated by the Bureau of Reclamation as $50,000.

Table 6. Contractual Costs (Engineering)

Engineering Budget			
Item	**Description**	**Percentage**	**Total**
	Construction Total		$2,423,705
1	Engineering (Design)	4.62%	$112,000
2	Engineering (Construction)	2.31%	$56,000
		Total Contractual Costs	**$168,000**

g. Construction

Total for Construction: $2,423,705

Construction Materials: $1,364,681

Construction materials include 5 Rubicon Water FlumeGates, one Rubicon Water SlipMeter, hardware for the SCADA system, structural concrete, backfill material and riprap. All materials and supplies will be purchased and installed as part of construction-related activity and are included under construction costs. The basis of cost for all construction materials is based on estimates from the vendor and/or costs associated with similar recent projects.

Construction Contractual: $1,059,024

Contractual costs include the General Contractor's mobilization, dewatering, excavation and concrete placement. Contractual costs also include Rubicon Water's installation of the FlumeGates and SlipMeter, and associated hardware. This is estimated based on the contractual construction costs associated with similar recent projects.

Table 7. Construction Costs

Construction Budget				
Materials				
Item No.	**Description**	**Quantity**	**Unit Price**	**Total**
1	Rubicon Water FlumeGate	5	$67,254	$336,270
2	FlumeGate Walkway	3	$2,850	$8,550
3	Rubicon SlipMeter	1	$29,381	$29,381
4	SCADAConnect Live	3	$1,200	$3,600
5	Backfill Material (CY)	870	$48	$41,760
6	Structural Concrete (CY)	240	$3,480	$835,200
7	Ungrouted Type M Riprap (CY)	380	$168	$63,840
8	Grouted Type M Riprap (CY)	45	$432	$19,440
9	Type II Rip Rap Bedding (CY)	120	$222	$26,640
			Construction Materials Subtotal	**$1,364,681**
Contractual (Construction)				
Contractor Name	**Description of Services**			**Total Cost**
Rubicon Water	Installation and commissioning of Rubicon FlumeGates and SlipMeter			$10,200
TBD	Mobilization			$124,800
TBD	Dewatering			$108,000
TBD	Clearing, Grubbing, Topsoil			$30,000
TBD	Demo Existing Structure			$64,800
TBD	Erosion and Sediment Control			$72,000
TBD	Excavation			$71,232
TBD	Foundation Prep			$46,992
TBD	Filter Fabric and Anchor Trench			$201,600
TBD	Access Road			$25,200
TBD	Gate Installation Assistance			$14,400
TBD	Chain Link			$39,600
TBD	QC Testing			$54,000
TBD	Seeding and Revegetation			$157,800
TBD	Surveying			$38,400
			Contractual Subtotal	**$1,059,024**
			Total Construction Costs	**$2,423,705**

h. Other Direct Costs

Total for Other Direct Costs: $0

No other expenses are anticipated for the project.

i. Indirect Costs

Total for Other Indirect Costs: $0

No indirect costs are anticipated for the project.

Environmental and Cultural Resources Compliance

1. Will the proposed project impact the surrounding environment (e.g., soil, 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 proposed project will be constructed within the existing canal alignment and involves minimal ground disturbances, construction, or increases to human activity that would potentially impact the surrounding environment. The project will be located on previously-disturbed soils and lands that are currently under cultivation, are existing roadways, or used for water conveyance infrastructure. All impacts resulting from construction are anticipated to be temporary and would not have a significant impact on air quality, climate, water quality, or other environmental resources.

Best management practices can be used to reduce emissions, minimize the potential for fugitive dust, and prevent erosion as a result of construction activities. This includes limiting of unnecessary equipment idling, requiring vehicles and equipment to be kept in good working order, and, when possible, recycling of construction debris associated with the project.

In addition, all applicable environmental compliance measures will, at a minimum, be followed to ensure the environment and animal life are not improperly disturbed. This can include requiring contractors to follow a temporary erosion and sedimentation control (TESC) plan, a site-specific fugitive dust control plan, a storm water pollution prevention plan (SWPPP), a spill prevention, control, and countermeasures (SPCC) plan, or related prevention plans as required.

If necessary, all disturbed areas can be revegetated with native species, as applicable, to restabilize the soil in these areas, reduce erosion, and help to prevent sediment and pollutants from entering into nearby surface waters.

If necessary, WSSC will engage a qualified biologist to conduct a biological site survey prior to beginning construction activities to identify any biological resources on the project site, determine potential impacts, and recommend suitable mitigation measures. This includes identifying any special status species such as endangered or threatened wildlife or migratory birds as well as critical habitat that could potentially be impacted by the project. In addition, standard avoidance and minimization protocols will be included in the project specifications and will be followed during construction.

2. 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?
Based on review of the U.S. Fish and Wildlife Service's Information for Planning and Consultation (IPaC) Online System, the following threatened or endangered species or designated critical habitat that potentially may be present in the project area:

Mammals:

- Gray Wolf (Canis lupus) is a federally listed, endangered species that may potentially be present in the project area.
- Preble's Meadow Jumping Mouse (Zapus hudsonius preblie) is a federally listed, threatened species that may potentially be present in the project area.
- Tricolored Bat (Perimyotis subflavus) is a federally listed, Proposed endangered threatened species that may potentially be present in the project vicinity.

Birds:

- Whooping Crane (Grus americana) is a federally listed, endangered bird that may potentially be present in the project vicinity.
- Piping Plover (Charadrius melodus) is a federally listed, threatened bird that may potentially be present in the project vicinity.
- Eastern Black Rail (Laterallus jamaicensis) is a federally listed, threatened bird that may potentially be present in the project vicinity.

Fish:

- Pallid Sturgeon (Scaphirhynchus albus) is a federally listed, endangered fish that may potentially be present in the project vicinity.
- Greenback Cutthroat Trout (Oncorhynchus larkiai stomias) is a federally listed, threatened fish that may potentially be present in the project vicinity.

Plants:

- Ute Ladies'-tresses (Spiranthes diluvialis) is a federally listed, threatened plant that may potentially be present in the project vicinity.
- Western Prairie Fringed Orchid (Platanthera praeclara) is a federally listed, threatened plant that may potentially be present in the project vicinity.

The project area is greatly disturbed, in constant agricultural use, and none of these species are currently known to occur within the project site. The proposed project would likely have No Effect on these species.

3. 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, there are no wetlands or other jurisdictional surface waters inside the project boundaries. The site of the proposed project is a series of historical canals constructed separately from the natural drainages in the area.

4. When was the water delivery system constructed?
The existing water delivery system was originally constructed around 1881.

5. 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.
This project will indeed result in modifications to individual features of the irrigation system, specifically through the installation of check structures and gates within the existing canal. These modifications are set within an irrigation system that originally began construction around 1881. This project represents a strategic enhancement to the historical infrastructure, with the goal of improving water management and efficiency without adversely affecting the canal's operational integrity.

6. 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.
According to the mapping database of National Register of Historic Places (NRHP) there are no known buildings, structures, or features located along the canal alignment that are listed or eligible for listing on the NRHP.

7. Are there any known archeological sites in the proposed project area?
No, there are no known archeological sites located in the proposed project area.

8. Will the proposed project have a disproportionate and adverse effect on any communities with environmental justice concerns?
The project is not anticipated to have a disproportionate or adverse effect on communities with environmental justice concerns. Covering several census tracts identified as disadvantaged in Larimer, Weld, and Adams Counties, the project aims to conserve an estimated 1,137.34 acre-feet of water annually, enhancing water supply and quality for both municipal uses and along the canal. This conservation effort is expected to yield significant state, regional, and particularly beneficial impacts for users in these disadvantaged areas. With Larimer County's population including a diverse minority composition and experiencing a poverty rate of 11.6%, and Weld and Adams Counties showing similar diversity and economic challenges, the project presents a critical opportunity for economic upliftment. Especially in rural areas served by WSSC and

surrounding disadvantaged communities, where economic opportunities are relatively scarce, this water efficiency improvement project stands to support local jobs and contribute economically, leveraging the significant role agriculture plays in Colorado's economy. Agriculture, a key sector in these counties, benefits directly from improved water supply and management contributing to the economic and social resilience of these communities.

9. Will the proposed project limit access to, and ceremonial use of, Indian sacred sites or result in other impacts on Tribal lands?
No, the proposed project will not limit access to, or ceremonial use of, Indian sacred sites or result in other impacts on Tribal lands.

10. 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?
No, the proposed project will not contribute to the introduction, continued existence, or spread of noxious weeks or non-native invasive species known to occur in the area.

Required Approvals and Permits

The following permits and approvals are required for the proposed project. All required permits and approvals will be obtained prior to construction.

Federal

- **NEPA:** WSSC will work with Reclamation to comply with the National Environmental Policy Act (NEPA) and complete any additional requirements.
- **Waters of the United States:** WSSC obtained a non-jurisdictional determination for the Larimer County Canal and associated structures in December 2019. An updated request for a jurisdictional determination is currently pending.

State

- **Colorado Department of Public Health and Environment (CDPHE)**: No permits required.
- **Colorado Division of Water Resources (DWR)**: No permits required. WSSC owns all of the water rights necessary for the project.

Local

- **Larimer County:** No permits required.
- **Weld County:** No permits required.

Easements will not need to be obtained for this project; construction, operation and maintenance of the subject structures will occur in WSSC's existing ditch easement. No permits are expected to be required because all work will be located within WSSC's existing canal easement. However, WSSC has been in contact with local Reclamation staff to discuss National Environmental Policy Act (NEPA) requirements. Completion of the permitting and approval process for this project is expected to be minimal and straightforward.

Mandatory Federal Forms

- SF-424: Application for Federal Assistance
- SF-424 C Budget Information Form – Construction Programs
- SF-424 D Assurances Form – Construction Programs

Overlap or Duplication of Effort Statement

WSSC does not have any projects that overlap with the proposed project or any other active or anticipated proposal or projects in terms of activities, costs, or commitment of key personnel. This proposal does not in any way duplicate any proposal or project that has been or will be submitted for funding consideration to any other potential funding source.

Conflict of Interest Disclosure Statement

WSSC does not have any actual or potential conflicts of interest. WSSC will establish internal controls that include, at a minimum, procedures to identify, disclose, and mitigate or eliminate identified conflicts of interest. WSSC will notify the Financial Assistance Officer in writing of any conflicts of interest that may arise during the life of the award, including those that have been reported by sub recipients.

Uniform Audit Reporting Statement

WSSC has not received $750,000 USD or more in Federal award funds during a fiscal year.

Certification Regarding Lobbying

WSSC does not retain a state or federal lobbyist. It has not made or agreed to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action.

Letters of Support

Letters of Support are included as **Appendix E.**

Official Resolution

An official resolution was adopted and approved by the WSSC Board of Directors. A copy of the signed **Official Resolution** is included as **Appendix F.**

Letters of Funding Commitment

The total cost of the project is estimated to be $2,677,605. The non-federal share of these costs is estimated to be a total of $1,477,605. WSSC is committed to providing the non-federal share for this project from its reserves to fund its share of the project costs. These funds are secured

and are available prior to award of the WaterSMART grant. A **Letter of Funding Commitment** confirming the availability of these funds is included in **Appendix G**.

Non-Federal Funding Partners

The Water Supply and Storage Company (WSSC) has committed a total of $1,477,605 (or 55% of the total project cost) as match for the proposed project. A **Letter of Funding Commitment** is included in **Appendix G**.

Federal Funding Requested

WSSC is requesting $1,200,000 from the Bureau of Reclamation's WaterSMART Grants Program as part of this Water and Energy Efficiency Grant application. No other federal funds have been requested.

Unique Entity Identifier and System for Award Management

WSSC is registered in the System for Award Management (SAM) and will maintain this active SAM registration with current information throughout the project duration.

Unique Entity Identifier in SAM: P9KBPYR4GKZ5

References

EPA How We Use Water, 2023: https://www.epa.gov/watersense/how-we-use-water

U.S. EPA's Greenhouse Gas Equivalencies Calculator, 2024: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

U.S. Environmental Protection Agency, 2023: https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle

U.S. Drought Monitor, 2024: https://droughtmonitor.unl.edu/DmData/DataGraphs.aspx

City of Fort Collins, 2024: https://www.fcgov.com/utilities/water-shortages

Climate Change in Colorado Report, 2023: https://www.documentcloud.org/documents/24350813-ccc-climate-assessment-report-1123-v9-spreads-draft

South Platte Basin Implementation Plan, 2022: https://www.southplattebasin.com/documents/bip

Colorado Water Plan, 2023: https://cwcb.colorado.gov/colorado-water-plan

Climate and Social Justice Screening Tool, 2024: https://screeningtool.geoplatform.gov/en/ -11.15/39.8733/-104.9789

Colorado Department of Labor and Employment, 2024: https://ag.colorado.gov/sites/ag/files/documents/Colorado Agriculture Brochure.pdf

Census of Agriculture, County Profile, 2017: https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Colorado/cp08123.pdf

Coloradoan, 2022 - Fort Collins history: A look at area's early Native American life: https://www.coloradoan.com/story/news/history/2022/03/17/fort-collins-history-northern-colorado-areas-early-native-american-life/9337492002/

Urban Nature Atlas, 2021 - Cache la Poudre River Restoration | Urban Nature Atlas (una.city): https://una.city/nbs/fort-collins/cache-la-poudre-river-restoration

United States Census Bureau, 2022 - Larimer County, Colorado Profile: https://data.census.gov/profile/Larimer_County,_Colorado?g=050XX00US08069

United States Census Bureau, 2022 - Weld County, Colorado: https://data.census.gov/profile/Weld_County,_Colorado?g=050XX00US08123

United States Census Bureau, 2022 - Adams County, Colorado: https://data.census.gov/profile/Adams_County,_Colorado?g=050XX00US08001

U.S. Fish and Wildlife Service's Information for Planning and Consultation (IPaC) Online System, 2024: https://ipac.ecosphere.fws.gov/

City of Thornton

Thornton City Hall
12450 Washington Street
Thornton, CO 80241
www.thorntonco.gov

Infrastructure Department
Water Resources Division
PH 720-977-6600
FAX 720-977-6202

January 25, 2024

U.S. Bureau of Reclamation
Water Resources and Planning Office
Attn: Josh German
Mail Code: 86-63000
P.O. Box 25007
Denver, CO 80225

RE: Support for WSSC's Larimer County Canal Delivery Headgate Automation Project and WaterSMART Water and Energy Efficiency Grant (No. R24AS0052) Application

Dear Mr. German:

I wish to express my strong support for the Water Supply and Storage Company's (WSSC) funding application for a WaterSMART Water Energy Efficiency Grant (WEEG) for its Larimer County Canal Delivery Efficiency Project.

WSSC, located near Fort Collins, Colorado, proposes installing several in-canal SCADA-controlled check structures (and related infrastructure) to measure and regulate water deliveries within the Larimer County Canal (LCC). The LCC is WSSC's main delivery ditch, serving approximately 40,000 acres in Larimer and Weld Counties. It is part of the South Platte Basin and is connected to the Bureau of Reclamation by WSSC deliveries from the Colorado-Big Thompson Project.

The city of Thornton relies on water deliveries from WSSC, and this project is necessary to continue to maintain water deliveries to our agricultural users in the system. WSSC's project will directly address priorities in the state 2023 Colorado Water Plan, as well as the local 2022 South Platte Basin Implementation Plan. In addition, the project will provide increased water supply efficiency though its remote monitoring capability and remote gate control access, aligning well with the WaterSMART goals to fund projects that result in quantifiable water savings and support broader sustainability benefits.

The proposed project is a collaborative effort between agricultural and municipal water users within the WSSC system, like the city. WSSC, other municipal users, and Thornton have been collaborating on ways to both mitigate the impacts caused by removal of water from the system (shares purchased by municipal users with the intent to convert to municipal use in the future), and to improve the overall operational efficiency of the system.

The city is aware of the water efficiency efforts made by WSSC in recent years and supports their ongoing efforts to provide increased water efficiency to city residents. Because of the benefits the LCC water delivery efficiency project will provide, the city wishes to offer its full support of the grant application filed by the WSSC.

Sincerely,

Emily Hunt
Deputy Infrastructure Director

cc: MCLR Files

February 8, 2024

U.S. Bureau of Reclamation
Water Resources and Planning Office
Attn: Josh German
Mail Code: 86-63000
P.O. Box 25007
Denver, CO 80225

RE: Support for WSSC's Larimar County Canal Delivery Headgate Automation Project and WaterSMART Water and Energy Efficiency Grant (No. R24AS0052) Application

Dear Mr. German:

On behalf of myself as the owner and operator of irrigated farmland that is served by The Water Supply and Storage Company (WSSC), I would like to express my support for the WaterSmart Water and Energy Efficiency Grant application. As President of WSSC, I fully support this Grant application in this capacity as well.

WSSC is a privately owned mutual ditch company, charged with delivering water to its shareholder owners. Basically, ownership can be broken into two groups, Agricultural and Municipal owners. The Municipal owners have the right to remove water from within our system only if water delivery to the remaining Ag users are not altered in time or quantity, or their expenses increased, or other rights adversely affected such as maintaining the established minimum water quality standards. As a result of Municipals changing the use of their water from Ag to Municipal use, WSSC in collaboration with the Municipal shareholders, has installed several in-canal SCADA-controlled check structures (and related infrastructure) to measure and regulate water deliveries within the Larimer County Canal (LCC).This will make sure farmer stockholders like me will continue to receive their pro rata share of water as shares are removed from the system for municipal use. These new check structures, and the accompanying automation improvements, are necessary to keep the remaining agricultural users whole. A secondary, and <u>important</u> benefit of installing these check structures can help in supporting WSSC's water conservation efforts. Installing these automated structures enables WSSC and all shareholders, regardless of what purpose the water will serve, makes possible the capability to save water, energy, time, and increase irrigation efficiency.

My family and I have been directly involved in production agriculture on the same lands near Ault, Colorado for multiple generations served by the WSSC system. As resources permit, we have always been at the forefront of improving our on-farm efficiency for years. A few of the more recent examples are utilizing evapotranspiration gauges in conjunction with recording water application rates and rainfall received during the irrigation season. Being one of the first farms in the area to install a center pivot for more efficient irrigation and water utilization. The installation of proven nozzle technology on all pivots

to reduce water (wind) drift, evaporation and improved pattern application, saving additional water while providing crops with efficient water supplies needed for top production.

Serving as President of WSSC for several years puts me in a unique position of knowing the diverse group of company stockholder's. Even though we are a private company, it is no secret the City of Thornton, the City of Fort Collins, the City of Greeley, North Weld County Water District, East Larimer County Water District, Fort Collins - Loveland Water District, and others including local farmers such as myself, help make up the varied ownership group of the Company. I mention this because it will not be just WSSC and the remaining Agricultural users that will benefit from this Grant, but a large population of people served by these Municipal water providers all along the front range of Colorado that will benefit too. Most of the general population will not even know they have received a benefit, but that's okay. We are not seeking praise; our goal is to strengthen our water supply in many ways including water savings and efficiencies.

In closing, I thank you for your consideration and I encourage you to fund the WaterSmart Water and Energy Efficiency Grant application submitted by The Water Supply and Storage Company.

Sincerely,

Keith W. Amen

Keith W. Amen
Owner: Amen Farming and Feeding
President and Stockholder: WSSC

NORTH WELD COUNTY WATER DISTRICT

32825 CR 39 • LUCERNE, CO 80646

P.O. BOX 56 • BUS: 970-356-3020 • FAX: 970-395-0997

WWW.NWCWD.ORG • EMAIL: WATER@NWCWD.ORG

January 22, 2024

U.S. Bureau of Reclamation
Water Resources and Planning Office
Attn: Josh German
Mail Code: 86-63000
P.O. Box 25007
Denver, CO 80225

RE: Support for WSSC's Larimar County Canal Delivery Headgate Automation Project and WaterSMART Water and Energy Efficiency Grant (No. R24AS0052) Application

Dear Mr. German:

On behalf of the North Weld County Water District, please accept this letter of support for the Water Supply and Storage Company's (WSSC) application for a WaterSMART Water Energy Efficiency Grant (WEEG).

WSSC, located near Fort Collins, Colorado, proposes installing several in-canal SCADA-controlled check structures (and related infrastructure) to measure and regulate water deliveries within the Larimer County Canal (LCC). The LCC is WSSC's main delivery ditch, serving approximately 40,000 acres in Larimer and Weld Counties. It is part of the South Platte Basin and is connected to the Bureau of Reclamation by WSSC deliveries from the Colorado-Big Thompson Project.

The North Weld County Water District works closely with WSSC measuring water as it enters the canals north and east of Fort Collins, Colorado. Proper and accurate measurement ensures proper accountability and delivery of water entitlements for all agencies using water delivered by WSSC.

WSSC's project is necessary to continue to maintain water deliveries to our homes and businesses within the District. WSSC's project will directly address priorities in the state 2023 Colorado Water Plan, as well as the local 2022 South Platte Basin Implementation Plan. In addition, the project will provide increased water supply efficiency though its remote monitoring capability and remote gate control access, aligning well with the WaterSMART goals to fund projects that result in quantifiable water savings and support broader sustainability benefits.

The proposed project is a collaborative effort between agricultural and municipal water users within the WSSC system, like the District. WSSC and the District have been collaborating on ways to both mitigate the adverse impacts caused by removal of water from the system (shares purchased by municipal users with the intent to convert to municipal use in the future), and to improve the overall operational efficiency of the system.

The District is aware of the water efficiency efforts made by WSSC in recent years and supports their ongoing efforts to provide increased water efficiency to District water customers. Because of the

NORTH WELD COUNTY WATER DISTRICT

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WWW.NWCWD.ORG • EMAIL: WATER@NWCWD.ORG

benefits the LCC water delivery efficiency project will provide, the District wishes to offer its full support of the grant application filed by WSSC.

Sincerely,

Eric Reckentine
General Manager, North Weld County Water District

City of Greeley Colorado

February 20, 2024

U.S. Bureau of Reclamation
Water Resources and Planning Office
Attn: Josh German
Mail Code: 86-63000
P.O. Box 25007
Denver, CO 80225

RE: Support for WSSC's Larimar County Canal Automation and Efficiency Project and WaterSMART Water and Energy Efficiency Grant (No. R24AS0052) Application

Dear Mr. German:

On behalf of the City of Greeley, please accept this letter of support for the Water Supply and Storage Company's (WSSC) application for a WaterSMART Water Energy Efficiency Grant (WEEG).

WSSC, located near Fort Collins, Colorado, proposes installing several in-canal SCADA-controlled check structures (and related infrastructure) to measure and regulate water deliveries within the Larimer County Canal (LCC). The LCC is WSSC's main delivery ditch, serving approximately 40,000 acres in Larimer and Weld Counties. It is part of the South Platte Basin and is connected to the Bureau of Reclamation by WSSC deliveries from the Colorado-Big Thompson Project.

WSSC's project will directly address priorities in the state 2023 Colorado Water Plan, as well as the local 2022 South Platte Basin Implementation Plan. In addition, the project will provide increased water supply efficiency though its remote monitoring capability and remote gate control access, aligning well with the WaterSMART goals to fund projects that result in quantifiable water savings and support broader sustainability benefits.

The proposed project is a collaborative effort between agricultural and municipal water users within the WSSC system, like the City. WSSC and the City have been collaborating on ways to both mitigate the adverse impacts caused by removal of water from the system (shares purchased by municipal users with the intent to convert to municipal use in the future), and to improve the overall operational efficiency of the system.

The City is aware of the water efficiency efforts made by WSSC in recent years and supports their ongoing efforts to provide increased water efficiency to City water customers. Because of the benefits the LCC water delivery efficiency project will provide, the City wishes to offer its full support of the grant application filed by WSSC.

Sincerely,

Sean Chambers,

Director of Water and Sewer, City of Greeley

February 20, 2024

U.S. Bureau of Reclamation
Water Resources and Planning Office
Attn: Josh German
Mail Code: 86-63000
P.O. Box 25007
Denver, CO 80225

RE: Support for WSSC's Larimer County Canal Delivery Headgate Automation Project and WaterSMART Water and Energy Efficiency Grant (No. R24AS0052) Application

Dear Mr. German:

On behalf of the East Larimer County Water District, please accept this letter of support for the Water Supply and Storage Company's (WSSC) application for a WaterSMART Water Energy Efficiency Grant (WEEG).

WSSC, located near Fort Collins, Colorado, proposes installing several in-canal SCADA-controlled check structures (and related infrastructure) to measure and regulate water deliveries within the Larimer County Canal (LCC). The LCC is WSSC's main delivery ditch, serving approximately 40,000 acres in Larimer and Weld Counties. It is part of the South Platte Basin and is connected to the Bureau of Reclamation by WSSC deliveries from the Colorado-Big Thompson Project.

The East Larimer County Water District works closely with WSSC measuring water as it enters the canals north and east of Fort Collins, Colorado. Proper and accurate measurement ensures proper accountability and delivery of water entitlements for all agencies using water delivered by WSSC.

WSSC's project is necessary to continue to maintain water deliveries to our homes and businesses within the District. WSSC's project will directly address priorities in the state 2023 Colorado Water Plan, as well as the local 2022 South Platte Basin Implementation Plan. In addition, the project will provide increased water supply efficiency though its remote monitoring capability and remote gate control access, aligning well with the WaterSMART goals to fund projects that result in quantifiable water savings and support broader sustainability benefits.

The proposed project is a collaborative effort between agricultural and municipal water users within the WSSC system, like the District. WSSC and the District have been collaborating on ways to both mitigate the adverse impacts caused by removal of water from the system (shares purchased by municipal users with the intent to convert to municipal use in the future), and to improve the overall operational efficiency of the system.

The District is aware of the water efficiency efforts made by WSSC in recent years and supports their ongoing efforts to provide increased water efficiency to District water customers. Because of

the benefits the LCC water delivery efficiency project will provide, the District wishes to offer its full support of the grant application filed by WSSC.

Sincerely,

Mike Scheid
General Manager
East Larimer County Water District

RESOLUTION OF THE BOARD OF DIRECTORS OF THE WATER SUPPLY AND STORAGE COMPANY (WSSC)

A RESOLUTION AUTHORIZING APPLICATION TO THE UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION WATERSMART GRANTS: WATER AND ENERGY EFFICIENCY GRANTS FOR FISCAL YEAR 2024 UNDER FUNDING OPPORTUNITY ANNOUNCEMENT No. R24AS00052

WHEREAS, the United States Department of the Interior, Bureau of Reclamation is seeking proposals for water conservation and renewable energy projects from organizations with water delivery authority through the WaterSMART Grants: Water and Energy Efficiency program for FY 2024; and

WHEREAS, WSSC has formulated a plan of improvements that will result in quantifiable and sustained water savings, implements renewable energy components, and supports broader sustainability benefits; and

WHEREAS, WSSC recognizes these improvements will increase water use efficiency and reliability through optimal flow rates, reduced leakage, and reduced operational losses; and

WHEREAS, WSSC has formulated a grant proposal to line a portion of the open canal to improve the existing conveyance and delivery infrastructure and install automated headgates with solar arrays to improve operational efficiency, referred to as the Larimer County Canal Delivery Headgate Automation Project.

NOW, THEREFORE, BE IT RESOLVED THAT THE BOARD OF DIRECTORS AGREES AND AUTHORIZES THAT:

1. The Board's President, Keith Amen, is hereby authorized to enter into an agreement with Reclamation on behalf of Water Supply and Storage Company;
2. The Board has reviewed and supports the proposal submitted;
3. The Applicant is capable of providing the amount of funding specified in the funding plan; and
4. If selected for a WaterSMART Grant, the Applicant will work with Reclamation to meet established deadlines by entering into a cooperative agreement.

Dated: 1/14/24

Signed: