

WaterSMART Grant

Water & Energy Efficiency Grant for Fiscal Year 2019
Funding Opportunity Announcement No. BOR-DO-19-F004

Tier II Application - \$400,000 Grant Request

March 19, 2019

South Fields Earthen Canal Piping Project

Cache Valley, Utah

Applicant

West Cache Irrigation Company
32 West Main St.
Trenton, Utah 84338
TEL 435-563-3501

Project Manager

Scott L. Archibald, PE
26 South Main St.
Smithfield, Utah 84335
TEL 435-563-3734
sarchibald@sunrise-eng.com



Table of Contents

Executive Summary	4
Project Summary:.....	4
Background Data	5
Project Location	6
Technical Project Description.....	8
Evaluation Criteria	9
Evaluation Criterion A—Quantifiable Water Savings	9
Evaluation Criterion B—Water Supply Reliability	13
Evaluation Criterion C—Implementing Hydropower	18
Evaluation Criterion D—Complementing On-Farm Irrigation Improvements	18
Evaluation Criterion E—Department of the Interior Priorities.....	20
Evaluation Criterion F—Implementation and Results.....	24
Subcriterion F.1— Project Planning	24
Subcriterion F.2— Performance Measures	24
Subcriterion F.3— Readiness to Proceed	25
Evaluation Criterion G— Nexus to Reclamation Project Activities	27
Evaluation Criterion H— Additional Non-Federal Funding	28
Project Budget.....	29
Funding Plan and Letters of Commitment.....	29
Budget Proposal	31
Budget Narrative.....	32
Salaries and Wages	32
Fringe Benefits.....	33
Travel	33
Equipment	33
Materials and Supplies.....	34
Contractual	34
Third-Party In-Kind Contributions	34
Environmental and Regulatory Compliance Costs	35
Other Expenses	36
Indirect Costs	36
Total Costs	36
Environmental and Cultural Resources Compliance	36
Required Permits or Approvals.....	37
Letters of Support	38
Official Resolution.....	38
Unique Entity Identifier and System for Award Management	39

Table of Tables

Table 1: Water Right Information.....	6
Table 2: Water Loss Data	9
Table 3: Data for Wetted Perimeter Calculations	12
Table 4: Power Consumption and Power Cost Comparisons	22
Table 5: Summary of Non-Federal and Federal Funding Sources	31
Table 6: Budget Proposal.....	32

Table of Figures

Figure 1: Example of an Existing Personal Irrigation Pumping Station.....	5
Figure 2: Project Location Map	7
Figure 3: On-Farm Improvement Locations	17
Figure 4: Project Timeline	26

Executive Summary

The executive summary should include:

- *The date, applicant name, city, county, and state*
- *A one paragraph project summary that specifies the work proposed, including how funds will be used to accomplish specific project activities and briefly identifies how the proposed project contributes to accomplishing the goals of this FOA.*
- *State the length of time and estimated completion date for the proposed project*
- *Whether or not the proposed project is located on a Federal facility*

Date: March 19, 2019

Applicant: West Cache Irrigation Co. – South Fields Earthen Canal Piping Project
32 West Main St.
Trenton, Cache County, Utah 84338

Contact: Scott Archibald, PE
Sunrise Engineering, Inc
26 South Main St.
Smithfield, Utah 84335
sarchibald@sunrise-eng.com
435.563.3734

Project Summary:

For this project, the South Fields Earthen Canal, 2.25 miles of the open earthen canal will be replaced with pressurized pipe. The project will also eliminate six small, inefficient pump stations with one centralized pump station that will efficiently pressurize the entire pipeline. This proposal includes the funding of the design, construction, and start-up of the pressurized irrigation system. The project consists of the following:

- Conserve ±1222.5 ac-ft of water annually
- Provide shareholders with a more reliable pressurized system
- Conserve ±168,000 kWh of power/ energy savings
- Reduce the impacts of drought
- Improve the sustainability of rural communities
- Reduce operation and maintenance costs

Approximate Project Length: 11 months

Completion Date: February 2020

Federal Facility: This is not a Federal facility.

Background Data

As applicable, describe the source of water supply, the water rights involved, current water uses (e.g., agricultural, municipal, domestic, or industrial), the number of water users served, and the current and projected water demand. Also, identify potential shortfalls in water supply. If water is primarily used for irrigation, describe major crops and total acres served.

In addition, describe the applicant's water delivery system as appropriate. For agricultural systems, please include the miles of canals, miles of laterals, and existing irrigation improvements (e.g., type, miles, and acres). For municipal systems, please include the number of connections and/or number of water users served and any other relevant information describing the system.

If the application includes hydropower or energy efficiency elements, describe existing energy sources and current energy uses.

Identify any past working relationships with Reclamation. This should include the date(s), description of prior relationships with Reclamation, and a description of the project(s).

The West Cache Irrigation Company operates a 50-mile long open ditch earthen canal that diverts water from the Bear River near Riverdale, Idaho and extends across the Utah border for another 25 miles to the fields south of Newton, Utah. The South Fields is the last 2.25 miles of the 50-mile network and provides water to 1053 acres of agricultural land.

Water shortfalls occur because the users dependent on the South Fields is located at the tail end of the 50-mile long system. There is a constant battle between the West Cache Irrigation Company and the shareholders within the last 2.25 miles. If the West Cache Irrigation Company supplies flow to satisfy the shareholders, the canal operates at a high water level along the canal, which increases water loss through seepage and evaporation and has caused periodic flooding along the West Cache Canal. If the water level in the canal is lowered to reduce canal losses and potential flooding issues, the shareholders in the South Fields experience water shortages.



Figure 1: Example of an Existing Personal Irrigation Pumping Station

Nine (9) shareholders along the South Fields utilize six (6) electric pump stations. These pump stations provide water from the open ditch canal into 7.1 miles of existing on-farm shareholder pipelines. The pipelines supply water to the irrigation pivots and wheel lines. A typical pump station is equipped with screening equipment at the intake, see Figure 1 for an Example of an Existing Personal Pumping Station.

During July 2017 irrigation season, the six electrical pump stations used approximately 385,000 kWh of electric power. It has been calculated that with the centralized pump station, the same volume of water will be able to be supplied with 168,000 kWh savings each irrigation season of operation. In turn, this will save approximately \$11,400 per irrigation season of operating costs (\$1,810 per month). This project does not include the use of hydropower.

According to the Idaho Division of Water Rights, the water duty for this water right is 3.5 ac-ft per acre of irrigated land. Therefore, the total water duty for the South Fields is 3,685.5 ac-ft of water annually.

The shareholders of the West Cache Irrigation Company located in the South Fields Area operate under 1,053 shares of West Cache Irrigation Company shares and irrigate 1,053 acres of ground. The shareholders primarily sprinkle-irrigate all the acres to grow wheat, oats, alfalfa, and grass hay. Currently, West Cache Canal supplies the South Fields Earthen Canal with 10 CFS of water to supply the needs of the irrigators. West Cache Canal operates under the water right presented in Table 1.

Part of the proposed project will provide a second diversion point along the Bear River. This second diversion point will eliminate water losses associated with the demand for the South Fields throughout the entire 50-mile canal system. The diversion point will be located at the Newton South Fields Pumping Company's new pumping station shown in Figure 2. Preliminary negotiations between Idaho, Utah, and the West Cache Irrigation Company have already taken place, and permeant agreements are currently in the works.

Previous work between the Bureau of Reclamation and the West Cache Irrigation Company includes the Newton Lateral Piping Project. This project was awarded the WaterSMART grant in the fall of 2018. It composed of piping the Newton Lateral which is a 5.3-mile long segment of the West Cache Canal system. It is currently underway and is scheduled to be completed this December. As part of the Newton Lateral Piping Project, the environmental compliance was expanded to encompass the environmental work for the South Fields Piping Project as well to facilitate the quick implementation of the South Fields Piping Project through this grant opportunity. All environmental compliance will be to the approval of the Bureau of Reclamation prior to any form of construction.

Table 1: Water Right Information

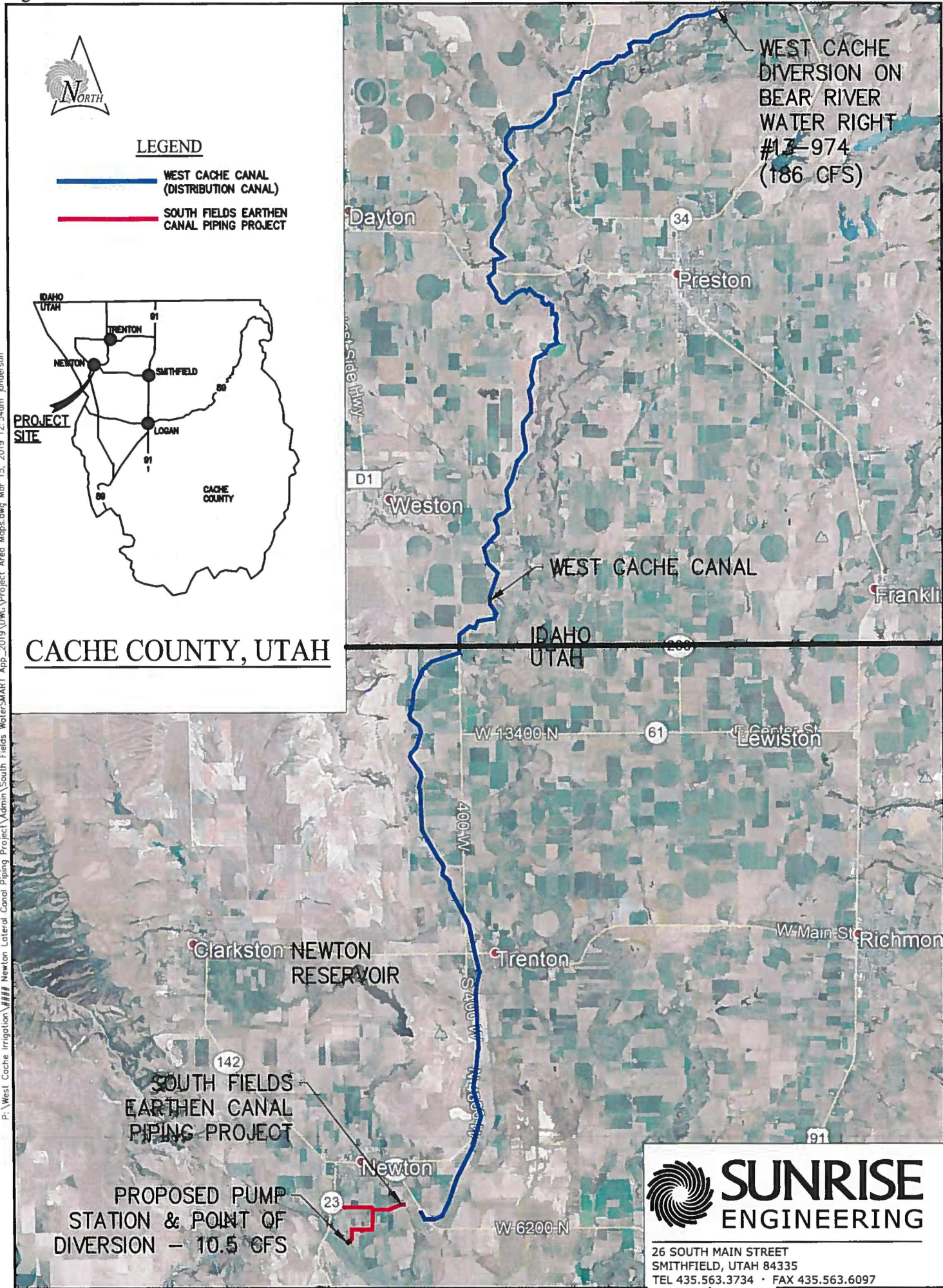
Idaho Water Right	Water Source	Priority Date	Flow	Ac-Ft
13-974	Bear River	1899	186 CFS	51,912 AC-FT

Project Location

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

The South Fields Earthen Canal Project is in Cache County, Utah immediately south of Newton, Utah. The headworks of the South Fields Earthen Canal is located at 41°50'29.10" N and 111°59'44.05" W. Figure 2 illustrates the location of the project in relation to its surroundings and the Newton Lateral. The Newton Lateral is the last 5.3 miles of the 50-mile West Cache Irrigation Company supply canal, the West Cache Canal.

Figure 2.



Technical Project Description

The technical project description should describe the work in detail, including specific activities that will be accomplished. This description shall have sufficient detail to permit a comprehensive evaluation of the proposal.

West Cache Irrigation Company currently owns and operates 50 miles of open irrigation ditches. The last 2.25 miles of this network is known as the South Fields. Currently the farmers utilizing the water from the South Fields receive water from the West Cache Canal. This project will separate the South Fields from the main West Cache Canal. This will be accomplished by placing a new pumping station along the Bear River as shown in Figure 2. The purpose in separating the South Fields from the West Cache Canal is to eliminate water loss throughout the entire West Cache Canal System.

In conjunction with separating the South Fields from the West Cache Canal, this project will pipe and pressurize the South Fields. Piping the South Fields will conserve water that is currently being lost to seepage, evaporation, and undesired vegetation uptake. Additionally, this project will provide a more stable irrigation system to the shareholders who depend on the South Fields for irrigation water.

The Utah Division of Water Resources (DWRe) has preliminarily approved a funding package that will fund this project in addition to other improvements along the West Cache Canal beyond the scope of this application. A copy of the preliminary approval letter has been attached in Appendix A along with an additional letter of support from the DWRe. Upon receiving the WaterSMART Grant, the total loan amount will be reduced to help lower the total financial impact on the farmers who utilize the South Fields for irrigation water. This area in Cache County is a low-income area.

Preliminary engineering analysis has been conducted to determine potential pipe sizes and pipe lengths, pumping station locations, and the number of irrigation connections. The preliminary design includes a pump station located at the new diversion point along the Bear River as shown in Figure 2. This pump station will be equipped with three pumps; one pump will be on a variable frequency drive while the other two are full drive pumps. This set up will provide one redundant pump while the variable frequency drive pump and one full drive pump can provide the required flow throughout the irrigation season.

The piping network will consist of a single backbone that is made of PVC Plastic Irrigation Pipe with a minimum pressure rating of 100 psi and sizes ranging from 21 in to 6 in. A minimum of seven connections will be installed along the main backbone. Each connection will consist of a gate valve for isolation or controlling the flow and an inline flow measuring device. The pump station along with each connection will be linked with a Supervisory Control and Data Acquisition (SCADA) system that will be accessible to the shareholders currently using the South Fields water.

With the funding secured from the DWRe a full engineering design of piping, the South Fields has already begun by a professional engineering firm to ensure proper design and safety considerations. The design will be in accordance with industry design standards as well as design standards set forth by the Natural Resources Conservation Service (NRCS).

By piping the South Fields, approximately 32.5% (1222.5 ac-ft /year) of the flow in the canal will be conserved. Currently, this water is being lost to seepage, evaporation, and undesired vegetation uptake. Additionally, the energy demand will also decrease due to the farmers no longer needing small, inefficient pumps to pressurize their irrigation systems. The combined energy savings due to operating a single pump station in place of each farmer operating their pump station is approximately 168,000 kWh or \$11,400 annually at 7.7 cents/kWh.

Evaluation Criteria

Evaluation Criterion A—Quantifiable Water Savings

Up to 30 points may be awarded for this criterion. This criterion prioritizes projects that will conserve water and improve water use efficiency by modernizing existing infrastructure. Points will be allocated based on the quantifiable water savings expected as a result of the project. Points will be allocated to give greater consideration to projects that are expected to result in more significant water savings.

All applicants should be sure to address the following:

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

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

According to the West Cache Irrigation Companies canal records, 10 cfs is diverted on average to the South Fields during the irrigation season of approximately 189 days a year (52% of the year). This equates to 3751.5 ac-ft/irrigation season or 3751.5 ac-ft/year. Along the earthen canals in the South Fields Area, there are three irrigation storage ponds that will no longer be needed due to the pressurization of the system. These ponds have large surface areas and are therefore a source of significant water loss for the canal system. Each pond has been evaluated individually for water loss.

Using the canal loss estimation method documented in the United States Department of Agriculture's National Engineering Handbook, a total estimated loss of 1222.5 ac-ft/ year was found. This total estimated loss is the summation of four separate calculations each representing an individual area: the main canal section, irrigation storage pond #1, irrigation storage pond #2, and the irrigation storage pond #3. Table 2 illustrates each of the four sections and their respective water losses due to seepage loss, evaporation loss, and vegetation loss.

Table 2: Water Loss Data

Evaluation Section/Area	Wetted Area (ft ²)	Seepage Loss (acre ft/year)	Evaporation Loss (acre ft/year)	Vegetation Loss (acre ft/year)	Total Loss (acre ft/year)
Main Canal Section	172,085	597.5	60.0	84.5	742.0
Irrigation Storage Pond #1	16,742	58.0	6.0	1.0	65.0
Irrigation Storage Pond #2	81,697	284.0	28.5	0.5	313.0
Irrigation Storage Pond #3	26,697	92.5	9.5	0.5	102.5
Total	297,222	1,032.0	104.0	86.5	1,222.5

With a total demand of 3751.5 ac-ft/year and a loss of 1222.5 ac-ft/ year, the percent loss can be calculated as follows:

$$\frac{1222.5_{ac*ft/year}}{3751.5_{ac*ft/year}} = 0.325 = 32.5\% \text{ Loss}$$

Describe current losses: Please explain where the water that will be conserved is currently going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground)?

Currently, the 1222.5 ac-ft/year loss is being lost to seepage through the earthen walls and bed of the existing canal, evaporation from the water surface exposed to sunlight, and heavy vegetation growth is covering the banks of the earthen canal. The amounts lost to each of these mechanisms are as follows:

- Seepage Loss = 1032.0 ac-ft/year
- Evaporation Loss = 104.0 ac-ft/year
- Vegetation Loss = 86.5 ac-ft/year

The accompanying calculations for these loss estimations can be found in Appendix B. Also included in Appendix B are the references for the supporting documentation of the water loss analysis used.

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

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

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

1. **Canal Lining/Piping:** Canal lining/piping projects can provide water savings when irrigation delivery systems experience significant losses due to canal seepage. Applicants proposing lining/piping projects should address the following:
 - a. How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.

Seepage Losses were determined using a method outlined in the United States Department of Agriculture Soil Conservation Service's National Engineering Handbook Chapter 2 – Irrigation Water Requirements. The full reference has been included in Appendix B. This method is an empirically derived method that uses the geometry of the canal and the soil the canal is constructed from to determine the seepage loss per mile of canal. The geometric data was gathered via site visits, aerial imagery, and owner furnished data. The soil data was acquired from the United States Geological Survey

(USGS) online database and has been included in Appendix B. The accuracy of this method is limited to 0.5 ac-ft.

The method outlined in the National Engineering Handbook also provides guidelines to determine water loss due to evaporation and vegetation uptake. Evaporation is generally taken as 10% of the amount lost due to seepage. This amount lost to evaporation is supported by the National Engineering Handbook as well as a published research article from Utah State University (USU) entitled “How Well Does Your Irrigation Canal Hold Water? Does it Need Lining?”, moreover, a published presentation from the NRCS entitled “Irrigation Water Conveyance.”

Water loss due to vegetation is based on a percentage of the total flow within the earthen canal ranging from 0.5% to 1.0%. The South Fields banks have heavy vegetation growth, and thus a 1.0% is used to determine total water loss due to undesired vegetation uptake. Some areas around two of the Irrigation Storage Ponds have minimal vegetation, and therefore 0.25% and 0.5% have been used. This method is supported in both the National Engineering Handbook, and the presentation previously stated produced by the NRCS. All of the materials referenced in this section are referenced in full in Appendix B.

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

Traditional methods of determining seepage loss such as ponding and inflow/outflow tests have not been performed on this canal section. This is primarily due to a lack of instrumentation in measuring flows throughout the canal. Part of the proposed project is to install flow measuring devices at key points in the system and at all diversion points.

Due to the lack of flow measurements throughout the system, an empirical method based on canal geometry and the material composing the canal was used to determine seepage loss. This method is described in detail in the previous section. The results of this method have been compared with observational data provided by Ed Cottle, who has been the West Cache Irrigation Company Operator for the past 20 years. According to the observational data, the canal experiences approximately 20% to 30% total loss throughout the duration of the irrigation season depending on the flow demand.

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

The project will be replacing the earthen canals with buried PVC pipe. Losses due to seepage, evaporation, and undesired vegetation uptake will be effectively eliminated. Due to the nature of PVC, leakage through the pipe walls is negligible. Although, if fittings are not installed correctly, water can be lost at pipe junctions, service line connections, or similar pipe fittings. The National Engineering Handbook states that buried pipeline losses range from 0.01 to 0.15 ft³/ft² per year of wetted perimeter depending on the age of the pipe. The pipe that will be installed will be new PVC pipe thus estimated loss through

the pipe is 0.01 ft³ per year per ft² of wetted perimeter. The calculations for the wetted perimeter are presented in the following table.

Table 3: Data for Wetted Perimeter Calculations

Pipe Diameter (in)	Pipe Circumference (ft)	Pipe Length (ft)	Total Wetted Perimeter (ft ²)
21	5.5	6,700	37,000
15	3.9	1,000	4,000
12	3.1	2,000	7,000
10	2.6	500	2,000
6	1.6	3,000	5,000
Total			55,000

$$55,000 \text{ ft}^2 * 0.01 \frac{\text{ft}^3}{\text{ft}^2 \text{ yr}} = 550 \frac{\text{ft}^3}{\text{yr}} = 0.013 \frac{\text{acre ft}}{\text{yr}}$$

This is less than a 0.00035% loss after the proposed project completion.

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

The project consists of piping approximately 2.25 miles of an open irrigation ditch. Currently, the canal experiences a total loss of 543 ac-ft/ year per mile of the earthen ditch (1222.5 ac-ft/year / 2.25 miles). After the proposed projects completion, the canal will experience approximately a total loss of 0.0058 ac-ft/year per mile of pipe (0.013 ac-ft/ year / 2.25 miles), which is negligible due to the sheer difference of more than 5 degrees of magnitude difference. This equates to an annual transit loss reduction of essentially 100% or an annual reduction of the full pre-project total loss of 543 ac-ft/year per mile.

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

Flow measuring devices will be installed at key points along the pipeline to monitor the actual flow through these key points. Each turn out/irrigation connection will have a flow measuring device to accurately measure and record the amount of water leaving the pipe system due to irrigation usage. A primary flow measuring device will be installed at the headworks of the piping system. This measuring device will provide accurate readings of how much water is being placed in the piping system. The entire piping system will be linked using a SCADA system. This SCADA system will link measured flow rates at any given location to a specific date and time enabling detailed comparisons between inflow and total outflow measurements to determine and quantify seepage losses.

The information provided by the SCADA system will not only aid the canal company but the local farmers using the system. With the detailed information provided by the individual flow measuring devices, local farmers can control their individual irrigation systems remotely and with greater efficiency.

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

The existing earthen canal will be replaced with PVC Plastic Irrigation Pipe (PIP) with a minimum pressure rating of 100 psi. A pumping station consisting of three pumps, an intake screening structure, flow measuring device, and SCADA devices will be placed at the head works. The three pumps will consist of two full drive pumps and one variable frequency drive pump allowing for a full range of flow operations with a spare pump for redundancy. The water will then be conveyed using a 21 in pipe. As irrigation demands take water from the system, the pipeline will be necked down from a 21 in to an 6 in by small increments. Each irrigation connection will be made using a gate valve and a flow measuring device, both will be controlled and monitored using a SCADA system.

Evaluation Criterion B—Water Supply Reliability

Up to 18 points may be awarded under this criterion. This criterion prioritizes projects that address water reliability concerns, including making water available for multiple beneficial uses and resolving water related conflicts in the region.

Note that an agreement will not be awarded for an improvement to conserve irrigation water unless the applicant agrees to the terms of Section 9504(a)(3)(B) of Public Law 111-11 (see p. 52 of the FOA for additional information).

Please address how the project will increase water supply reliability. Proposals that will address more significant water supply shortfalls benefitting multiple sectors and multiple water users, will be prioritized. General water supply reliability benefits (e.g., proposals that will increase resiliency to drought) will also be considered. Please provide sufficient explanation of the project benefits and their significance. These benefits may include, but are not limited to, the following:

1. *Will the project address a specific water reliability concern? Please address the following:*
 - *Explain and provide detail of the specific issue(s) in the area that is impacting water reliability, such as shortages due to drought, increased demand, or reduced deliveries. Will the project directly address a heightened competition for finite water supplies and over-allocation (e.g., population growth)?*

This project will assist in the reliability of the delivery of water to the shareholders using the South Fields. As previously stated, this is the end of a 50-mile canal. Currently, West Cache Irrigation Company desires to keep the water in their canal as low as possible. Operating the canal in this manner, water has not consistently reached the end of the South Fields. The main reasons the canal is operated in this manner is in response to avoiding the following:

- High seepage and evaporation loss throughout the 50-mile canal segment
- Canal failure due to high water levels in the canal resulting in flooding
- Landslides that have previously blocked the canal

The proposed project will assure that the shareholders using the South Fields receive their water allocation by providing a secondary diversion point on the Bear River. In addition, the proposed new pumping station on the Bear River will have a redundant pump, allowing irrigation water to be delivered at all times even if a pump fails.

- *Describe how the project will address the water reliability concern? In your response, please address where the conserved water 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 32.5% of conserved water will be used in two methods. The first method will be to ensure all shareholders receive their allocation of water during a drought or low water years. The second method is that the water will remain in the Bear River. Downstream of the project along the Bear River is the Bear River Migratory Bird Refuge operated by the United States Fish and Wildlife Service. Conserved water will aid the refuge in providing habitats for critical migratory birds as they struggle to control diseases and maintain a healthy ecosystem with their limited water supply. Additional water savings will be seen as farmers transition from flood irrigation to sprinkler irrigation.

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

The mechanism that will be used is the water share certificates of the West Cache Irrigation Company.

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

The first priority is making sure the water right allocation to the South Fields water users is met. Depending on the year this could take all of the saved water to meet their need. In wetter years the conserved water would not be diverted and would remain in the Bear River.

2. *Will the project make water available to achieve multiple benefits or to benefit multiple water users? Consider the following:*

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

The Yellow-Billed Cuckoo (threatened) is listed on the federal endangered species list and would benefit from the water that remains in the Bear River and makes it way to the Bear River Migratory Bird Refuge.

- *Will the project benefit a larger initiative to address water reliability?*

The benefits that will be realized from the completion of this project are aligned with Utah's water conservancy goals outlined in the document entitled "Bear

River Basin Planning for the Future”. The cover page of this document has been included as Appendix C.

- *Will the project benefit Indian tribes?*

This project will not benefit an Indian tribe.

- *Will the project benefit rural or economically disadvantaged communities?*

This project will support rural and economically disadvantaged communities. The majority of the South Fields water users live in Newton or Trenton, Utah. Newton has a population of 778 and Trenton has a population of 497. The median household income of both communities fall below the State median household income level and they are considered economically disadvantaged.

- *Describe how the project will help to achieve these multiple benefits. In your response, please address where the conserved will go and where 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.*

As described previously, the conserved water will be used in two main methods: first ensuring the current shareholders have access to their allocated water and second is to not divert the saved water and leave it in the river system.

Historically, the West Cache Irrigation Company has diverted more water than the shareholders are allocated to account for the water that will be lost during the hydraulic conveyance through the earthen canals. With the loss due to seepage, evaporation, and undesired vegetation uptake eliminated, the West Cache Irrigation Company can reduce the total amount of water diverted to the South Fields. This reduction in the total amount delivered will result in the reduction of water pulled from the Bear River or allow West Cache Irrigation Company to transfer the excess water to additional farmers in deed or use it farm currently unfarmable land.

3. *Does the project promote and encourage collaboration among parties in a way that helps increase the reliability of the water supply?*

- *Is there widespread support for the project?*

Yes, the shareholders have witnessed the benefits of these types of projects. As such, the shareholders are very supportive of the project.

- *What is the significance of the collaboration/support?*

Several meetings have been held with the West Cache Irrigation Company shareholders currently using the South Fields and the West Cache Irrigation Company to discuss the project and how to make the project feasible. This project will directly benefit the South Fields water users; however, the remaining shareholders of the West Cache Irrigation Company will also benefit by not maintaining the canal at high water levels to meet the needs of the South Fields water users. This will reduce the seepage along the entire 50-

mile-long West Cache Canal and the flooding along the West Cache Canal. The West Cache Irrigation Company Board sees this as a large benefit to the entire system.

- *Is the possibility of future water conservation improvements by other water users enhanced by completion of this project?*

Yes, there are four pivots and four wheel lines that are immediately planned to be installed if this project is implemented. In addition, other water users of the South Fields are watching to see how this project affects their irrigation practices. A successful project will greatly encourage other users along the 50-mile reach to follow and apply for WaterSMART funding for their laterals. In total there are approximately 186 cfs of water in the West Cache Canal network, realistically 25% of this water could be saved. Figure 3 shows the location of the proposed On-Farm Improvements.

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

There is a constant tension between the water users of the South Fields and the West Cache Irrigation Company with being able to reliably provide the allocated water. This project will eliminate the tension by supplying water to the South Fields water users by becoming independent from the West Cache Canal with the installation of the new pumping station along the Bear River.

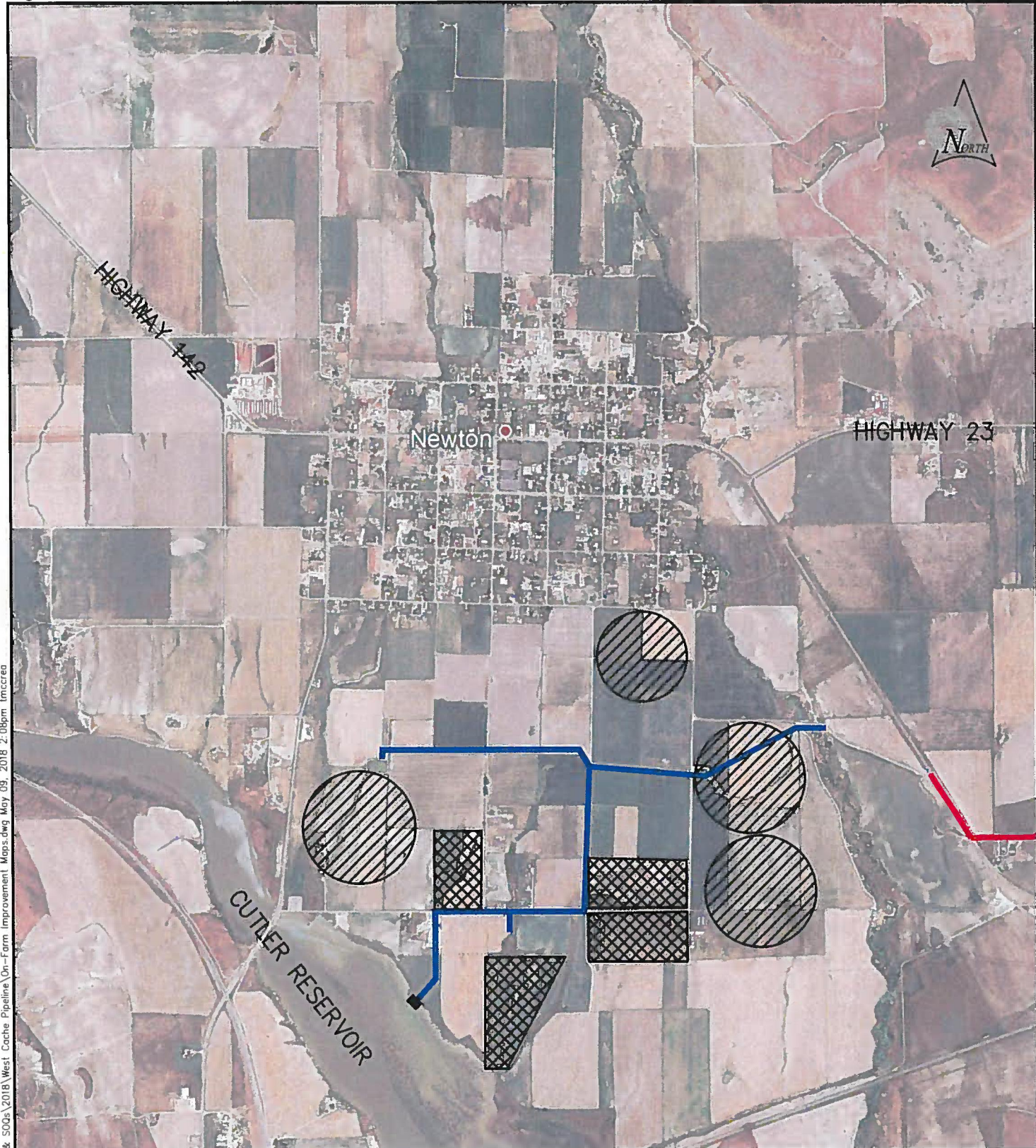
- *Describe the roles of any partners in the process. Please attach any relevant supporting documents.*

- West Cache Irrigation Company (including shareholders)
 - Owner and project stakeholder
- Users of the South Fields
 - Subgroup of West Cache Irrigation Company shareholders that will directly use the proposed piping network
- Sunrise Engineering Inc.
 - Providing engineering design and professional support for owner
- Utah Division of Water Resources
 - Funding: loan
- Reclamation
 - Funding: grant

4. *Will the project address water supply reliability in other ways not described above?*

The central pumping station will help provide a reliable water supply with the redundant pump. The existing individual pumping systems are not equipped with a redundant pump or generator. Water supplies are cut short when pumps, motors, or power failure.





Figure 3.



ON-FARM IMPROVEMENT MAP

WEST CACHE IRRIGATION COMPANY

LEGEND

-  PIVOT IRRIGATION
-  WHEEL LINE IRRIGATION
-  SOUTH FIELDS PROJECT
-  NEWTON LATERAL



26 SOUTH MAIN STREET
SMITHFIELD, UTAH 84335
TEL 435.563.3734 • FAX 435.563.6097
www.sunrise-eng.com

Evaluation Criterion C—Implementing Hydropower

Up to 18 points may be awarded for this criterion. This criterion prioritizes projects that will install new hydropower capacity in order to utilize our natural resources to ensure energy is available to meet our security and economic needs.

The piping and pressurizing project of the existing South Fields does not include the installation of a hydropower system. There will be a reduction of energy consumption due to the elimination of individual irrigation pumping systems and the installation of a single pumping station. This energy conservation is discussed in detail in Evaluation Criterion E-2.a.

Evaluation Criterion D—Complementing On-Farm Irrigation Improvements

*Up to 10 points may be awarded for projects that describe in detail how they will **complement on-farm irrigation improvements** eligible for NRCS financial or technical assistance.*

*Note: Scoring under this criterion is based on an overall assessment of the extent to which the WaterSMART Grant project will complement ongoing or future on-farm improvements. Applicants should describe any proposal made to NRCS, or any plans to seek assistance from NRCS in the future, and how an NRCS-assisted activity would complement the WaterSMART Grant project. Financial assistance through the Environmental Quality Incentives Program (EQIP) is the most commonly used program by which NRCS helps producers implement improvements to irrigation systems, but NRCS does have additional technical or financial assistance programs that may be available. Applicants may receive maximum points under this criterion by providing the information described in the bullet points below. **Applicants are not required to have assurances of NRCS assistance by the application deadline to be awarded the maximum number of points under this sub-criterion.** Reclamation may contact applicants during the review process to gather additional information about pending applications for NRCS assistance if necessary.*

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

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

- *Describe any planned or ongoing projects by farmers/ranchers that receive water from the applicant to improve on-farm efficiencies.*
 - *Provide a detailed description of the on-farm efficiency improvements.*

Currently, there are eight plots of land that are irrigated using flood irrigation. Although flood irrigation is effective in watering crops, the amount lost to evaporation and seepage is significantly greater than using sprinklers. Those who currently irrigate with flood irrigation have developed plans to install pivots or wheel lines to irrigate their plots. The future use of pivots or wheel lines instead of flood irrigation will conserve water and decrease irrigation demand.

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

The farmers that are currently flood irrigating have started to work with the NRCS. The other farmers plan to work with the NRCS in the future once the project has been completed. A letter of support for this project from the NRCS has been included in Appendix A.

- *If available, provide documentation that the on-farm projects are eligible for NRCS assistance, that such assistance has or will be requested, and the number or percentage of farms that plan to participate in available NRCS programs.*

N/A

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

Located in Appendix A are various letters of intent/support of implementing pivots or wheel lines where flood irrigation is currently being used. These letters also state the intent to implement additional water conserving measures.

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

Many of the farmers that have indicated their intentions to implement on-farm improvements with the completion of this project have also indicated that if this project is not completed, they intend to remain with flood irrigation. Therefore, this project is directly facilitating the on-farm improvements that are currently being planned.

Additionally, with the piping and pressurizing of the South Fields, SCADA will be added to link the network. Irrigation connections will be made to the main pipeline using a gate valve and a flow measuring device that can both be monitored remotely. This ability will allow irrigators to evaluate their water usage closer and determine when and where water can be conserved. This control ability is currently not possible with the existing system.

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

Currently, there are eight fields that are irrigated using flood irrigation. The respective owners of these fields have stated that they are committed to installing pivots or wheel lines to irrigate those fields after the completion of the proposed project. With the switch from flood irrigation to sprinkler irrigation, less water will be lost to seepage and evaporation while watering the crops. This reduction in water loss will increase the water use efficiency for the area. A map illustrating the location of these fields has been previously included in Figure 3.

- *Describe the on-farm water conservation or water use efficiency benefits that would result from the on-farm component of this project.*
 - *Estimate the potential on-farm water savings that could result in acre- feet per year. Include support or backup documentation for any calculations or assumptions.*

One goal of the proposed project is to provide the opportunity for local farmers to implement on-farm water conservation measures. The switch from flood irrigation to sprinkler irrigation aids in the conservation of water within individual irrigation systems. Flood irrigation allows water to sit on the surface of the land for long durations of time. During these periods of time, large amounts of water are lost due to seepage and evaporation. With the switch to sprinkler irrigation, water is applied in a manner that aids in the elimination of water loss due to seepage and evaporation. The majority of the water applied using sprinkler irrigation is used by the crop itself instead of being lost due to seepage and evaporation.

However, data concerning potential on-farm water savings is not currently available for the specific region in which the intended on-farm improvements are planned for. With the completion of the on-farm improvements, water data will be recorded and compared to past water data to evaluate the increase in water efficiency and the amount of water savings. This data will be made available to the Reclamation upon request.

Note: On-farm water conservation improvements that complement the water delivery improvement projects selected through this FOA may be considered for NRCS funding and technical assistance to the extent that such assistance is available. For more information, including application deadlines and a description of available funding, please contact your local NRCS office. See the NRCS website for office contact information, www.nrcs.usda.gov/wps/portal/nrcs/main/national/contact/states/.

Evaluation Criterion E—Department of the Interior Priorities

Up to 10 points may be awarded based on the extent that the proposal demonstrates that the project supports the Department of the Interior priorities. Please address those priorities that are applicable to your project. It is not necessary to address priorities that are not applicable to your project. A project will not necessarily receive more points simply because multiple priorities are addressed. Points will be allocated based on the degree to which the project supports one or more of the priorities listed, and whether the connection to the priority(ies) is well supported in the proposal.

1. Creating a conservation stewardship legacy second only to Teddy Roosevelt

- a. Utilize science to identify best practices to manage land and water resources and adapt to changes in the environment;*

N/A

- b. Examine land use planning processes and land use designations that govern public use and access;*

N/A

- c. *Revise and streamline the environmental and regulatory review process while maintaining environmental standards.*

N/A

- d. *Review DOI water storage, transportation, and distribution systems to identify opportunities to resolve conflicts and expand capacity;*

N/A

- e. *Foster relationships with conservation organizations advocating for balanced stewardship and use of public lands;*

N/A

- f. *Identify and implement initiatives to expand access to DOI lands for hunting and fishing;*

N/A

- g. *Shift the balance towards providing greater public access to public lands over restrictions to access.*

N/A

2. *Utilizing our natural resources*

- a. *Ensure American Energy is available to meet our security and economic needs;*

Currently, each farmer using the South Fields for irrigation is forced to use a pump to draw water out of the canal and pressurize their individual systems. Spread throughout the South Fields system there are six electric pumps. The electric pumps range from 30 Hp to 75 Hp. On average the collective pumps consume 385,000 kWh an irrigation season. At 7.7 Cents a kWh, that equates to \$29,600 a year in energy costs.

With the completion of the proposed project, three 60 Hp pumps in parallel would replace the existing six electric pumps. Only two pumps would be running at any given moment with the third acting as a redundant pump in case of a pump failure. One of the two running pumps would have a variable frequency drive on it allowing it to adjust to the demand and to save energy when the peak demand is not required. With two 60 Hp pumps running, the pumps would consume 237,000 kWh an irrigation season. At 7.7 Cents a kWh, that equates to \$18,200 a year in energy costs. The change from individual pumps to a single pump station equates to a 38.70% reduction in energy consumption and energy costs. Table 4 represents this data.

Table 4: Power Consumption and Power Cost Comparisons

	Number of Pumps to Maintain	Seasonal Power Consumption (kWh)	Energy Cost @ 7.70 Cents/kWh
Pre-Project Condition	7	385,000	\$ 29,600
Post-Project Condition	3	237,000	\$ 18,200
Energy Savings	N/A	168,000	\$ 11,400
Reduction Percentage		38.70%	38.70%

- b. *Ensure access to mineral resources, especially the critical and rare earth minerals needed for scientific, technological, or military applications;*

N/A

- c. *Refocus timber programs to embrace the entire 'healthy forests' lifecycle;*

N/A

- d. *Manage competition for grazing resources.*

N/A

3. *Restoring trust with local communities*

- a. *Be a better neighbor with those closest to our resources by improving dialogue and relationships with persons and entities bordering our lands;*

This project will aid in reducing the tension and conflicts that exist between the shareholder's users of the South Fields and the West Cache Irrigation Company. This will be accomplished by reducing the amount of water that West Cache Irrigation Company is required to deliver to the shareholders.

- b. *Expand the lines of communication with Governors, state natural resource offices, Fish and Wildlife offices, water authorities, county commissioners, Tribes, and local communities.*

N/A

4. *Striking a regulatory balance*

- a. *Reduce the administrative and regulatory burden imposed on U.S. industry and the public;*

N/A

- b. *Ensure that Endangered Species Act decisions are based on strong science and thorough analysis.*

N/A

5. *Modernizing our infrastructure*

- a. *Support the White House Public/Private Partnership Initiative to modernize U.S. infrastructure;*

This project will help modernize the irrigation practices along the South Fields. This will be accomplished by replacing the open ditch irrigation system with a buried pressurized pipe system. Additionally, this modernization of irrigation practices will save energy as more efficient motors replace old motors and as individual small pumps are replaced with a single pump station.

- b. *Remove impediments to infrastructure development and facilitate private sector efforts to construct infrastructure projects serving American needs;*

The West Cache Irrigation Company is a privately owned and operated company that serves the irrigation needs for rural communities in and around Newton, Trenton, and Amalga, Utah, as well as, Weston, Dayton, Preston, and Riverdale, Idaho. The canal extends for over 50 miles providing irrigation for farmers all along its length. In many of these rural communities, the towns and cities do not provide secondary irrigation water to their residents nor surrounding communities. Canal and irrigation companies are vital private entities for these communities. The 2.25-mile section that will be piped and pressurized by this project will serve 1,053 acres of farmland in and around Newton, Utah.

- c. *Prioritize DOI infrastructure needs to highlight:*

- 1. *Construction of infrastructure;*

N/A

- 2. *Cyclical maintenance;*

N/A

- 3. *Deferred maintenance.*

N/A

Evaluation Criterion F—Implementation and Results

Up to 6 points may be awarded for these subcriteria.

Subcriterion F.1— Project Planning

Points may be awarded for proposals with planning efforts that provide support for the proposed project.

Does the applicant have a Water Conservation Plan and/or System Optimization Review (SOR) in place? Please self-certify, or provide copies of these plans where appropriate to verify that such a plan is in place.

Provide the following information regarding project planning:

1. *Identify any district-wide, or system-wide, planning that provides support for the proposed project. This could include a Water Conservation Plan, SOR, Drought Contingency Plan or other planning efforts done to determine the priority of this project in relation to other potential projects.*

Produced in January of 2004, DWRe published the “Bear River Basin Planning for the Future” a Utah State Water Plan specific to the Bear River Basin. The water in the West Cache Canal and the South Fields come directly from the Bear River. The water from the Bear River Basin supplies large and small communities throughout northern Utah, southeastern Idaho, and southwestern Wyoming. The water conservation plan can be viewed in Appendix C.

2. *Describe how the project conforms to and meets the goals of any applicable planning efforts, and identify any aspect of the project that implements a feature of an existing water plan(s).*

The “Bear River Basin Planning for the Future” lays out, in Chapters 4 and 5, the need for water conservation and the development of efficient agricultural use of water. It states that between 20% and 65% of water diverted into a canal can be lost to seepage, evaporation, and transpiration from vegetation along the canal banks. The document identifies various strategies that can help minimize these losses while increasing the efficiency of the water used in irrigation. One strategy discussed is the piping and pressurizing of open ditch canals. Another strategy outlined is the use of sprinkler irrigation rather than flood irrigation. A final strategy given is the automation of irrigation systems using SCADA and irrigation equipment that can be controlled or monitored using telemetry. The proposed project encompasses all three of these strategies in decreasing the amount of water lost from the open canal and increasing the efficiency of water usage during irrigation.

Subcriterion F.2— Performance Measures

Points may be awarded based on the description and development of performance measures to quantify actual project benefits upon completion of the project.

Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (e.g., water saved or better managed, energy generated or saved).

The benefits of the proposed project will be categorized into three areas:

- 1) reduction of water loss during water conveyance.
- 2) reduction of energy consumption and costs due to pumping requirements.
- 3) increase in water use efficiency due to improvements made on individual irrigation systems encouraged with the completion of the proposed project.

The reduction of water loss during water conveyance will be measured by comparing historic demands of the South Fields to demands after the completion of the proposed project. This will be made possible with the installation of a flow measuring device at the headworks of the proposed project and the installation of flow measuring devices at each point of diversion along the piped South Fields.

Reduction of energy consumption and energy costs will be quantified by comparing past recorded electrical demands from the various individual pumps to the electrical demands of the new single pump station. Similarly, the electrical costs will be determined using the same comparison but comparing costs instead of electrical demands. Inflation will be accounted for to avoid artificial results.

The increase in water use efficiency will be a specific measure for those farmers that implement additional water conservation measures on their individual irrigation systems made possible/probable with the completion of the proposed project. These improvements include the switch from flood irrigation to using pivots or wheel lines. The efficiency will be quantified by comparing the past demand for water for individual fields/farmers and the demand after the improvements have been installed. Similar periods will be used for comparison to ensure an accurate measurement.

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

Program funding may be used to install necessary equipment to monitor progress. However, program funding may not be used to measure performance after project construction is complete (these costs are considered normal operation and maintenance costs and are the responsibility of the applicant).

Subcriterion F.3— Readiness to Proceed

Points may be awarded based upon the extent to which the proposed project is capable of proceeding upon entering into a financial assistance agreement. Applicants that describe a detailed plan (e.g., estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates) will receive the most points under this criterion.

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

The West Cache Irrigation Company has been working diligently over the past year to make the South Fields project occur. The loan or non-grant portion of the project has been secured. Several meetings between Idaho and Utah Department of Water Rights have been held to determine the correct documents to transfer an Idaho right down river into Utah. These documents are being reviewed. Environmental work is underway and as soon as the snow melts it will be finalized. Design of the system has been awarded to Sunrise Engineering and is ongoing. Engineering design plans, easements, and permits are being complete this spring and summer. It is anticipated to be completed by June 2019. Construction is scheduled for Fall of 2019.

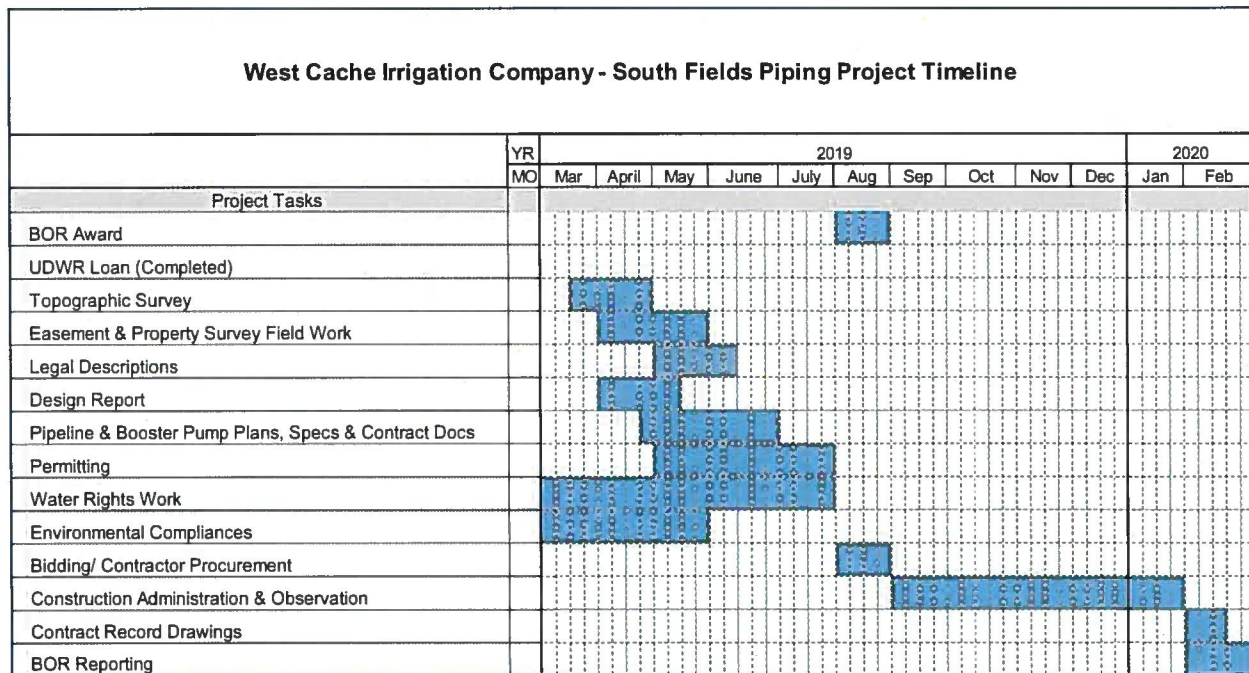


Figure 4: Project Timeline

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

The required permits include Cache County road permits, Utah Division of Water Resources (loan agency) plan approval, BOR Environmental clearance, Idaho Water Rights – Transfer approval, and Utah Water Rights – Change Application approval.

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

Sunrise Engineering has prepared hydraulic water model of the pipe network, evaluated pump sizing and energy pumping costs, performed seepage calculation with regards to the soil types, conducted preliminary environmental reviews, and held meetings with Utah & Idaho Divisions of Water rights concerning the transfer of water from Idaho into Utah.

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

West Cache has updated bylaws allowing shareholders to be charged a different rate depending on the lateral or section of the canal their shares are located on. This was needed to accommodate the shareholders that desire to participate in Water Smart canal piping projects.

- *Describe how the environmental compliance estimate was developed. Has the compliance cost been discussed with the local Reclamation office?*

The environmental compliance estimates were taken from Sunrise's experience with completing NEPA documents. Sunrise has reviewed these costs with BOR.

Evaluation Criterion G— Nexus to Reclamation Project Activities

Up to 4 points may be awarded if the proposed project is in a basin with connections to Reclamation project activities. No points will be awarded for proposals without connection to a Reclamation project or Reclamation activity.

- *Is the proposed project connected to Reclamation project activities? If so, how? Please consider the following:*

- *Does the applicant receive Reclamation project water?*

No.

- *Is the project on Reclamation project lands or involving Reclamation facilities?*

No.

- *Is the project in the same basin as a Reclamation project or activity?*

Yes, the proposed project is located immediately downstream from the Newton Lateral which is a 5.2-mile long canal within the West Cache Canal system. The Newton Lateral Piping Project was awarded a WaterSMART Grant last year and will be completed this year.

Within the same basin as the proposed project there is Reclamations project known as the Newton Dam Project. The Newton Dam is located just over 3.2 miles north of the midpoint of the South Fields. Additionally, the proposed project is located within Cache Valley and there have been several WaterSmart projects complete in the valley for example; Newton Water Users Canal Lining, Newton Water Users Piping the Dam, Benson Irrigation Users Canal lining, Cub River Canal Lining projects to name a few.

- *Will the proposed work contribute water to a basin where a Reclamation project is located?*

Yes, the Newton Dam Project, Hyrum Dam Project. Also, with water conservation measures in place, such as piping the canal or increasing water efficiency on irrigated land, the total demand from the Bear River will decrease. With the decrease in demand from the Bear River, more water will be allowed to continue to flow down the Bear River. As stated in the "Bear River Basin Planning for the Future", the Bear River Development Act of 1991 allocates 50,000 ac-ft of water to both the Jordan Valley Water Conservancy District and Weber Basin Water Conservancy District, 60,000 ac-ft to the Bear River Water Conservancy District, and 60,000 ac-ft to the water users in Cache

County. These allocated waters impact a vast number of Reclamation projects, such as the Weber Basin Project and its related projects and dams.

- *Will the project benefit any tribe(s)?*

The project will not benefit an Indian tribe.

Evaluation Criterion H— Additional Non-Federal Funding

Up to 4 points may be awarded to proposals that provide non-Federal funding in excess of 50 percent of the project costs. State the percentage of non-Federal funding provided using the following calculation:

$$\frac{\text{Non – Federal Funding}}{\text{Total Project Cost}} = \frac{\$520,000}{\$920,000} = 56.5\%$$

Project Budget

The project budget includes:

1. *Funding plan and letters of commitment*
2. *Budget proposal*
3. *Budget narrative*

Project costs for environmental and cultural compliance and engineering/design that were incurred or are anticipated to be incurred prior to award should be included in the proposed project budget.

Funding Plan and Letters of Commitment

Describe how the non-Federal share of project costs will be obtained. Reclamation will use this information in making a determination of financial capability.

Project funding provided by a source other than the applicant shall be supported with letters of commitment from these additional sources. Letters of commitment shall identify the following elements:

- *The amount of funding commitment*
- *The date the funds will be available to the applicant*
- *Any time constraints on the availability of funds*
- *Any other contingencies associated with the funding commitment*

Commitment letters from third party funding sources should be submitted with your application. If commitment letters are not available at the time of the application submission, please provide a timeline for submission of all commitment letters. Cost-share funding from sources outside the applicant's organization (e.g., loans or State grants), should be secured and available to the applicant prior to award.

Reclamation will not make funds available for an award under this FOA until the recipient has secured non-Federal cost-share. Reclamation will execute a financial assistance agreement once non-Federal funding has been secured or Reclamation determines that there is sufficient evidence and likelihood that non-Federal funds will be available to the applicant subsequent to executing the agreement.

The funding plan for the project is as follows and will be split as follows:

- 56.5% West Cache Irrigation Company through the Utah Division of Water Resources Loan: \$520,000
- 43.5% Reclamation WaterSMART Grant: \$400,000
- Support letters from the Utah Division of Water Resources can be found in Appendix A. A draft of the official resolution supporting the project from the West Cache Irrigation Company can be viewed in Appendix G, a final copy will be sent to the Bureau of Reclamation.
- The funding plan is to borrow \$520,000 at 1% for 25 years from the State of Utah Board of Water Resources
- Preliminary Approval of the loan occurred on January 31, 2019, as indicated in the Authorization of Funds Letter from the Utah Division of Natural Resources in Appendix A.
- As noted in the Authorization of Funds Letter in Appendix A, there are six requirements or constraints that need to be met in order to finalize the loan. All of these requirements are do-

able and are common practice for these types of loans from the Utah Division of Water Resources.

- There are no other known contingencies that are associated with the funding commitment

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

- *Any monetary contributions by the applicant towards the cost-share requirement and source of funds (e.g., reserve account, tax revenue, and/or assessments)*

West Cache Irrigation Company will not be placing any monetary contributions directly to the project. West Cache Irrigation Company has secured a loan from the Utah Division of Water Resources to provide for their cost-sharing requirements.

- *Any costs that will be contributed by the applicant*

West Cache Irrigation Company has secured a loan from the Utah Division of Water Resources to provide for their cost-sharing requirements.

- *Any third party in-kind costs (i.e., goods and services provided by a third party)*

There are no third party individuals or entities that will be participating in the cost sharing of this project other than the State of Utah Division of Water Resources as will be explained further in the application.

- *Any cash requested or received from other non-Federal entities.*

The cost-share requirements will be met by the West Cache Irrigation Company through the loan secured from the Utah Water Resource Board as administered from the Utah Division of Water Resources.

- *Any pending funding requests (i.e. grants or loans) that have not yet been approved and explain how the project will be affected if such funding is denied.*

At this point, the Utah Division of Water Resources has preliminarily approved the loan required to complete this project. As such there are no funds that are pending for approval.

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

- *The project expenditure and amount*
- *The date of cost incurrence*
- *How the expenditure benefits the Project*

The West Cache Irrigation Company signed an engineering agreement with Sunrise Engineering for preliminary engineering and Reclamation application preparation.

- Preliminary Design & Funding Assistance – Sunrise Engineering: \$5,000
- Expenses Occurred between February-March 2018

- Without these expenditures, the West Cache Irrigation Company would not have had the resources to make the application with Reclamation.
- West Cache Irrigation Company shareholders are paying for these expenses on a per share basis and this cost is NOT included as costs to be funded by this budget proposal.

Table 5: Summary of Non-Federal and Federal Funding Sources

Funding Source	Amount	Percentage
Non-Federal Entities		
*Newton South Fields Pumping Company – Division of Water Resources Water Loan	\$ 520,000	56.5%
Other Federal Entities		
None	\$ 0	0%
Reclamation Federal Entity		
REQUESTED RECLAMATION FUNDING	\$ 400,000	43.5%
Total Project Funding	\$ 920,000	100%

Budget Proposal

The budget proposal should include detailed information on the categories listed below and must clearly identify all items of cost, including those that will be contributed as non-Federal cost share by the applicant (required and voluntary), third-party in-kind contributions, and those that will be covered using the funding requested from Reclamation, and any requested pre-award costs. Unit costs must be provided for all budget items including the cost of services or other work to be provided by consultants and contractors. Applicants are strongly encouraged to review the procurement standards for Federal awards found at 2 CFR §200.317 through §200.326 before developing their budget proposal. It is also strongly advised that applicants use the budget proposal format shown below in Table 2 or a similar format that provides this information. If selected for award, successful applicants must submit detailed supporting documentation for all budgeted costs.

Note: *The costs of preparing bids, proposals, or applications on potential Federal and non-Federal awards or projects, including the development of data necessary to support the non-Federal entity's application are not eligible project costs and should not be included in the budget proposal (2 CFR §200.460).*

Table 6: Budget Proposal

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	TOTAL COST
	\$/Unit	Quantity		
Salaries and Wages				
Included within Contractual	N/A	N/A	N/A	\$ 0
Fringe Benefits				
Not Applicable for Current Budget	N/A	N/A	N/A	\$ 0
Travel				
Not Applicable for Current Budget	N/A	N/A	N/A	\$ 0
Equipment				
Included within Contractual	N/A	N/A	N/A	\$ 0
Supplies and Materials				
Included within Contractual	N/A	N/A	N/A	\$ 0
Contractual/Construction				
Engineering Professional Services	Refer to Appendix D			\$ 124,500
Construction	Refer to Appendix E			\$ 745,500
Environmental	Refer to Appendix F			\$ 40,000
Legal Professional Services	\$ 10,000	1	Lump Sum	\$ 10,000
Other				
Not Applicable for Current Budget	N/A	N/A	N/A	\$ 0
TOTAL DIRECT COSTS				\$ 920,000
Indirect Costs				
Not Applicable for Current Budget	N/A	N/A	N/A	\$ 0
TOTAL ESTIMATED PROJECT COSTS				\$ 920,000

Budget Narrative

Submission of a budget narrative is mandatory. An award will not be made to any applicant who fails to fully disclose this information. The budget narrative provides a discussion of, or explanation for, items included in the budget proposal. The types of information to describe in the narrative include, but are not limited to, those listed in the following subsections. Costs, including the valuation of third-party in-kind contributions, must comply with the applicable cost principles contained in 2 CFR Part §200, available at the Electronic Code of Federal Regulations (www.ecfr.gov).

Salaries and Wages

Indicate the Project Manager and other key personnel by name and title. The Project Manager must be an employee or board member of the applicant. Other personnel should be indicated by title alone. For all positions, indicate salaries and wages, estimated hours or percent of time, and rate of compensation.

The labor rates must identify the direct labor rate separate from the fringe rate or fringe cost for each category. All labor estimates must be allocated to specific tasks as outlined in the applicant's technical project description. Labor rates and proposed hours shall be displayed for each task. The budget proposal and narrative should include estimated hours for compliance with reporting requirements, including final project and evaluation. Please see Section F.3. Program Performance Reports for information on types and frequency of reports required.

Generally, salaries of administrative and/or clerical personnel will be included as a portion of the stated indirect costs. If these salaries can be adequately documented as direct costs, they should be included in this section; however, a justification should be included in the budget narrative.

Salaries and Wages are included in Contractual Costs. With the Engineering Costs, the budgeted amounts have been broken down to Salaries and Wages (Fee Schedule) where applicable. These cost break downs are included in Appendix D.

Fringe Benefits

Identify the rates/amounts, what costs are included in this category, and the basis of the rate computations. Federally approved rate agreements are acceptable for compliance with this item.

Fringe Benefits are not included in this budget. All compensation for employees with the engineering firm is expressed in the Fee Schedule attached in Appendix D. All other compensation for employees outside of the engineering firm are included in their Contractual Costs.

Travel

Identify the purpose of each anticipated trip, destination, number of persons traveling, length of stay, and all travel costs including airfare (basis for rate used), per diem, lodging, and miscellaneous travel expenses. For local travel, include mileage and rate of compensation.

Travel Costs are not necessary for the completion of this project.

Equipment

If equipment will be purchased, itemize all equipment valued at or greater than \$5,000. For each item, identify why it is needed for the completion of the Project and how the equipment was priced. Note: if the value is less than \$5,000, the item should be included under materials and supplies.

If equipment is being rented, specify the number of hours and the hourly rate. Local rental rates are only accepted for equipment actually being rented or leased. If the applicant intends to use their own equipment for the purposes of the project, the proposed usage rates should fall within the equipment usage rates outlined by the United States Army Corps of Engineers (USACE) within their Construction Equipment Ownership and Operating Expense Schedule (EP 1110-1-8) at:

www.publications.usace.army.mil/USACE-Publications/Engineer-Pamphlets/u43545q/313131302D312D38.

Note: If the equipment will be furnished and installed under a construction contract, the equipment should be included in the construction contract cost estimate.

Equipment Costs are included in Contractual Costs. Documentation of all contracts incurred during the project will be properly documented as required and will be made available upon request.

Materials and Supplies

Itemize supplies by major category, unit price, quantity, and purpose, such as whether the items are needed for office use, research, or construction. Identify how these costs were estimated (i.e., quotes, engineering estimates, or other methodology).

Note: If the materials/supplies will be furnished and installed under a contract, the equipment should be included in the construction contract cost estimate.

Materials and Supplies are included in Contractual Costs. Documentation of all contracts incurred during the project will be properly documented as required and will be made available upon request.

Contractual

Identify all work that will be accomplished by consultants or contractors, including a breakdown of all tasks to be completed, and a detailed budget estimate of time, rates, supplies, and materials that will be required for each task. For each proposed contract, identify the procurement method that will be used to select the consultant or contractor and the basis for selection

Please note that all procurements with an anticipated aggregate value that exceeds the Micro-purchase Threshold (currently \$10,000) must use a competitive procurement method (see 2 CFR §200.320 – Methods of procurement to be followed). Only contracts for architectural/engineering services can be awarded using a qualifications-based procurement method. If a qualifications-based procurement method is used, profit must be negotiated as a separate element of the contract price. See 2 CFR §200.317 through §200.326 for additional information regarding procurements, including required contract content.

Funding for the project will be used to pay for contractors, construction material, engineering consultants, environmental consultants, and attorney consultation. This includes construction, engineering, environmental, and legal services. A breakdown of these services can be viewed in the following Appendices.

- Appendix D – Engineering Services
- Appendix E – Construction Services
- Appendix F – Environmental Services

The costs found in the above-referenced Appendices were prepared by a professional engineering firm. Costs for construction were taken from recent bid documents from a similar type of work and projects. This information is available for review upon request.

Third-Party In-Kind Contributions

Identify all work that will be accomplished by third-party contributors, including a breakdown of all tasks to be completed, and a detailed budget estimate of time, rates, supplies, and materials that will be required for each task. Third-party in-kind contributions, including contracts, must comply with all applicable administrative and cost principles criteria, established in 2 CFR Part 200, available at www.ecfr.gov, and all other requirements of this FOA.

At this point in the project, West Cache Irrigation Company does not anticipate work to be completed from a third-party contributor.

Environmental and Regulatory Compliance Costs

Prior to awarding financial assistance, Reclamation must first ensure compliance with Federal environmental and cultural resources laws and other regulations (“environmental compliance”). Every project funded under this program will have environmental compliance costs associated with activities undertaken by Reclamation and the recipient.

To estimate environmental compliance costs, please contact compliance staff at your local Reclamation Office for additional details regarding the type and costs of compliance that may be required for your project. Note, support for your compliance costs estimate will be considered during review of your application. Contact the Program Coordinator (see Section G. Agency Contacts) for Reclamation contact information regarding compliance costs and requirements.

Environmental compliance costs are considered project costs and must be included as a line item in the project budget and will be cost shared accordingly.

The amount of the line item should be based on the actual expected environmental compliance costs for the project, including Reclamation's cost to review environmental compliance documentation. Environmental compliance costs will vary based on project type, location, and potential impacts to the environment and cultural resources. How environmental compliance activities will be performed (e.g., by Reclamation, the applicant, or a consultant) and how the environmental compliance funds will be spent, will be determined pursuant to subsequent agreement between Reclamation and the applicant. The amount of funding required for Reclamation to conduct any environmental compliance activities, including Reclamation's cost to review environmental compliance documentation, will be withheld from the Federal award amount and placed in an environmental compliance account to cover such costs. If any portion of the funds budgeted for environmental compliance is not required for compliance activities, such funds may be reallocated to the project, if appropriate.

Costs associated with environmental and regulatory compliance must be included in the budget. Compliance costs include costs associated with any required documentation of environmental compliance, analyses, permits, or approvals.

Applicable Federal environmental laws could include NEPA, ESA, NHPA, CWA, and other regulations depending on the project. Such costs may include, but are not limited to:

- The cost incurred by Reclamation to determine the level of environmental compliance required for the project*
- The cost incurred by Reclamation, the recipient, or a consultant to prepare any necessary environmental compliance documents or reports*
- The cost incurred by Reclamation to review any environmental compliance documents prepared by a consultant*
- The cost incurred by the recipient in acquiring any required approvals or permits, or in implementing any required mitigation measures*

A budget of \$40,000 is planned to complete the environmental requirements of this project. It is anticipated that a team of consultants will be used to prepare the environmental documents to a level acceptable by the National Environmental Policy Act (NEPA) requirements.

Other Expenses

Any other expenses not included in the above categories shall be listed in this category, along with a description of the item and why it is necessary. No profit or fee will be allowed.

There are no other expenses that have not been accounted for in the previous sections and previous budgets.

Indirect Costs

Indirect costs are costs incurred by the applicant for a common or joint purpose that benefit more than one activity of the organization and are not readily assignable to the activities specifically benefitted without undue effort. Costs that are normally treated as indirect costs include, but are not limited to, administrative salaries and fringe benefits associated with overall financial and organizational administration; operation and maintenance costs for facilities and equipment; and, payroll and procurement services. If indirect costs will be incurred, identify the proposed rate, cost base, and proposed amount for allowable indirect costs based on the applicable cost principles for the applicant's organization. It is not acceptable to simply incorporate indirect rates within other direct cost line items.

If the applicant has never received a Federal negotiated indirect cost rate, the budget may include a de minimis rate of up to 10 percent of modified total direct costs. For further information on modified total direct costs, refer to 2 CFR §200.68 available at www.ecfr.gov.

If the applicant does not have a federally approved indirect cost rate agreement and is proposing a rate greater than the de minimis 10 percent rate, include the computational basis for the indirect expense pool and corresponding allocation base for each rate. Information on "Preparing and Submitting Indirect Cost Proposals" is available from Interior, the National Business Center, and Indirect Cost Services, at www.doi.gov/ibc/services/finance/indirect-cost-services. If the proposed project is selected for award, the recipient will be required to submit an indirect cost rate proposal with their cognizant agency within 3 months of award.

There are no Indirect Costs associated with this proposed project.

Total Costs

<u>Non-Federal Funding Amount</u>	<u>Reclamation Funding Amount</u>	<u>Total Project Cost</u>
\$ 520,000	\$ 400,00	\$ 920,000

Environmental and Cultural Resources Compliance

All projects being considered for award funding will require compliance with the National Environmental Policy Act (NEPA) before any ground-disturbing activity may begin. Compliance with all applicable state, Federal and local environmental, cultural, and paleontological resource protection laws and regulations is also required. These may include, but are not limited to, the Clean Water Act (CWA), the Endangered Species Act (ESA), the National Historic Preservation Act (NHPA), consultation with potentially affected tribes, and consultation with the State Historic Preservation Office. Reclamation will

be the lead Federal agency for NEPA compliance and will be responsible for evaluating technical information and ensuring that natural resources, cultural, and socioeconomic concerns are appropriately addressed. As the lead agency, Reclamation is solely responsible for determining the appropriate level of NEPA compliance. Further, Reclamation is responsible to ensure that findings under NEPA, and consultations, as appropriate, will support Reclamation's decision on whether to fund a project. Environmental and cultural resources compliance costs are considered project costs. These costs will be considered in the ranking of applications.

Note, if mitigation is required to lessen environmental impacts, the applicant may, at Reclamation's discretion, be required to report on progress and completion of these commitments. Reclamation will coordinate with the applicant to establish reporting requirements and intervals accordingly.

Under no circumstances may an applicant begin any ground-disturbing activities (e.g., grading, clearing, and other preliminary activities) on a project before environmental and cultural resources compliance is complete and a Reclamation Grants Officer provides written notification that all such clearances have been obtained. This pertains to all components of the proposed project, including those that are part of the applicant's non-Federal cost-share. An applicant that proceeds before environmental and cultural resources compliance is complete may risk forfeiting Reclamation funding under this FOA. Costs incurred for ground-disturbing activities performed prior to award are not eligible for reimbursement or cost share unless the recipient can provide documentation that Federal environmental and cultural resource clearances were obtained for the Project prior to the commencement of the activities.

West Cache Irrigation Company understands that in no circumstances they are, to begin with any ground-disturbing activities on this project prior to the acceptance of their completed environmental and cultural resources compliance as approved by a Reclamation Grants Officer as documented in written notification. West Cache Irrigation Company further understands that this pertains to all components of this project including those funded by the non-Federal cost-sharing entities, namely West Cache Irrigation Company and the State of Utah's Department of Natural Resources. Lastly, West Cache Irrigation Company understands that in the event of the occurrence of any ground-disturbing activities, they may be at risk of forfeiting Reclamation funding.

West Cache Irrigation Company has already started the environmental and cultural compliance with the Bureau of Reclamation that will be required for this project. Last year the West Cache Irrigation Company was awarded a WaterSMART Grant for the Newton Lateral Piping Project. As part of that project and in the anticipation for this project, West Cache Irrigation Company expanded the scope for the environmental and cultural compliance to cover the area for both projects to help expedite this project.

Required Permits or Approvals

Applicants must state in the application whether any permits or approvals are required and explain the plan for obtaining such permits or approvals. Note that improvements to Federal facilities that are implemented through any project awarded funding through this FOA must comply with additional requirements. The Federal government will continue to hold title to the Federal facility and any improvement that is integral to the existing operations of that facility. Please see P.L. 111-11, Section 9504(a)(3)(B). Reclamation may also require additional reviews and approvals prior to award to ensure that any necessary easements, land use authorizations, or special permits can be approved consistent with the requirements of 43 CFR Section 429, and that the development will not impact or impair project operations or efficiency.

An environmental clearance will be required before construction can begin. Preliminary research with the Historic Places and National Wetlands Inventory suggests that there are no apparent areas to be concerned with at this time. Permits with Utah Department of Transportation, Storm Water Pollution & Prevention Plans, Cache County road crossing, Town of Newton, and Rocky Mountain Power permits are required for the project, but it is not anticipated that these permits will have major consequences with the project. Adding a new point of diversion to the water right, allowing the water to be taken out farther downstream on the Bear River will also need to be completed. We have spoken with the Utah and Idaho Department of Water Rights and their change application process will need to be followed. This permitting process to allow the new diversion point has already begun and a water right specialist within Sunrise Engineering is currently working on adding the diversion point.

Letters of Support

Please include letters from interested stakeholders supporting the proposed project. To ensure your proposal is accurately reviewed, please attach all letters of support/ partnership letters as an appendix. Letters of support received after the application deadline for this FOA will not be considered in the evaluation of the proposed project.

Letters of support for the project are attached in Appendix A. Appendix A includes Letters of Support from the following individuals or groups:

- Local NRCS Office: Aaron Romesser
- Department of Natural Resources – Division of Water Resources: Todd Stonely
- West Cache Irrigation Company Shareholders in support of on-farm improvements that will result from the project

Official Resolution

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

- *The identity of the official with legal authority to enter into an agreement*
- *The board of directors, governing body, or appropriate official who has reviewed and supports the application submitted*
- *The capability of the applicant to provide the amount of funding and/or in-kind contributions specified in the funding plan*
- *That the applicant will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement*

An official resolution meeting the requirements set forth above is mandatory. If the applicant is unable to submit the official resolution by the application deadline because of the timing of board meetings or other justifiable reasons, the official resolution may be submitted up to 30 days after the application deadline.

An official resolution meeting the criteria set forth above will be signed and submitted to the Bureau of Reclamation within the allotted 30 days permitted after the application deadline. A draft copy of the resolution has been attached in Appendix G.

Unique Entity Identifier and System for Award Management

All applicants (unless the applicant has an exception approved by Reclamation under 2 CFR §25.110[d]) are required to:

- (i) Be registered in the System for Award Management (SAM) before submitting its application;*
- (ii) Provide a valid unique entity identifier in its application; and*
- (iii) Continue to maintain an active SAM registration with current information at all times during which it has an active Federal award or an application or plan under consideration by a Federal awarding agency.*

Meeting the requirements set forth above is mandatory. *If the applicant is unable to complete registration by the application deadline, the unique entity identifier must be obtained and SAM registration must be initiated within 30 days after the application deadline in order to be considered for selection and award.*

Reclamation will not make a Federal award to an applicant until the applicant has complied with all applicable unique entity identifier and SAM requirements and, if an applicant has not fully complied with the requirements by the time the Reclamation is ready to make an award, Reclamation may determine that the applicant is not qualified to receive a Federal award and use that determination as a basis for making a Federal award to another applicant.

The Company is currently registered with SAM, under DUNNS number 0683523220000. The West Cache Irrigation Company will maintain a SAM registration as required.

Appendix A

Commitment Letters And Support Letters

March 11, 2019

Sid Munk, President
West Cache Irrigation Co.
1207 South 400 East
Trenton, Utah 84338

RE: Letter of Support for West Cache Irrigation Company Pipeline Project - South Fields Area

Dear Mr. Munk:

I am writing in behalf of the North Logan Field Office. The Natural Resources Conservation Service (NRCS) would like to state their official support of your plans to pipe and pressurize a portion of West Cache Irrigation Companies earth canals known as the South Fields Area. The NRCS continues to support the WaterSMART Grant Program, and the piping of these earthen canals provides a wonderful opportunity for the NRCS to help the local farmers that depend on the earthen canals in the South Fields Area for irrigation.

With the WaterSMART Grant awarded to the West Cache Irrigation Company to pipe the Newton Lateral, the NRCS can provide additional aid to the local farmers. This aid will be offered in the form of funding opportunities and technical advice/expertise to help the local farmers improve their individual irrigation systems to further conserve and protect the environment.

Regards,



Aaron Romesser
Acting District Conservationist
(435) 793-3905 – Randolph, Utah Office
(435) 753-5616 – North Logan, Utah Office
aaorn.romesser@ut.usda.gov
Natural Resources Conservation Service (NRCS)
United States Department of Agriculture (USDA)

CC Scott Archibald, PE Sunrise Engineering (via email)



GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Water Resources

ERIC L. MILLIS
Division Director

March 13, 2019

Sid Munk, President
West Cache Irrigation Co.
1207 South 400 East
Trenton, Utah 84338

RE: Letter of Support for West Cache Irrigation Company Pipeline Project RE421 -
South Fields Area

Mr. Munk:

The Utah Division of Water Resources understands that West Cache Irrigation Company is seeking federal funds to pipe and pressurize a part of the company's ditch system, known as the South Fields Area. Piping open, earthen canals typically saves up to one-third of the water available, and for a system of this size, the savings would be significant.

As an agency, our mission is to plan, conserve, develop and protect Utah's water resources. Through revolving loan funds overseen by the Utah Board of Water Resources, the division is able to provide financial assistance to help construct projects that further this mission.

On January 31, 2019, the board authorized a loan for \$2,125,000 to help the company construct a project that includes improvements in the South Fields Area. It is our understanding that the company will use \$620,000 of these funds in this area and that an additional \$300,000 in WaterSMART funds would enable the company to completely pressurize the distribution system.

As manifest by its authorization of funds, the Board of Water Resources is very supportive of your project and hopes that you are successful in obtaining the desired federal funding to supplement existing funds and complete the additional improvements.

Sincerely,

Todd Stonely, P.E.
Project Funding Manager

TES:db
cc: Scott Achibald, PE Sunrise Engineering (via email)





GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Water Resources

ERIC L. MILLIS
Division Director

February 4, 2019

Glade Griffin, President
West Cache Irrigation Company
338 N. Center St.
Trenton, UT 84338

RE: Authorization of Funds, Proj. No. RE421 - West Cache Irrigation Company

Mr. Griffin:

In its January 31, 2019 meeting, the Board of Water Resources authorized your project to replace almost 5.3 miles of the West Cache Irrigation Ditch with pipe, construct two pump stations, and related appurtenance. The board will advance 60.7% of the project cost, up to \$2,125,000, which the company will return to the state at 1% interest over approximately 25 years, with annual payments of \$100,000. The Board's action is contingent upon the availability of funds at the time the project is ready for construction.

Attached is a list of requirements that need to be accomplished before a funding agreement can be executed. Also attached are forms that will accomplish requirement #2 regarding your company vote. Please fill-out the form applicable to your bylaws, etc.

Please contact Russell Hadley at 801-538-7289 if you have any questions.

Thank you,

Todd Stonely, P.E.
Project Funding Manager

TES:RRH:db

Enclosures

1. List of Requirements
2. Certification and Acknowledgment Forms (2)

cc: Charles Holmgren - Board of Water Resources (via email)
Scott Archibald - Sunrise Engineering (via email)



LIST OF REQUIREMENTS

Before the Board of Water Resources can enter into a funding agreement with the WEST CACHE IRRIGATION COMPANY, its officers must do the following:

1. Obtain all easements, rights-of-way, and permits required to construct, operate, and maintain the project.
2. Pass a resolution by the appropriate (as defined in the company's Articles of Incorporation and Bylaws) majority of company stock authorizing its officers to do the following:
 - a. Assign properties, easements, and water rights required for the project to the Board of Water Resources.
 - b. Enter into a contract with the Board of Water Resources for construction of the project and subsequent purchase from the Board.
3. Have an attorney give the Board of Water Resources a written legal opinion that:
 - a. The company is legally incorporated for at least the term of the purchase contract and is in good standing with the state Department of Commerce.
 - b. The company has legally passed the above resolution in accordance with the requirements of state law and the company's Articles of Incorporation and Bylaws.
 - c. The company has obtained all permits required for the project.
 - d. The company owns all easements and rights-of-way for the project, as well as the land on which the project is located, and that title to these easements, rights-of-way, and the project itself can be legally transferred to the Board.
 - e. The company's water rights applicable to the project are unencumbered and legally transferable to the Board of Water Resources, and that they cover the land to be irrigated by the project.
 - f. The company is in compliance with sections 73-10-33, 10-9a-211, and 17-27a-211 of the Utah Code governing management plans for water conveyance facilities.
4. Update the water conservation plan for its service area, and obtain approval of it from the Division of Water Resources.
5. Obtain approval of final plans and specifications from the Division of Water Resources.
6. Obtain letters from all outside financing agencies establishing their commitment of funds to the project.

Stockholders

CERTIFICATION AND ACKNOWLEDGMENT

STATE OF UTAH)

: SS

County of _____)

Comes now Ed Cottle being first duly sworn upon oath deposes and says: That he is the duly qualified Secretary of the WEST CACHE IRRIGATION COMPANY, a corporation organized under the laws of the State of Utah; that on the ____ day of _____, 20____, a meeting of the STOCKHOLDERS of the aforesaid corporation was held at _____, Utah, which meeting was held in the manner required by law and after due notice had been given to the aforesaid STOCKHOLDERS in the manner prescribed by law; that at such meeting ____ percent of the total shares of stock in this corporation were represented and that the following resolution was made, seconded and passed by _____ percent of the company stock represented at the meeting.

RESOLUTION

IT IS HEREBY RESOLVED that Glade Griffin, President, and Ed Cottle, Secretary, acting on behalf of the WEST CACHE IRRIGATION COMPANY are hereby authorized to enter into a contract with the State of Utah, acting through the Board of Water Resources, for the construction of a water conservation project to replace West Cache Irrigation Ditch with pipe and construct two pump stations, located in and around Section 3, T12N, R01W, Salt Lake Base Meridian; and

FURTHER, that the total estimated cost of completing the project will be \$3,500,000, of which amount the Board of Water Resources will pay 60.7% of the cost of construction, but not to exceed \$2,125,000, and all additional costs to complete the project will be paid by the WEST CACHE IRRIGATION COMPANY; and

FURTHER, that this corporation shall assign to the Board of Water Resources its properties, easements, and water rights, appurtenant to said project on condition that the same be reconveyed to this corporation upon the payment of the purchase price thereof, such purchase price to be the combined total of all money paid by the Board of Water Resources for the construction of the project, but not to exceed \$2,125,000, including all expense incurred by the Board of Water Resources for investigation, engineering, and inspection in its accomplishment of project; and

CERTIFICATION AND ACKNOWLEDGMENT

Comes now Ed Cottle, who being first duly sworn upon oath deposes and says: That he is the duly qualified Secretary of the WEST CACHE IRRIGATION COMPANY, a corporation organized under the laws of the State of Utah; that on the ___ day of _____, 20___, a meeting of the BOARD OF DIRECTORS of the aforesaid corporation was held at _____, Utah, which meeting was held in the manner required by law and after due notice had been given to the aforesaid BOARD OF DIRECTORS in the manner prescribed by law; that at such meeting a quorum of the Board was present to legally authorize the aforesaid Board to transact the business for which the aforesaid meeting was held; and that at said meeting the following resolution was made, seconded, and passed by a legal majority of the Board.

IT IS HEREBY RESOLVED that Glade Griffin, President, and Ed Cottle, Secretary, acting on behalf of the WEST CACHE IRRIGATION COMPANY are hereby authorized to enter into a contract with the State of Utah, acting through the Board of Water Resources, for the construction of a water conservation project to replace West Cache Irrigation Ditch with pipe and construct two pump stations, located in and around Section 3, T12N, R01W, Salt Lake Base Meridian; and

FURTHER, that this corporation shall assign to the Board of Water Resources its properties, easements, and water rights, appurtenant to said project on condition that the same be reconveyed to this corporation upon the payment of the purchase price thereof, such purchase price to be the combined total of all money paid by the Board of Water Resources for the construction of the project, but not to exceed \$2,125,000, including all expense incurred by the Board of Water Resources for investigation, engineering, and inspection in its accomplishment of project; and

March 11th, 2019

Sid Munk, President
West Cache Irrigation Co.
1207 South 400 East
Trenton, Utah 84338

RE: West Cache Irrigation Co. – South Fields Piping of the Canal

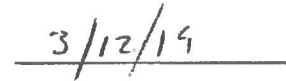
Dear Mr. Munk:

I am writing this letter in support of the West Irrigation Co. piping the canal section known as the South Fields by applying for funding to complete the project with the Bureau of Reclamation and the Utah Division of Water Resources. I believe this project will be beneficial to myself and the other shareholders. Upon completion of the project, I anticipate making on-farm improvements through personal and/or NRCS funding.

Sincerely,



Signature



Date



Print Name

March 11th, 2019

Sid Munk, President
West Cache Irrigation Co.
1207 South 400 East
Trenton, Utah 84338

RE: West Cache Irrigation Co. – South Fields Piping of the Canal

Dear Mr. Munk:

I am writing this letter in support of the West Irrigation Co. piping the canal section known as the South Fields by applying for funding to complete the project with the Bureau of Reclamation and the Utah Division of Water Resources. I believe this project will be beneficial to myself and the other shareholders. Upon completion of the project, I anticipate making on-farm improvements through personal and/or NRCS funding.

Sincerely,

Rick Jenkins
Signature

3-12-2019
Date

Rick Jenkins
Print Name

March 11th, 2019

Sid Munk, President
West Cache Irrigation Co.
1207 South 400 East
Trenton, Utah 84338

RE: West Cache Irrigation Co. – South Fields Piping of the Canal

Dear Mr. Munk:

I am writing this letter in support of the West Irrigation Co. piping the canal section known as the South Fields by applying for funding to complete the project with the Bureau of Reclamation and the Utah Division of Water Resources. I believe this project will be beneficial to myself and the other shareholders. Upon completion of the project, I anticipate making on-farm improvements through personal and/or NRCS funding.

Sincerely,

Vin LeKins

Signature

3-12-19

Date

Vin LeKins

Print Name

March 11th, 2019

Sid Munk, President
West Cache Irrigation Co.
1207 South 400 East
Trenton, Utah 84338

RE: West Cache Irrigation Co. – South Fields Piping of the Canal

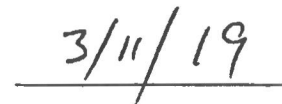
Dear Mr. Munk:

I am writing this letter in support of the West Irrigation Co. piping the canal section known as the South Fields by applying for funding to complete the project with the Bureau of Reclamation and the Utah Division of Water Resources. I believe this project will be beneficial to myself and the other shareholders. Upon completion of the project, I anticipate making on-farm improvements through personal and/or NRCS funding.

Sincerely,

A handwritten signature in dark ink, appearing to read "David Larsen", written over a horizontal line.

Signature

A handwritten date "3/11/19" written in dark ink over a horizontal line.

Date

A handwritten name "David Larsen" in dark ink, written over a horizontal line.

Print Name

March 11th, 2019

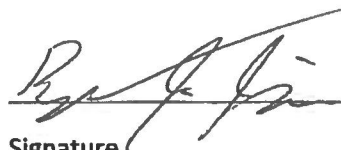
Sid Munk, President
West Cache Irrigation Co.
1207 South 400 East
Trenton, Utah 84338

RE: West Cache Irrigation Co. – South Fields Piping of the Canal

Dear Mr. Munk:

I am writing this letter in support of the West Irrigation Co. piping the canal section known as the South Fields by applying for funding to complete the project with the Bureau of Reclamation and the Utah Division of Water Resources. I believe this project will be beneficial to myself and the other shareholders. Upon completion of the project, I anticipate making on-farm improvements through personal and/or NRCS funding.

Sincerely,


Signature

3-12-19
Date

Ryan Jenkins
Print Name

March 11th, 2019

Sid Munk, President
West Cache Irrigation Co.
1207 South 400 East
Trenton, Utah 84338

RE: West Cache Irrigation Co. – South Fields Piping of the Canal

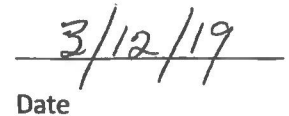
Dear Mr. Munk:

I am writing this letter in support of the West Irrigation Co. piping the canal section known as the South Fields by applying for funding to complete the project with the Bureau of Reclamation and the Utah Division of Water Resources. I believe this project will be beneficial to myself and the other shareholders. Upon completion of the project, I anticipate making on-farm improvements through personal and/or NRCS funding.

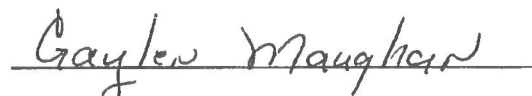
Sincerely,



Signature



Date



Print Name

March 11th, 2019

Sid Munk, President
West Cache Irrigation Co.
1207 South 400 East
Trenton, Utah 84338

RE: West Cache Irrigation Co. – South Fields Piping of the Canal

Dear Mr. Munk:

I am writing this letter in support of the West Irrigation Co. piping the canal section known as the South Fields by applying for funding to complete the project with the Bureau of Reclamation and the Utah Division of Water Resources. I believe this project will be beneficial to myself and the other shareholders. Upon completion of the project, I anticipate making on-farm improvements through personal and/or NRCS funding.

Sincerely,


Signature

3-12-19
Date

Trent Dagley
Print Name

March 11th, 2019

Sid Munk, President
West Cache Irrigation Co.
1207 South 400 East
Trenton, Utah 84338

RE: West Cache Irrigation Co. – South Fields Piping of the Canal

Dear Mr. Munk:

I am writing this letter in support of the West Irrigation Co. piping the canal section known as the South Fields by applying for funding to complete the project with the Bureau of Reclamation and the Utah Division of Water Resources. I believe this project will be beneficial to myself and the other shareholders. Upon completion of the project, I anticipate making on-farm improvements through personal and/or NRCS funding.

Sincerely,

John P. Larsen

Signature

3/12/19

Date

JOHN P. LARSEN

Print Name

Appendix B

Canal Loss Calculations

LOSS CALCULATIONS

Client: **WEST CACHE IRRIGATION COMPANY**

Project: South Fields Piping Project - Canal Section

Analysis Performed By: Steven Wood

Date: 3/13/2019

Current Water Demand Flow: 10 cfs
Yearly Volume in Irrigation Duration: 3751.5 acre ft / year

Canal / System Characteristics

Irrigation Duration (t): 189 irrigation days / year
16329600 irrigation seconds / year
Canal Cross Section Type: Trapezoid Select
Side Slope (m): 1 1 Vertical to (m) Horizontal
Bed Width (B): 6 ft
Flow Depth (h): 3 ft
Wetted Perimeter (P): 14.49 ft
Length (L): 11880 ft
2.25 miles
Wetted Area (P_A): 172085.1427 ft²

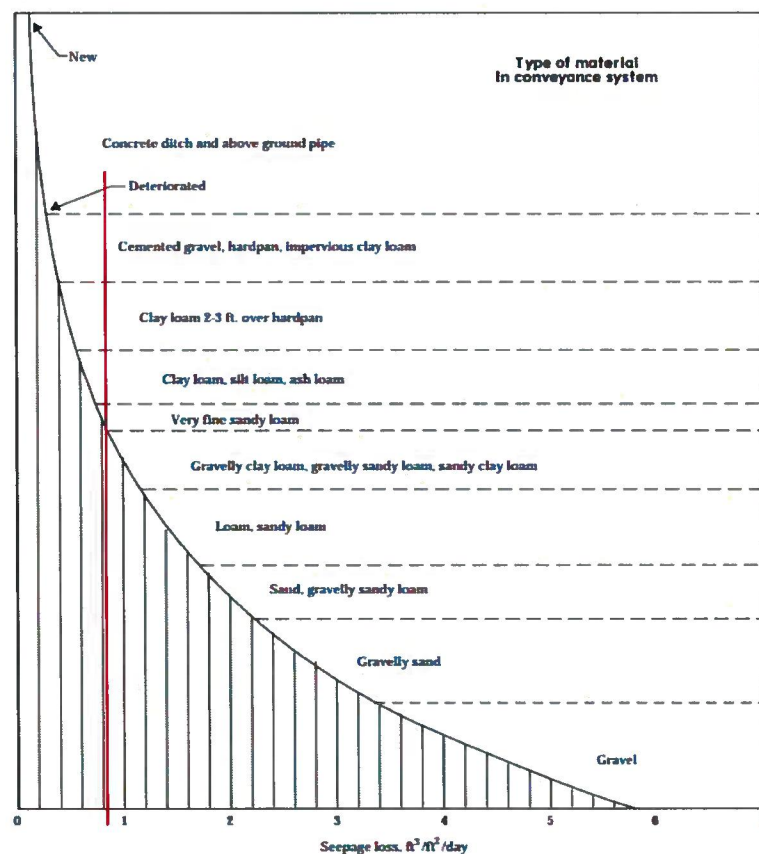
Data Output

Seepage Loss Factor: 0.8 ft³/ft²/Day - From Figure 2-50
Seepage Loss Rate: 137668 ft³/Day
Seepage Loss Rate: 597.5 acre ft / year (189 days in irrigation season)
Evaporation Loss Percentage: 10% Percentage of Seepage Loss
Evaporation Loss Rate: 13767 ft³/Day
Evaporation Loss Rate: 60.0 acre ft / year (189 days in irrigation season)
Vegetation Loss Percentage: 1.00% Percentage of Total Flow per Mile
Vegetation Loss Rate: 19440 ft³/Day
Vegetation Loss Rate: 84.5 acre ft / year (189 days in irrigation season)

Total Seepage and Evaporation Loss Rate

Total Loss Rate: 170875 ft³/Day
Total Loss Rate: 1.98 cfs
742.0 acre ft / year (189 days in irrigation season)
Current Percent Loss: 20% Percentage of Current Water Demand Lost

Figure 2-50 Method to estimate seepage losses from irrigation delivery systems (adapted from USDA 1985)



Method References:

National Engineering Handbook - Chapter 2 Irrigation Water Requirements (pp. 183-186). (1993). U.S. Dept. of Agriculture, Soil Conservation Service.

Hill, R.W. (2000). "How Well Does your Irrigation Canal Hold Water? Does it Need Lining?" All Archived Publications, Utah State University. Paper 148.

"Irrigation Water Conveyance." (2005). NRCS Irrigation Water Management Training, Fort Collins, CO. Presentation

LOSS CALCULATIONS

Client: **WEST CACHE IRRIGATION COMPANY**

Project: South Fields Piping Project - Irrigation Storage Pond #1

Analysis Performed By: Steven Wood

Date: 3/12/2019

Current Water Demand Flow: 10 cfs
Yearly Volume in Irrigation Duration: 3751.5 acre ft / year

Canal / System Characteristics

Irrigation Duration (t):	189	irrigation days/ year
	16329600	irrigation seconds/ year
Canal Cross Section Type	Trapezoid	Select
Side Slope (m):	1	1 Vertical to (m) Horizontal
Bed Width (B):	90	ft
Flow Depth (h):	3	ft
Wetted Perimeter (P):	98.49	ft
	170	ft
Length (L):	0.0	miles
Wetted Area (P _A):	16742.49783	ft ²

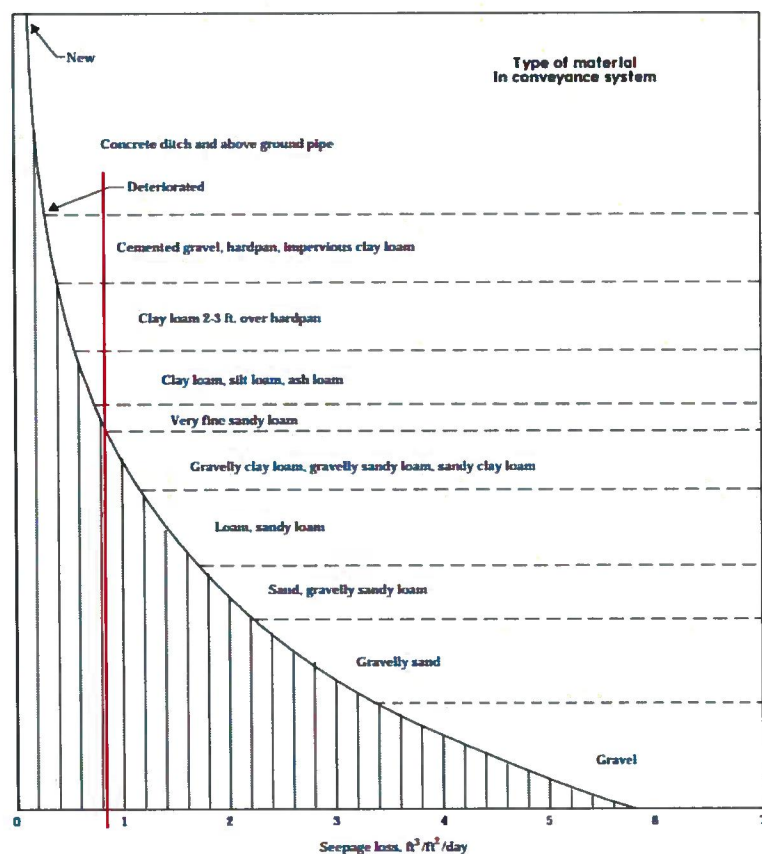
Data Output

Seepage Loss Factor:	0.8	ft ³ /ft ² /Day - From Figure 2-50
Seepage Loss Rate:	13394	ft ³ /Day
Seepage Loss Rate:	58.0	acre ft / year (189 days in irrigation season)
Evaporation Loss Percentage	10%	Percentage of Seepage Loss
Evaporation Loss Rate:	1339	ft ³ /Day
Evaporation Loss Rate:	6.0	acre ft / year (189 days in irrigation season)
Vegetation Loss Percentage	1.00%	Percentage of Total Flow per Mile
Vegetation Loss Rate:	278	ft ³ /Day
Vegetation Loss Rate:	1.0	acre ft / year (189 days in irrigation season)

Total Seepage and Evaporation Loss Rate

	15012	ft ³ /Day
Total Loss Rate:	0.17	cfs
	65.0	acre ft / year (189 days in irrigation season)
Current Percent Loss:	2%	Percentage of Current Water Demand Lost

Figure 2-50 Method to estimate seepage losses from irrigation delivery systems (adapted from USDA 1985)



Method References:

National Engineering Handbook - Chapter 2 Irrigation Water Requirements (pp. 183-186). (1993). U.S. Dept. of Agriculture, Soil Conservation Service.

Hill, R.W. (2000). "How Well Does your Irrigation Canal Hold Water? Does it Need Lining?" All Archived Publications, Utah State University. Paper 148.

"Irrigation Water Conveyance." (2005). NRCS Irrigation Water Management Training, Fort Collins, CO. Presentation

LOSS CALCULATIONS

Client: **WEST CACHE IRRIGATION COMPANY**

Project: South Fields Piping Project - Irrigation Storage Pond #2

Analysis Performed By: Steven Wood

Date: 3/12/2019

Current Water Demand Flow: 10 cfs
Yearly Volume in Irrigation Duration: 3751.5 acre ft / year

Canal / System Characteristics

Irrigation Duration (t): 189 irrigation days / year
16329600 irrigation seconds / year
Canal Cross Section Type: Trapezoid Select
Side Slope (m): 1 1 Vertical to (m) Horizontal
Bed Width (B): 400 ft
Flow Depth (h): 3 ft
Wetted Perimeter (P): 408.49 ft
Length (L): 200 ft
0.0 miles
Wetted Area (P_A): 81697.05627 ft²

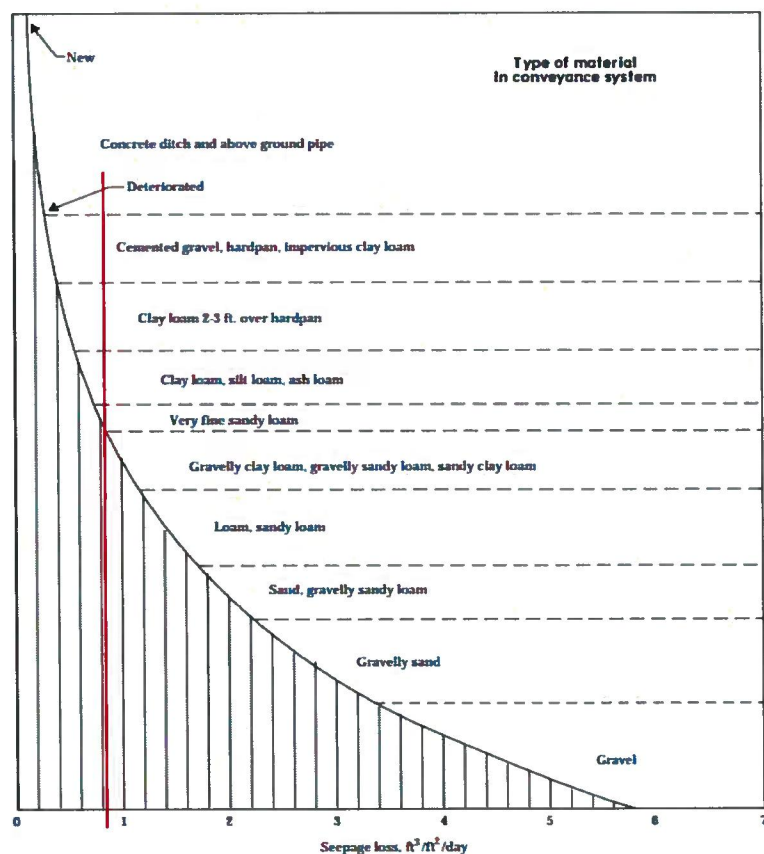
Data Output

Seepage Loss Factor: 0.8 ft³/ft²/Day - From Figure 2-50
Seepage Loss Rate: 65358 ft³/Day
Seepage Loss Rate: 284.0 acre ft / year (189 days in irrigation season)
Evaporation Loss Percentage: 10% Percentage of Seepage Loss
Evaporation Loss Rate: 6536 ft³/Day
Evaporation Loss Rate: 28.5 acre ft / year (189 days in irrigation season)
Vegetation Loss Percentage: 0.25% Percentage of Total Flow per Mile
Vegetation Loss Rate: 82 ft³/Day
Vegetation Loss Rate: 0.5 acre ft / year (189 days in irrigation season)

Total Seepage and Evaporation Loss Rate

Total Loss Rate: 71975 ft³/Day
Total Loss Rate: 0.83 cfs
Total Loss Rate: 312.5 acre ft / year (189 days in irrigation season)
Current Percent Loss: 8% Percentage of Current Water Demand Lost

Figure 2-50 Method to estimate seepage losses from irrigation delivery systems (adapted from USDA 1985)



Method References:

National Engineering Handbook - Chapter 2 Irrigation Water Requirements (pp. 183-186). (1993). U.S. Dept. of Agriculture, Soil Conservation Service.

Hill, R.W. (2000). "How Well Does your Irrigation Canal Hold Water? Does it Need Lining?" All Archived Publications, Utah State University. Paper 148.

"Irrigation Water Conveyance." (2005). NRCS Irrigation Water Management Training, Fort Collins, CO. Presentation

LOSS CALCULATIONS

Client: **WEST CACHE IRRIGATION COMPANY**

Project: South Fields Piping Project - Irrigation Storage Pond #3

Analysis Performed By: Steven Wood

Date: 3/13/2019

Current Water Demand Flow: 10 cfs
Yearly Volume in Irrigation Duration: 3751.5 acre ft / year

Canal / System Characteristics

Irrigation Duration (t):	189	irrigation days/ year
	16329600	irrigation seconds/ year
Canal Cross Section Type	Trapezoid	Select
Side Slope (m):	1	1 Vertical to (m) Horizontal
Bed Width (B):	125	ft
Flow Depth (h):	3	ft
Wetted Perimeter (P):	133.49	ft
	200	ft
Length (L):	0.0	miles
Wetted Area (P _A):	26697.05627	ft ²

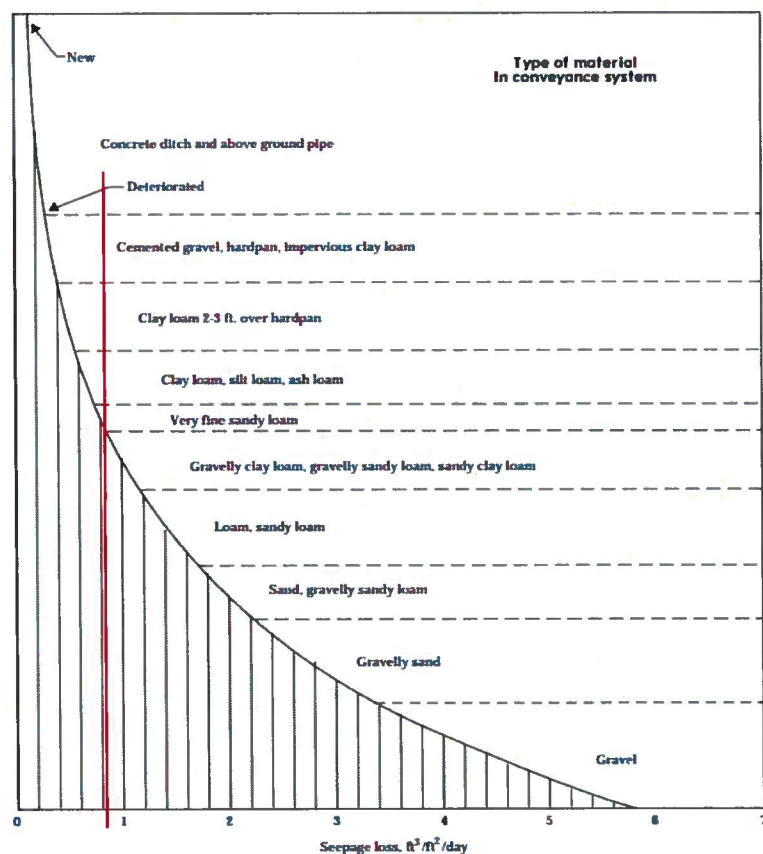
Data Output

Seepage Loss Factor:	0.8	ft ³ /ft ² /Day - From Figure 2-50
Seepage Loss Rate:	21358	ft ³ /Day
Seepage Loss Rate:	92.5	acre ft / year (189 days in irrigation season)
Evaporation Loss Percentage	10%	Percentage of Seepage Loss
Evaporation Loss Rate:	2136	ft ³ /Day
Evaporation Loss Rate:	9.5	acre ft / year (189 days in irrigation season)
Vegetation Loss Percentage	0.50%	Percentage of Total Flow per Mile
Vegetation Loss Rate:	164	ft ³ /Day
Vegetation Loss Rate:	0.5	acre ft / year (189 days in irrigation season)

Total Seepage and Evaporation Loss Rate

	23657	ft ³ /Day
Total Loss Rate:	0.27	cfs
	102.5	acre ft / year (189 days in irrigation season)
Current Percent Loss:	3%	Percentage of Current Water Demand Lost

Figure 2-50 Method to estimate seepage losses from irrigation delivery systems (adapted from USDA 1985)



Method References:

National Engineering Handbook - Chapter 2 Irrigation Water Requirements (pp. 183-186). (1993). U.S. Dept. of Agriculture, Soil Conservation Service.

Hill, R.W. (2000). "How Well Does your Irrigation Canal Hold Water? Does it Need Lining?" All Archived Publications, Utah State University. Paper 148.

"Irrigation Water Conveyance." (2005). NRCS Irrigation Water Management Training, Fort Collins, CO. Presentation



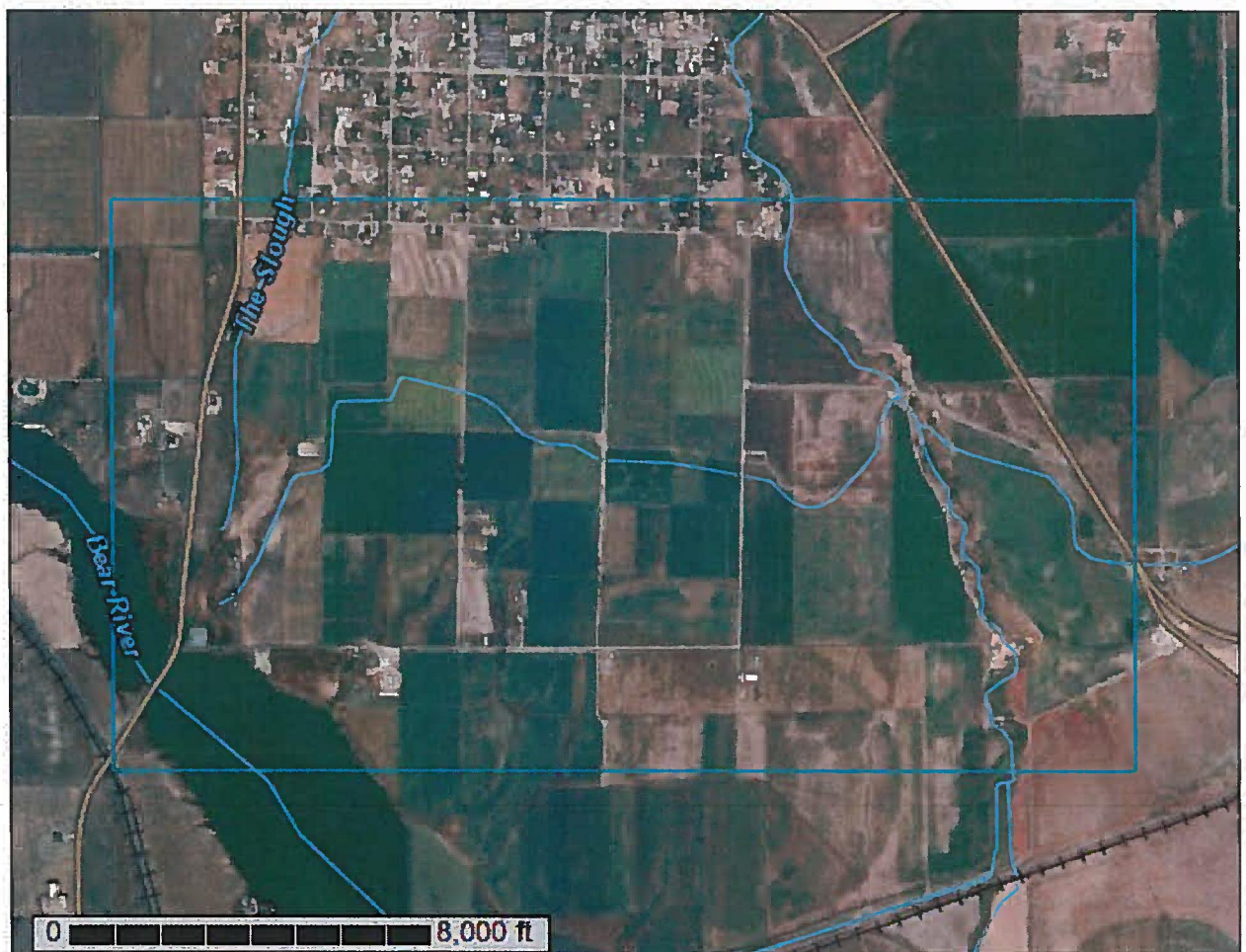
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Cache Valley Area, Parts of Cache and Box Elder Counties, Utah



March 11, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

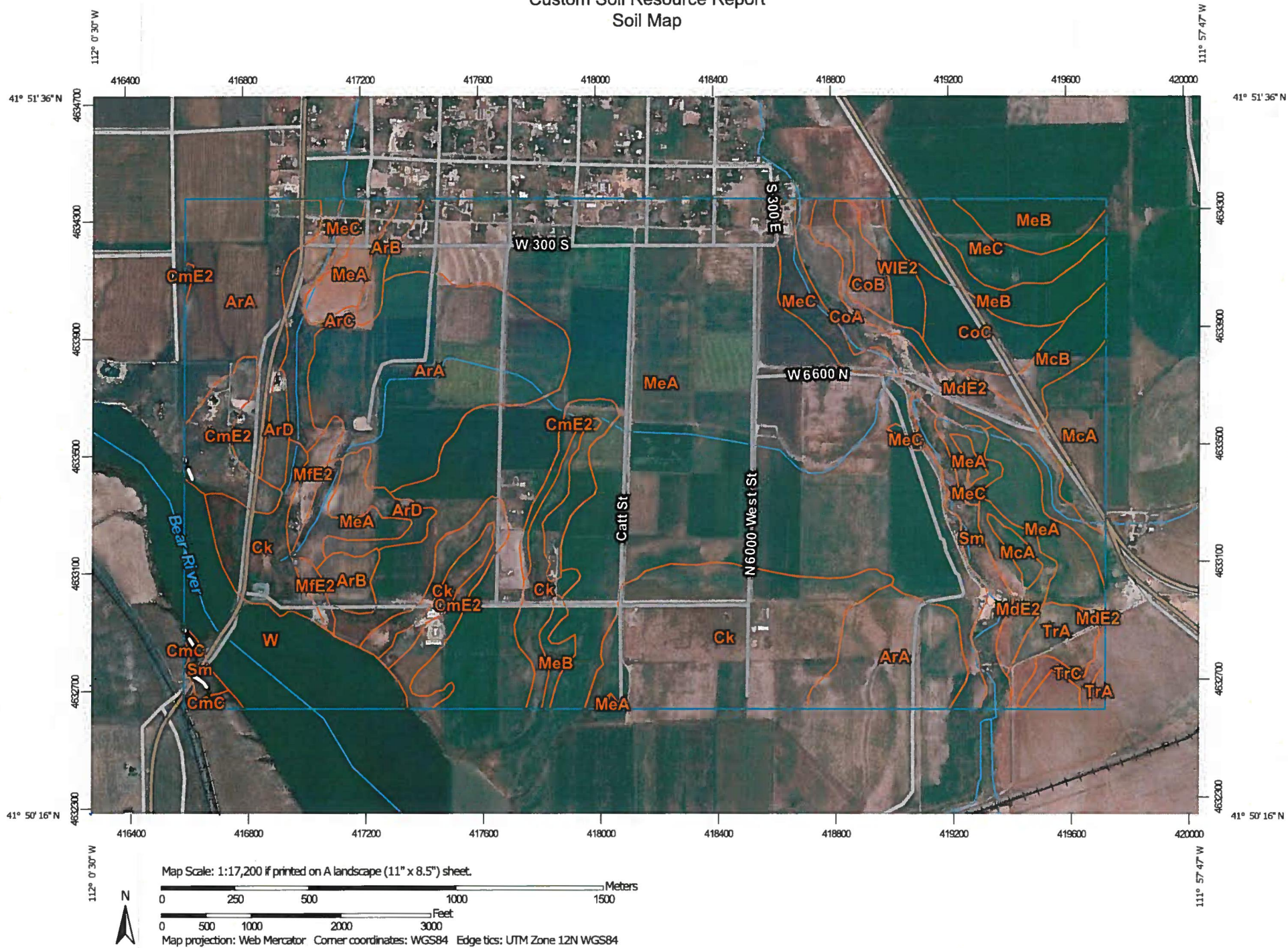
Preface.....	2
Soil Map.....	5
Soil Map.....	6
Legend.....	7
Map Unit Legend.....	8

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report


Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cache Valley Area, Parts of Cache and Box Elder Counties, Utah
Survey Area Data: Version 11, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 6, 2012—Oct 27, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
ArA	AVON SILTY CLAY LOAM, 0 TO 3 PERCENT SLOPES	204.9	15.2%
ArB	AVON SILTY CLAY LOAM, 3 TO 6 PERCENT SLOPES	15.6	1.2%
ArC	AVON SILTY CLAY LOAM, 6 TO 10 PERCENT SLOPES	20.3	1.5%
ArD	AVON SILTY CLAY LOAM, 10 TO 20 PERCENT SLOPES	20.3	1.5%
Ck	COLLETT SILTY CLAY LOAM	142.9	10.6%
CmC	COLLINSTON LOAM, 1 TO 6 PERCENT SLOPES	2.8	0.2%
CmE2	COLLINSTON LOAM, 10 TO 30 PERCENT SLOPES, ERODED	59.4	4.4%
CoA	CROOKSTON LOAM, 0 TO 3 PERCENT SLOPES	20.4	1.5%
CoB	CROOKSTON LOAM, 3 TO 6 PERCENT SLOPES	9.0	0.7%
CoC	CROOKSTON LOAM, 6 TO 10 PERCENT SLOPES	23.0	1.7%
McA	MCMURDIE SILT LOAM, 0 TO 3 PERCENT SLOPES	27.9	2.1%
McB	MCMURDIE SILT LOAM, 3 TO 6 PERCENT SLOPES	17.2	1.3%
MdE2	MCMURDIE-HILLFIELD SILT LOAMS, 10 TO 30 PERCENT SLOPES, ERODED	40.9	3.0%
MeA	MENDON SILT LOAM, 0 TO 3 PERCENT SLOPES	525.1	38.9%
MeB	MENDON SILT LOAM, 3 TO 6 PERCENT SLOPES	48.0	3.6%
MeC	MENDON SILT LOAM, 6 TO 10 PERCENT SLOPES	45.5	3.4%
MfE2	MENDON-COLLINSTON COMPLEX, 6 TO 30 PERCENT SLOPES, ERODED	10.3	0.8%
Sm	SHAY SILTY CLAY LOAM	23.9	1.8%
TrA	TRENTON SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES	19.0	1.4%
TrC	TRENTON SILTY CLAY LOAM, 4 TO 8 PERCENT SLOPES	5.4	0.4%
W	WATER	57.9	4.3%

Custom Soil Resource Report

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
WIE2	WHEELON-COLLINSTON COMPLEX, 10 TO 30 PERCENT SLOPES, ERODED	10.9	0.8%
Totals for Area of Interest		1,350.9	100.0%

Appendix C

Conservation Plan *(Cover Page)*

BEAR RIVER BASIN PLANNING FOR THE FUTURE

January 2004



Prepared for:
The people of Utah
Under the direction of the Board of Water Resources

By:
The Division of Water Resources

With valuable input from the
State Water Plan Coordinating Committee:

Department of Natural Resources, Division of Water Rights, Division of Parks and Recreation, Division of Wildlife Resources, Department of Environmental Quality, Division of Drinking Water, Division of Water Quality, Department of Agriculture and Food, Governor's Office of Planning and Budget, Division of Comprehensive Emergency Management, Utah Water Research Laboratory

UTAH STATE WATER PLAN

This document and other state water plans are available online at: www.water.utah.gov.

Appendix D

Opinion of Engineering Costs



SUNRISE
ENGINEERING

South Fields Earthen Canal Piping Project - March 2019

PROJECT NAME: South Fields Earthen Canal Piping Project
 CLIENT: West Cache Irrigation Company
 PROJECT MANAGEMENT PLAN - DESIGN & CONSTRUCTION
 Sunrise Engineering Inc.
 Project Engineer's Estimate of Civil Engineering Services

Project No.: S0000000
 Project Engineer: Scott Archibald
 Project Manager: Scott Archibald
 Completion Date: 12/31/19
 Contract Amount: \$134,500
 Fee Schedule: W03-2017

SERVICE TYPE				Topographic Survey & Base Mapping				Irrigation System Design				Permitting				Post Design Services				Allowance	HOURS PER CLASS	COST PER CLASS	
PHASE				001	001	001	002	002	002	002	003	003	004	004	004	004	004	004	004				
TASK				0001	0002	0003	0001	0002	0003	0004	0001	0002	0001	0002	0001	0004	0005	0006	0001				
TASK DESCRIPTION				Topographic Survey & Base Mapping	Easement & Property Field Work	Legal Descriptions & Exhibits	Design Report	Pipeline 5 Booster Pump Plans, Specs & Contract Docs	Electrical Design	Structural Design	Railroad, UDOT & Cache County Permitting	Water Rights Diversion Change	Materials or Contractor Bidding #1	Materials or Contractor Bidding #2	Construction Administration	Construction Observation & Support Services	Construction Survey Staking	Contract Record Drawings	Relay/Response Expenses				
CLASS	DESCRIPTION	RATE	BUDGET	\$6,000	\$4,300	\$4,200	\$4,000	\$33,000	\$4,000	\$2,000	\$6,000	\$10,000	\$2,500	\$2,500	\$23,000	\$14,000	\$6,000	\$2,000	\$1,000				
101	Engineer Intern (E.I.T.) I	\$99.00	Hours Cost				10 \$990	50 \$4,950		3 \$297	18 \$1,782	6 \$594			30 \$1,980	70 \$6,930		10 \$990	10 \$990	197	\$19,503		
102	Engineer Intern (E.I.T.) II	\$109.00	Hours Cost				13 \$1,417	100 \$10,900			30 \$3,270	50 \$5,450	16 \$1,744	16 \$1,744	45 \$4,905	47 \$5,123		6 \$654		323	\$35,207		
105	Engineer V	\$175.00	Hours Cost						8 \$1,400	10 \$1,750										18	\$3,150		
110	Principal Engineer	\$199.00	Hours Cost				8 \$1,592	75 \$14,925			5 \$995	20 \$3,980	4 \$796	4 \$796	81 \$16,119	10 \$1,990		2 \$398		209	\$41,591		
311	Electrical Tech I	\$85.00	Hours Cost						8 \$680											8	\$680		
312	Electrical Tech II	\$95.00	Hours Cost						20 \$1,900											20	\$1,900		
51	Administrative III	\$75.00	Hours Cost					30 \$2,250												30	\$2,250		
930	Survey CAD Tech	\$105.00	Hours Cost	15 \$1,575	8 \$840	7 \$735											15 \$1,575			45	\$4,725		
935	One Man Survey Crew	\$145.00	Hours Cost	24 \$3,480	10 \$1,450	10 \$1,450											24 \$3,480			68	\$9,860		
945	Registered Surveyor	\$165.00	Hours Cost			12 \$1,980														24	\$3,960		
950	Principal Surveyor	\$179.00	Hours Cost		5 \$895												5 \$895			10	\$1,790		
TOTAL:				HOURS	44	30	29	31	255	36	13	53	76	20	20	146	127	44	18	10	952	\$124,616	
				TASK COST	\$5,950	\$4,270	\$4,165	\$3,999	\$33,025	\$3,980	\$2,847	\$6,847	\$10,024	\$2,540	\$2,540	\$23,004	\$14,043	\$5,950	\$2,042	\$990			\$124,616
				ROUNDED	\$6,000	\$4,300	\$4,200	\$4,000	\$33,000	\$4,000	\$2,000	\$6,000	\$10,000	\$2,500	\$2,500	\$23,000	\$14,000	\$6,000	\$2,000	\$1,000			\$124,500

SUNRISE ENGINEERING, INC.

Cache Valley 2019 Fee Schedule

<u>CODE</u>	<u>CLASSIFICATION</u>	<u>RATE</u>	<u>CODE</u>	<u>CLASSIFICATION</u>	<u>RATE</u>
101	Engineer (E.I.T.) I	\$99 <i>per hour</i>	051	Administrative I	\$45 <i>per hour</i>
102	Engineer (E.I.T.) II	\$109	052	Administrative II	\$59
103	Engineer III	\$139	053	Administrative III	\$75
104	Engineer IV	\$155	922	Survey Tech	\$79
105	Engineer V	\$175	930	Survey CAD Tech	\$105
110	Principal Engineer	\$199	935	One Man Survey Crew	\$145
301	Engineering Tech I	\$79	940	Survey Manager	\$155
302	Engineering Tech II	\$95	945	Registered Surveyor	\$165
303	Engineering Tech III	\$109	950	Principal Surveyor	\$179
304	Engineering Tech IV	\$135	311	Electrical Tech I	\$ 85
401	CAD Technician I	\$69	312	Electrical Tech II	\$ 95
402	CAD Technician II	\$79	353	Sr. Construction Manager	\$ 159
403	CAD Technician III	\$94	MILE	Mileage	\$0.59 <i>per mile</i>
404	CAD Technician IV	\$105			

Subconsultants and other direct expenses as incurred plus 10% handling fee

Appendix E

Opinion of Construction Costs

West Cache Irrigation Company

South Fields Earthen Canal Piping Project

Opinion of Probable Construction Costs

ITEM NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	Mobilization	1	LS	\$ 31,000	\$ 31,000
2	Subsurface Investigation	20	HR	\$ 150	\$ 3,000
3	21" PVC P.I.P. DR 41 Irrigation Pipe	6,700	LF	\$ 32	\$ 214,400
4	15" PVC P.I.P. DR 41 Irrigation Pipe	1,000	LF	\$ 20	\$ 20,000
5	12" PVC P.I.P. DR 41 Irrigation Pipe	2,000	LF	\$ 16	\$ 32,000
6	10" PVC P.I.P. DR 41 Irrigation Pipe	500	LF	\$ 12	\$ 6,000
7	6" PVC P.I.P. DR 41 Irrigation Pipe	3,000	LF	\$ 9	\$ 26,400
8	4" Waterline PVC Connection	1	LF	\$ 1,000	\$ 1,000
9	6" Waterline PVC Connection	2	EA	\$ 1,100	\$ 2,200
10	8" Waterline PVC Connection	4	EA	\$ 1,300	\$ 5,200
11	10" Waterline PVC Connection	2	EA	\$ 1,500	\$ 3,000
12	4" Electromagnetic Flow Meter	1	EA	\$ 3,000	\$ 3,000
13	6" Electromagnetic Flow Meter	2	EA	\$ 4,000	\$ 8,000
14	8" Electromagnetic Flow Meter	4	EA	\$ 5,000	\$ 20,000
15	10" Electromagnetic Flow Meter	2	EA	\$ 6,500	\$ 13,000
16	4" Gate Valve	1	EA	\$ 700	\$ 700
17	6" Gate Valve	2	EA	\$ 900	\$ 1,800
18	8" Gate Valve	4	EA	\$ 1,200	\$ 4,800
19	10" Gate Valve	2	EA	\$ 1,500	\$ 3,000
20	70 Hp Lower Pump	3	EA	\$ 25,000	\$ 75,000
21	Lower Intake Screen/Pump Facility	1	LS	\$ 125,000	\$ 125,000
22	Buried Electrical Cable - 3 Phase Power	600	LF	\$ 25	\$ 15,000
23	Repair Shoulders	1,000	LF	\$ 7	\$ 7,000
24	Repair Gravel Roads	2,000	LF	\$ 7	\$ 14,000
25	Reclaim Existing Canal	13,000	LF	\$ 1	\$ 13,000
26	Construction Contingency	1	LS	\$ 98,000	\$ 98,000
Construction Subtotal					\$ 745,500



SUNRISE
ENGINEERING

South Fields Earthen Canal Piping Project - March 2019

Budget Narrative

The above cost estimate is based on unit prices. Prices are rounded up to the nearest thousand or hundred depending on the item; this is based on engineering judgement. The unit prices were taken from actual construction bids tabulations from multiple projects of similar nature and/or type of work located in Cache County, Utah. Additional research was performed to aid in the developing of this cost estimate (such as contacting suppliers, etc.) Relative projects include the following:

Newton Water Users Canal Piping – 2016

Big Birch & North Fork Spring Redevelopment Project – 2016

And additional miscellaneous piping projects throughout Cache County

Item 1 - Mobilization is based on 5% of the construction costs.

Item 2 – Subsurface Investigation was based on the Newton Water Users, Big Birch, North Fork Spring Redevelopment projects, & And additional miscellaneous piping projects throughout Cache County.

Item 3 – 21" PVC was based on Newton Water Users, Big Birch, North Fork Spring Redevelopment projects, & And additional miscellaneous piping projects throughout Cache County. Material costs were updated from local suppliers.

Item 4 – 15" PVC was based on Newton Water Users, Big Birch, North Fork Spring Redevelopment projects, & And additional miscellaneous piping projects throughout Cache County. Material costs were updated from local suppliers.

Item 5 – 12" PVC was based on Newton Water Users, Big Birch, North Fork Spring Redevelopment projects, & And additional miscellaneous piping projects throughout Cache County. Material costs were updated from local suppliers.

Item 6 – 10" PVC was based on Newton Water Users, Big Birch, North Fork Spring Redevelopment projects, & And additional miscellaneous piping projects throughout Cache County. Material costs were updated from local suppliers.

Item 7 – 6" PVC was based on Newton Water Users, Big Birch, North Fork Spring Redevelopment projects, & And additional miscellaneous piping projects throughout Cache County. Material costs were updated from local suppliers.

Item 8 – 4" PVC Connection was based on Newton Water Users project and includes labor and materials to make the connections to the existing farmers pipe.

Item 9 – 6" PVC Connection was based on Newton Water Users project and includes labor and materials to make the connections to the existing farmers pipe.

Item 10 – 8" PVC Connection was based on Newton Water Users project and includes labor and materials to make the connections to the existing farmers pipe.

Item 11 – 10" PVC Connection was based on Newton Water Users project and includes labor and materials to make the connections to the existing farmers pipe.



Item 12 – 4” Electromagnetic Flow Meter was based on Newton Water Users project and includes labor and materials.

Item 13 – 6” Electromagnetic Flow Meter was based on Newton Water Users project and includes labor and materials.

Item 14 – 8” Electromagnetic Flow Meter was based on Newton Water Users project and includes labor and materials.

Item 15 – 10” Electromagnetic Flow Meter was based on Newton Water Users project and includes labor and materials.

Item 16 – 4” Gate valve was based on Newton Water Users project, Big Birch, and includes labor and materials.

Item 17 – 6” Gate valve was based on Newton Water Users project, Big Birch, and includes labor and materials.

Item 18 – 8” Gate valve was based on Newton Water Users project, Big Birch, and includes labor and materials.

Item 19 – 10” Gate valve was based on Newton Water Users project, Big Birch, and includes labor and materials.

Item 20 – 70 Hp Lower Pump was based on material estimates from suppliers along with Sunrise’s professional experience and judgement.

Item 21 – Lower Intake Screen/ Pump Facility was based on material estimates from suppliers along with Sunrise’s professional experience and judgement.

Item 22 Buried Electrical was based on material estimates from suppliers, projects throughout Cache County, and Sunrise’s professional experience and judgement.

Item 23 Repair Shoulders was based on material estimates from suppliers, projects throughout Cache County, and Sunrise’s professional experience and judgement.

Item 24 Repair Gravel Roads was based on material estimates from suppliers, projects throughout Cache County, and Sunrise’s professional experience and judgement.

Item 25 Reclaim Existing Canals was based on material estimates from suppliers, projects throughout Cache County, and Sunrise’s professional experience and judgement.

Item 26 Construction Contingency was based on 15% of the construction materials. This 15% has been based on research and Sunrise’s professional experience and judgement.

Appendix F

Opinion of Environmental Costs



SUNRISE
ENGINEERING

South Fields Earthen Canal Piping Project - March 2019

West Cache Irrigation Company

South Fields Earthen Canal Piping Project

Opinion of Probable Environmental Costs

ITEM NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
Archeologist Investigation					
1	Filed Work/Site Investigation	64	Hrs	\$ 100.00	\$ 6,400.00
2	Archelogy File Search	24	Hrs	\$ 100.00	\$ 2,400.00
3	Reporting and Deliverables	40	Hrs	\$ 100.00	\$ 4,000.00
Archeologist Subtotal					\$ 12,800.00
Flora and Fauna Investigation					
4	Filed Work/Site Investigation	40	Hrs	\$ 100.00	\$ 4,000.00
5	Biology/Habitat File Search	20	Hrs	\$ 100.00	\$ 2,000.00
6	Reporting and Deliverables	40	Hrs	\$ 100.00	\$ 4,000.00
Flora and Fauna Subtotal					\$ 10,000.00
Additional Required Items					
7	BOR Environmental Fees	1	LS	\$ 10,000.00	\$ 10,000.00
8	SHPO - Utah State History File Search	1	LS	\$ 200.00	\$ 200.00
9	Project Manager Coordination and Reporting	1	LS	\$ 7,000.00	\$ 7,000.00
Additional Required Items Subtotal					\$ 17,200.00
Total					\$ 40,000

Budget Narrative

The above cost estimate is based Sunrise's professional experience and judgement. Additionally, it is based on recent projects that environmental reviews and approvals have been required. These projects include:

- Newton Lateral Piping Project (with BOR)
- Newton Dam – Pipeline through the Dam (with BOR)
- Weston, Idaho Capital Facility Water Master Plan
 - Tank Construction
 - Well Construction



- Transmission Line Construction
- Laketown, Utah Capital Facility Water Master Plan
 - Tank Construction
 - Transmission Line Construction

The local Reclamation Office was also contacted during the preparation of this application. Their estimates are as follows:

Appendix G

Resolution

OFFICIAL RESOLUTION
OF THE
West Cache Irrigation Company
Resolution No. 2019 -4

The President of the Association is Sid Munk, President, and he will be the legal authority on the project.

AUTHORIZING THE PRESIDENT OF THE WEST CACHE IRRIGATION COMPANY TO APPLY FOR A CONTRIBUTION GRANT FROM THE U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION, FOR THE RENOVATION AND ENCLOSURE OF PART OF THE WEST CACHE CANEL SYSTEM KNOWN AS THE SOUTH FIELDS AREA.

WHEREAS, The West Cache Irrigation Company, (the "Company") of Trenton, Utah deems it necessary to apply to the Department of the Interior, Bureau of Reclamation, (\$ 920,000 Total Project, \$ 400,000 Water SMART Grant) for funding through a cost-sharing grant, shall not exceed for design & construction to pipe the South Fields Area. The Company has reviewed and supports the application submitted.

WHEREAS, The Company intentions are to provide the remaining funding through a Utah Water Resources loan or in-kind services specified in the funding plan.

WHEREAS, the Company will work with Reclamation to meet environmental compliance and established deadlines for the entering into a grant or cooperative agreement.

Date:_____

Sid Munk, President

ATTEST:

Scott Archibald, Project Manager

*Signed Copy was sent to BOR as part of the Final Submission

Appendix H

Proposed Schedule

West Cache Irrigation Company - South Fields Piping Project Timeline

[illegible]