WaterSMART

WATER AND ENERGY EFFICIENCY GRANTS FOR FY 2024

NO. R24AS00052
FUNDING GROUP II

WATER EFFICIENCY PROJECT - PHASE 3
DUCHESNE COUNTY WATER CONSERVANCY DISTRICT

DUCHESNE COUNTY, UTAH

CLYDE WATKINS ▪ GENERAL MANAGER
DUCHESNE COUNTY WATER CONSERVANCY DISTRICT
675 RODEA DRIVE, ROOSEVELT, UTAH 84066
435.722.4977

ERIC MAJOR, P.E.
PROJECT MANAGER
JONES & DEMILLE ENGINEERING, INC.
520 WEST HIGHWAY 40
ROOSEVELT, UTAH 84066
435.760.5844
ERIC.M@JONESANDDEMILLE.COM

FEBRUARY 22, 2024

TABLE OF CONTENTS

1. TECHNICAL PROPOSAL

1.1. EXECUTIVE SUMMARY

Start Date:	February 18, 2025
Applicant:	Duchesne County Water Conservancy District
Partners:	Dry Gulch Irrigation Company (DGIC), Uintah Indian Irrigation Project (UIIP), Uintah Basin Irrigation Company (UBIC), Uintah Independent Ditch Company (UIDC)
Location:	Roosevelt/Myton/Neola, Duchesne County, Utah
Project Title:	Water Efficiency Project – Phase 3
Applicant Category:	A

Project Summary:

The Duchesne County Water Conservancy District (DCWCD) Water Efficiency Project – Phase 3 is a project that combines three separate water efficiency projects within Duchesne County. DCWCD is the acting sponsor of the project in association with DGIC, UIIP, UBIC, and UIDC. The Water Efficiency Project - Phase 3 includes the following components:

- Eastern Duchesne Projects Pipeline Metering – DGIC and UIIP
- Water Efficiency and Control – UBIC
- Independent Diversion and Ditch Improvements – UIDC

Each of these components has a different scope of work, but they all have the same goal of conserving water within Duchesne County through efficient and accurate delivery. The Eastern Duchesne Projects Pipeline Metering component of this project will install meters on the Class B Pipeline and the Arcadia Farms Pipeline, both of which are proposed pipelines to be completed under the PL-566 program and are already funded. The plan for the Eastern Duchesne Projects Pipeline Metering project is to fund the portion of the work specifically for installing meters where the PL-566 project will only cover the main pipeline and turnout valve. The Water Efficiency and Control component of the project with UBIC consists of improvements to the Pleasant Valley Pipeline, with the highest priority being the spill structure at the beginning of the North Pipeline. The proposed improvement at this location consists of new water regulation structure and modifications to the existing concrete overflow structure that currently send excess flows to a private pond or down a nearby wash. The Independent Diversion and Ditch Improvements component of the project consists of reconstructing the heading structure and lining a 1-miles section of the existing ditch with a geo-composite and concrete liner. The expected benefits of the projects include savings of 18,506 acre-feet of water per year, which can benefit the agricultural user as well as the river systems as a whole.

Length of Time:	22 months
Completion Date:	December 2026
Federal Facility:	No

1.2. PROJECT LOCATION

The Water Efficiency Project – Phase 3 project is located in Duchesne County, Utah. Because the project includes multiple different components, there are multiple locations where the project would occur.

- Arcadia Farms Pipeline – Approximately 7.8 miles west of Myton, Utah
    - Latitude and Longitude – 40.205329° and -110.217820°
- Class B Pipeline – Approximately 0.5 miles west of Bluebell, Utah
    - Latitude and Longitude – 40.374240° and -110.228266°
- Water Efficiency and Control – Approximately 6 miles south of Myton, Utah/
    - Latitude and Longitude – 40.112497° and -110.03665°
- Independent Diversion and Ditch Improvements – Approximately 2 miles north west of Whiterocks, Utah
    - Latitude and Longitude – 40.474819° and -109.965665°

1.3. PROJECT DESCRIPTION

The Water Efficiency Project – Phase 3 includes three separate water efficiency projects within Duchesne County. The DCWCD is the acting sponsor for the overall project, in partnership with DGIC, UIIP, UBIC, and UIDC. The three components of the Water Efficiency Project – Phase 3 include:

- Eastern Duchesne Projects Pipeline Metering – DGIC and UIIP
- Water Efficiency and Control – UBIC
- Independent Diversion and Ditch Improvements – UIDC

Each of these project components are also being submitted under Funding Group I individually to allow their separate evaluation and scoring for another possible funding avenue. Funding Group II would be more ideal for all parties involved with less paperwork and grants. The project components are discussed individually in further detail below.

1.3.1. EASTERN DUCHESNE PROJECTS PIPELINE METERING – DGIC AND UIIP

The Eastern Duchesne Projects Pipeline Metering project is a partnering effort between DCWCD, DGIC, and UIIP. DCWCD is the acting sponsor of the project in association with the other listed entities. The Eastern Duchesne Projects Pipeline Metering project will install meters on 2 different projects within Duchesne County.

Both projects are a part of the USDA's NRCS Small Watershed Program (PL-566), which is funding the design and construction of 7 total projects. The funding that will be received from the PL-566 program will be utilized to install the pipelines and canal linings; however, due to the increase in material price since being awarded the funding, the funding will need to be focused on taking care of the main pipelines and liner. The plan for the Eastern Duchesne Projects Pipeline Metering project is to be able to fund and install metering where the PL-566 project ends during the construction of the mainlines and turnouts. It will be more cost effective to install them with the new pipelines rather than coming back later due to the budget constraints.

For the pipeline projects that distribute water to end users, a turnout will be placed off the main lines at each location where water will be delivered to agricultural users. There will be a gate valve that would control the flow of water to the turnout installed as part of the PL-566 project. Following the gate valve, this proposed metering project would be responsible for the meter can, mag meter and reducers, and then a section of PVC pipe for the end users to tie into when performing on-farm projects. The figure below indicates the different components of the projects and how funding/costs would be divided and tracked.

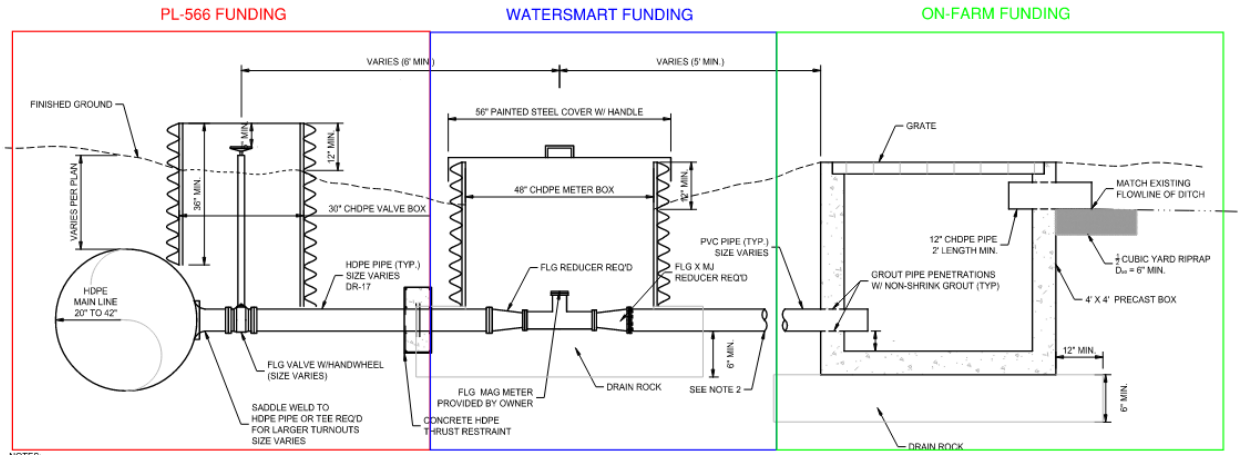


Figure 1 FUNDING BREAKDOWN

After the installation of meters, the end users can then implement on-farm projects as well. With the increasing scarcity of water and the climate change that has occurred, the DCWCD realizes the value of conserving water, and the implementation of this project will assist in monitoring the flow and delivery of water in real time. The installation of the metering would also alert the irrigation companies of unusual demands on the system consistent with water line breaks or unauthorized use of water.

There are a total of 152 meters planned to be installed as part of this project in order to more accurately deliver water. The following list details the number of meters on each of the projects:

- Arcadia Farms Pipeline – 55
- Class B Pipeline – 97

The proposed project will include the following elements:

- Preliminary design and hydraulic analysis of flow measurement devices.
- Analysis and selection of most cost-effective and available materials and supplies.
- Design of flow measurement and telemetry.
- Contractor selection and contracting.
- Access road restoration and improvements.
- Construction of projects: flow measurement meters, telemetry, power installation (likely solar), erosion control, stabilization, site restoration, commissioning of project elements.
- Monitoring of improvements and assessment of project goals and water conservation measures.

The list of objectives for the project include:

- Install metering and flow measurement on 2 projects.
- Increase efficiency in water deliveries to irrigators and storage.
- Increase accuracy and timeliness of water deliveries through telemetry and meters.
- Reduce conflict from shareholders, ditch companies, Tribal users through accurate measurement and increased accountability.

1.3.2. WATER EFFICIENCY AND CONTROL COMPONENT – UBIC

The UBIC Water Efficiency and Control Project consists of improvements to the Pleasant Valley Pipeline, with the highest priority being the spill structure at the beginning of the North Pipeline. The proposed improvement at this location consists of a new water regulation structure and modifications of the existing concrete overflow structure that currently sends excess flows to a private pond or down a nearby wash.

The water regulation structure will hold approximately 30 acre-feet, which is a full day of water or more for average consumption on that end of the system. The berm will be 15 feet wide on the top and approximately 700 feet in length, with a maximum depth of 20-feet of water, making provisions for a 2-foot safety factor for freeboard. The spill way will be constructed to route any excess water back to the existing drainage and a valve and pipe will be installed for maintenance in draining for maintenance. The water regulation structure is planned to be placed near the crossing of the North Pipeline in UBIC's system, and an inlet and screen structure will be constructed to allow water to be delivered and pulled from the water regulation structure. The current pipeline receives water through the existing concrete overflow structure, which is simply a standpipe within a box, with an overflow weir. As the flow from the Pleasant Valley canal/pipeline enters the concrete box, it provides a pressure break from the upper system before entering the North Pipeline. The proposed structure will use the 30 acre-feet volume as a buffer to eliminate spillage of water into the wash and also allow the upstream water users on the pipeline more constant pressure, resulting in a more consistent diversion from the Duchesne River. The water level fluctuates within the overflow box and a level sensor has been installed to track the height of the water. If the water goes above elevation 91, it starts to spill into another pipe to the drainage and Private Pond, which will be the spillage that this project will capture directly within a structure owned by UBIC. Materials needed will primarily be existing material excavated to create the storage capacity of 30-acre feet, with native clays being harvested to build the embankment and nearby rock gathered for spillway and riprap armoring. Approximately 6,800 cubic yards of material is required to build the embankment. The pipe outlet and screen structure, as well as an outflow structure on the pipe coming into the pond will be constructed with concrete and metal screen material.

The proposed UBIC Water Efficiency and Control Project will include the following milestones and activities:

- Topographic survey, geotechnical analysis, preliminary design and hydraulics, and determining existing features and pipeline locations for connection to new water regulation structure.
- Environmental surveys, permitting, and coordination with appropriate agencies.

- UBIC has memorandums of understanding with landowners willing to donate easement on the land with the proposed pond and appurtenances, with the intent for a recorded easement once design and footprint of pond is finalized.
- Final design, reviews with funding agency, UBIC Board, and Quality Control Reviews
- Advertise for bidding, Contractor Procurement
- Excavation of water regulation structure and construction of embankment, along with necessary liner and filter layers.
- Connections to existing North Pipeline for outlet structure and new inlet structure with screen, including modifications of existing standpipe and overflow box to eliminate spills to Henderson Pond.
- Installation of emergency bypass valve and pipe on downstream side of water regulation structure draining to natural drainage per regulatory agency.
- Installation of telemetry on water regulation structure level, integration of pipeline metering, and associated startup and testing.
- Associated access road and fence repairs as necessary for construction and maintenance of the project
- Filling of water regulation structure and associated reporting and documentation required by funding agency and regulatory agency

The following list of objectives for the project includes:

- Eliminate water losses by eliminating spills into natural drainage and Henderson Pond
- Minimize maintenance disturbances and manhours required to correct system problems during periods of lost pressure or lost water flow (both upstream and downstream users)
- Improve water management, level control, and measuring capabilities
- Improve the ability to enable farmers to have access to their full water share through on-farm improvements, including providing more reliable and steady pressure for both upstream and downstream water users on the Pleasant Valley pipeline.
- Provide storage for an increased response time for ditchrider to make adjustments without draining pipeline or overflowing, a buffer that will reduce conflict within the system.

1.3.3. INDEPENDENT DIVERSION AND DITCH IMPROVEMENTS

The existing heading of the Independent Canal is in poor condition but still operational. In spring of 2023 the slide gate was refurbished due to the slide being bent and having issues opening. One of the goals of this project is to redo the heading structure to improve its overall functionality. The structure has almost no freeboard during regular flow and a higher flow event would easily overtop the structure and flood the ditch. The concrete floor of the heading is deteriorated and rebar can be seen protruding from the concrete, there is also a significant amount of seepage coming from underneath and the side of the heading structure. The new heading structure would consist of new headwalls that would match the height of the check structure, and a new slide gate that is capable of sealing on all sides. This will ensure that no water is being diverted from the West Channel when it is not needed.

It is also anticipated that there will be some bank stabilization directly upstream of the diversion so that the River channel could handle a high flow event and not overtop the streambanks.

The measurement flume just downstream of the diversion would also be refurbished or reconstructed to ensure accurate flow measurements. The stilling wells and flume appear to be in an acceptable condition but could use some improvements. The existing flume is currently collecting data, and data for UIDC can be found on www.duchesneriver.org. Water losses and average seasonal flows were based on data collected from the flume.

Lining the existing ditch is the largest component of this project and will consist of clearing and grubbing the existing ditch, forming a trapezoidal channel and installing and geo-composite and concrete liner. As mention before, the channel directly downstream of the diversion was dug through large cobbles and sandy material and experiences the most losses. Lining this section will improve the efficiency of water delivery by minimizing the losses from seepage. A ½ mile section of the ditch just downstream of the diversion is not capable of supporting the maximum amount of flow that UIDC is allowed during their water delivery, this causes the ditch to overtop and water to be lost into the surrounding area. After this ½ mile section water comes to the "splitter" where water is split into different laterals, after this point the existing ditch's are capable of conveying the maximum flow. After the "splitter" the ditch will be lined another ½ mile for a total of 1 mile of lining. Depending on how bids come back, additional length of ditch would be lined.

Piping the ditch was also considered but ultimately a geo-composite and concrete liner was selected for its cost effectiveness to install and the amount of ditch that could be lined. A liner offers many of the benefits of piping, but is cheaper and still achieves the goals of this project.

The proposed project will include the following elements:

- Preliminary design and hydraulic analysis of diversion structure, flow measurement device, and canal cross section.
- Analysis and selection of most cost-effective and available materials, gates, and supplies.
- Environmental surveys for Ute-Ladies Tresses, Wetland Delineation, cultural surveys, and other necessary NEPA work.
- Design of structure, flow measurement, canal lining, and telemetry/automation.
- Contractor selection and contracting.
- Access road restoration and improvements.
- Construction of project: dewatering, concrete construction, flow control gates installed, flow measurement structure and instruments, telemetry and automation of gates, power installation (likely solar), canal lining installation, commissioning of all project elements.
- Monitoring of improvements and assessment of project goals and water conservation measures.

The list of objectives for the project include:

- Install automated control gates for the Independent Canal
- Increase the diversion structure ability to pass flood stage flows established in design criteria
- Reduce water losses from seepage by lining portion of canal
- Increase efficiency in water deliveries to irrigators and storage.
- Increase accuracy and timeliness of water deliveries through telemetry and meters.
- Reduce required maintenance and operation cost for irrigation company

- Reduce conflict from shareholders, ditch companies, Tribal users through accurate measurement and increased accountability.

1.4. EVALUATION CRITERIA

1.4.1. EVALUATION CRITERION A – QUANTIFIABLE WATER SAVINGS (25 POINTS)

All applicants should be sure to:

1) *Describe the amount of estimated water savings. For projects that conserve water, please state the estimated amount of water expected to be conserved (in acre-feet per year) as a direct result of this project. Please include a specific quantifiable water savings estimate; do not include a range of potential water savings.*

The Water Efficiency Project – Phase 3 is estimated to save a total of 18,506 acre-feet per year of water between the three different components of the project.

Eastern Duchesne Projects Pipeline Metering: Overall, for the main pipeline installation (PL-566) and metering (WaterSMART) projects for Arcadia Farms Pipeline and the Class B Pipeline, the water that is expected to be saved is 16,114 acre-feet per year. This water loss that is currently experienced is due to the lack of conveyance efficiency currently within the canals because of seepage and run-off in the existing systems.

Water Efficiency and Control Component: The estimated water savings by implementing the UBIC Water Efficiency and Control Project is 552 acre-feet annually. The water being conserved with the project as proposed is currently being spilled into a private pond owned by Henderson Ranches, who have their own separate pipeline with metered inflow and when their pond is full it causes their pond to overflow to the natural drainage. Water is both operationally and physically lost to UBIC and users on the North Pipeline, which is a source of contention and dispute. Water spilled into the natural drainage often gets soaked up and enters sub-surface groundwater table and downstream riparian areas, similar to natural runoff water and also any excess water from irrigated lands.

Independent Diversion and Ditch Improvements: It is estimated that 1,840 acre-feet of water would be saved due to the implementation of this project. These savings are estimated by eliminating all of the seepage losses in the 1-mile section or ditch that would be lined. It is assumed that the liner is impervious and that there would be no losses through it.

Water savings will come from being able to have a watertight head gate and structure. Getting rid of water lost during the winter months due to leaking headgates and headwalls were considered savings, because water would remain in the river for beneficial uses downstream. New gates will be watertight and will not allow water to be sent down the ditch.

It is estimated that 724 acre-feet of water would be saved per year from eliminating the seepage through the ditch itself, and 1,116 acre-feet due to water lost during the off-season.

2) *Describe current losses. Please explain where the water that will be conserved is currently going and how it is being used. Consider the following:*
   - *Explain where current losses are going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground)?*

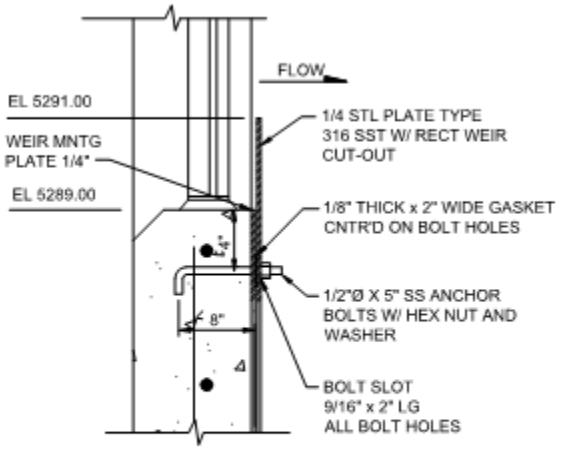
- *If known, please explain how current losses are being used. For example, are current losses returning to the system for use by others? Are current losses entering an impaired groundwater table becoming unsuitable for future use?*
- *Are there any known benefits associated with where the current losses are going? For example, is seepage water providing additional habitat for fish or animal species?*

Eastern Duchesne Projects Pipeline Metering: The current water losses are being lost out of the canals due to seepage and surface runoff. The water lost due to seepage goes into the ground, and the water loss due to runoff, which is due to excess use on farms, either is gathered by other ditches or eventually seeps into the ground as well. There are no known benefits to the current losses that are experienced. This is also a known area for high salinity which is detrimental to the Colorado River system and its tributaries.

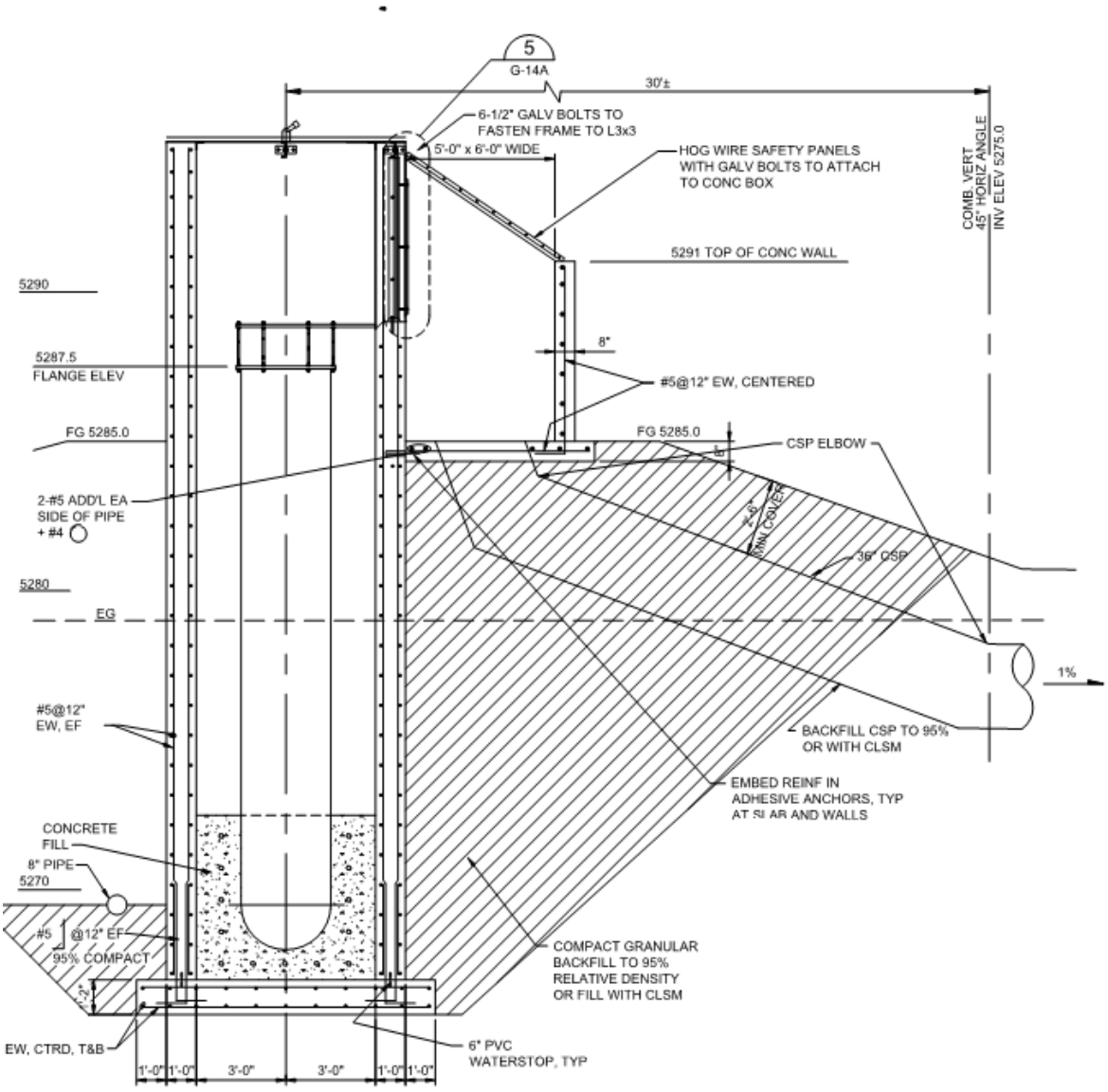
Water Efficiency and Control Component: Water losses have been quantified using an existing level sensor installed in the overflow box which tracks and records water levels during the operation of the pipelines. Elevations of water above the elevation of 5291 begin to spill over the overflow weir, as illustrated in the Figures in Appendix D (extracted from 2006 As-built plan sheets by CH2MHill). Similar to other projects of that era, the full design included an overflow and regulating pond but project budgets were short and it wasn't installed and sometimes not understood or valued until years later when operations create the need and benefits can be realized.

Data pulled from the 2020 irrigation season, which was a typical year for water availability per UBIC board, was used to calculate an incremental head over the weir plate and subsequent flow estimate for water passed on through the overflow.

A second check was by observation by the irrigation board members and also substantiated by down-time estimates given during the annual meeting of irrigation shareholders, which aren't as easily quantified, but show an operational loss to their water availability and poor reliability at certain times during the water year.



WEIR PLATE CONNECTION 1



SPILL VENT CMP DRAIN PIPE B

3/8"=1'-0"

Independent Diversion and Ditch Improvements: Water leaking from the heading structure during the winter months are being lost in the ditch. Due to the relatively low flow rate of the leaks, and a high seepage rate in the ditch most of the water ends up seeping into the soil, and doesn't make it far enough down the ditch to have any beneficial uses.

It is possible the current losses do have some indirect benefits. The UIDC Ditch goes directly through Roosevelt City's Hayden Well field. These wells are a primary source of culinary water for Roosevelt City, and some of the surrounding communities. This Ditch comes within 30 feet of two wells located in the well field. These are deep wells, and it is very likely that the ditch has a small influence or recharging the aquifer. The well sight is only 1-1/2 miles from the Uinta

River, so it is more likely that the river is the primary source of water that recharges the aquifer that the wells pump from.

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

Eastern Duchesne Projects Pipeline Metering: The water losses in the canal were first estimated by ditch riders and irrigation personnel, but in order to verify the assumptions, the water loss due to seepage was estimated using a seepage rate method for soils. The method requires an estimated seepage rate based on soil data and an area measurement where water is subject to seep into the ground. The seepage rates for the project area were determined using publicly available information. The flows for the canal are measured and recorded at www.duchesneriver.org. The flow information was gathered, and the velocity in the canal was then used to calculate an equivalent cross-sectional area of the water in the canal.

The area measurement used in the seepage rate calculation was then used to estimate the wetted perimeter using the hydraulic radius of an equivalent sized radial section of pipe. Using this area, the equivalent pipe size needed to convey the same amount of water at the same velocity was estimated. The area of the pipe is set to be only half circle because the canal does not enclose water. Thus, the size of the pipe needed to convey the same amount of water as if the pipe were half full is estimated. The equation of the circle was then used to determine arc length, or the wetted perimeter, of the canal that water can seep into. Using the wetted perimeter of the circle in the seepage calculation is conservative since the wetted perimeter of the circle is less than the actual wetted perimeter of the canal in the field.

The area where seepage is occurring was then estimated by multiplying the length of the canal by the wetted perimeter. This assumes that there is a constant flow throughout the length of the canal. To account for this assumption, the seepage area is halved if there is no flow at the end of the canal. The average of the wetted perimeter at the start and end of the canal is used to calculate the seepage area when there is a given flow at the end of the canal. The seepage area multiplied by the seepage rate gives the seepage volume per unit of time.

Analyzing the seepage volume per day gives a good basis for analysis because the volume changes over time. The seepage volume is then divided by the amount of water diverted into the canal. This gives the seepage loss as a percentage of the total water diverted. The seepage loss per day was then multiplied by the number of days in the typical irrigation season for that canal to determine the annual loss due to seepage. This resulted in the following losses for the canals:

1. Class B – 11,331 acre-feet per year
2. Arcadia Farms – 4,783 acre-feet per year

Water Efficiency and Control Component: Savings were estimated using data pulled from a level sensor inside of the overflow box. When water goes above elevation 91, it begins to spill over a weir plate and goes into another pipe which spills into the Henderson pond, which ends up in a natural drainage. Data was obtained from the level sensor and using a weir equation a volume of water spilled was calculated for an average irrigation year.

Independent Diversion and Ditch Improvements: Losses due to seepage were calculated using soil data obtained from the USGS web soil survey. Saturated hydraulic conductivity values for the soil were used and applied to seepage spreadsheet. Using flow rates obtained from the

Parshall flume data recorder, an average irrigation season flow rate was determined and applied to the spreadsheet. It was assumed that the average irrigation season is 183 days which corresponds to the period that the water rights can be used. This calculation estimated that approximately 22% of the water is lost in this one-mile segment.

Ditch riders estimated that approximately 40-50% of their water is lost in the system due to seepage, overtopping the ditch, and other operational losses. This soil data and seepage calculations support these claims.

4) *Please address the following questions according to the type of infrastructure improvement you are proposing for funding.*
   (1) ***Canal Lining/Piping****:*
   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.*

Eastern Duchesne Projects Pipeline Metering: The canal lining and piping will be completed as part of the PL-566 project. This funding will cover the meter purchase and installation. Canal lining/piping questions will be marked as N/A for this component of the project.

Water Efficiency and Control Component: This portion of the project doesn't incorporate canal lining or piping, however this project is closely aligned with water savings from a canal and pipeline combination. While seepage is a secondary loss from the current system, the operational losses and spills to the natural drainage has been calculated as described above, with a weir plate height used to establish a benchmark for overflow. The flow rate and subsequent volume over time increments was calculated using a standard weir equation, the head over the weir, width of plate, and a sharp crested weir coefficient. See attached raw data and calculations in Appendix D.

Independent Diversion and Ditch Improvements: Losses due to seepage were calculated using soil data collected from the USGS web soil survey, and flow rates obtained from the data recorder. Calculations can be found in Appendix C.

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.

Eastern Duchesne Projects Pipeline Metering: N/A

Water Efficiency and Control Component: Average overflow quantities were found using data from the 2020 season, as earlier timeframes had inconsistent measurements and incomplete data. In 2019 or early 2020, adjustments were made and consistent heights of water were being logged.

Independent Diversion and Ditch Improvements: Average annual seepage losses were determined using a seepage spreadsheet which calculates losses in the ditch by calculating a

wetted perimeter for a flow and applying a saturated hydraulic conductivity rate to a length of a canal or ditch.

No inflow or outflow test were conducted, or ponding tests were conducted. But observation of the ditch indicate that a significant amount of water is seeping through the ditch embankment and into the surround area.

The results of the seepage calculations and losses were consistent with other irrigators observations in the area.

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)?

Eastern Duchesne Projects Pipeline Metering: N/A

Water Efficiency and Control Component: Expected post project seepage and leakage losses will be minimal, a geotechnical investigation and report have been completed and found that the native material is mostly silty clay. This material will be used to construct the pond, and the pond will be lined with a native clay or bentonite. Any loses due to seepage or evaporation will be significantly less the current operational losses.

Independent Diversion and Ditch Improvements: Seepage losses after the project will essential be zero in the lined section of the ditch. The ditch will be cleared and grubbed and then excavated and shaped using a fine granular material. I waterproof geo-composite liner will be placed and then a concrete liner will be formed on top. This will result in a protected waterproof channel with a consistent slope that will efficiently convey water. Having a channel with a consistent width and height will keep water from overtopping the ditch.

This method has been used for the Yellowstone Feeder Canal which is in the adjacent area and has proven to be an effective way of reducing seepage. The Yellowstone Feeder Canal project was funded through WaterSMART as well and had a 50 year plus life consideration by Reclamation. It has continued to hold up very well and has eliminated seepage for that portion installed in 2015.

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?

Eastern Duchesne Projects Pipeline Metering: N/A

Water Efficiency and Control Component: This North Pipeline has no transit losses as it is an enclosed system consisting of HDPE pipe with a maximum size of 42”. Losses are due to entrances into the pipeline. Phase II of the pleasant valley irrigation project had this water regulation structure planned, but due to budget constraints was abandoned, and the current regulation structure was constructed. The structure serves as pressure break for the North Pipeline, losses are due to having more supply than there is demand this causes the system to spill into the natural drainage.

Independent Diversion and Ditch Improvements: The total amount of ditch to be lined for this project is exactly one mile. If we only consider losses due to seepage during the irrigation season. The reduction in transit losses are 724 acre feet. If we consider all the entire losses through the year that would be 1840 acre-feet per mile.

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

Eastern Duchesne Projects Pipeline Metering: N/A

Water Efficiency and Control Project: Seepage losses will be negligible or minimal in the water regulation structure.

Independent Diversion and Ditch Improvements: Canal seepage losses can be verified by using the flow rate at the upstream Parshall flume and then calculating the flow rate in the uniform trapezoidal channel using water velocity and some open channel flow equations. The flow in the channel would be relatively easy to determine even after the splitter.

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

Eastern Duchesne Projects Pipeline Metering: N/A

Water Efficiency and Control Component:

Independent Diversion and Ditch Improvements: The ditch liner would consist of a geo-composite liner and a concrete liner. This system can be illustrated by a youtube video that the Moon Lake Water Users and JDE created documenting the steps taken to install the geosynthetic fabric, the liner, and another layer of fabric for protection and a bonding surface for the concrete layer. This was tested and held very well after a sledge hammer was used to break it up. See the video at the following link: https://www.youtube.com/watch?v=TfbLVmIyGi0

(2) ***Municipal Metering****:*

No municipal meters included in this application and scope of work.

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

a) How have average annual water savings estimates been determined? Please provide all relevant calculations, assumptions, and supporting data.
b) Have current operational losses been determined? If water savings are based on a reduction of spills, please provide support for the amount of water currently being lost to spills.
c) Are flows currently measured at proposed sites and if so, what is the accuracy of existing devices? How has the existing measurement accuracy been established?
d) Provide detailed descriptions of all proposed flow measurement devices, including accuracy and the basis for the accuracy.
e) Will annual farm delivery volumes be reduced by more efficient and timely deliveries? If so, how has this reduction been estimated?
f) How will actual water savings be verified upon completion of the project?

Eastern Duchesne Projects Pipeline Metering: The average annual water savings for the piping (PL-566) and metering (WaterSMART) project was estimated first by ditch riders and irrigation company personnel. The flows in the canal are measured using flumes, and the flows are recorded on www.duchesneriver.org. Knowing the flows, the irrigation company personnel estimated the losses due to seepage and leaks based off a percentage of the flows. In order to verify these estimations, a soil seepage study was performed. Reference question 3 for a detailed explanation of the seepage study. The seepage study took the wetted perimeter of each canal,

multiplied it by the length to find the seepage area, and then used the seepage rate of the soils to determine the seepage losses that were being experienced.

The seepage study that was performed assumes that there is a constant flow throughout the length of the canal. To account for this assumption, the seepage area is halved if there is no flow at the end of the canal. The average of the wetted perimeter at the start and end of the canal is used to calculate the seepage area when there is a given flow at the end of the canal. Running the calculations this way allows for a conservative approach. The final numbers for losses in the canals that were determined is a total of 16,114 acre-feet per year.

The flows are currently measured as previously discussed with flumes, and a lot of the data is real time and stored on www.duchesneriver.org. The accuracy of the existing flumes is anywhere between 5-10% depending on the approach, downstream conditions, and installation. The accuracy of the existing measurements is based off industry knowledge on the accuracy of measurement flumes.

The proposed measurement devices are flanged mag meters, similar to the Ultra Mag from McCrometer. These meters range in size from 2”-20” throughout the project. The accuracy of this type of meter is +/-0.5%, as determined from the specifications on the Ultra Mag from the manufacturer’s website.

Farm delivery will reduce during the high flows as the pipelines will take less water than an open channel delivery system as the pipelines will be more efficient. During this time, more water will be seen downstream in the river systems of each of the projects. This will also allow the irrigation season to be extended, delivering more water to the farms, increasing the water supply, which would be deliveries closer to the appropriated amount.

After the project is completed, the water savings will be verified based off comparing the previous years flows in the canals to the after project flows within the canals. Currently, the flows are measured and data stored on www.duchesneriver.org, so the pre-project flows can be referenced. Following the project implementation, those flows from the installed meters from this project, as well as main line meters will be stored either on www.duchesneriver.org or by irrigation company personnel. The inflow/outflow method will be used to then verify the water savings.

Water Efficiency and Control Component: Annual water saving for an average irrigation season have been calculated using a level sensor inside of weir box using a weir equation describe in previous section and included in the appendices.

Spills have been calculated based on the water level data in the spill vent box and metal plate weir over the full irrigation season of 2020 which is representative of water usage in the UBIC system. Operational losses outside of the overflow at the spill vent pipe/box have not been calculated, however an additional loss of service occurs anytime the pipeline feeding this area of the system experiences fluctuations in pressure and/or water supply. Time and water is lost because of the lag time that occurs for ditchrider to make adjustments on the system to keep a steady flow at this location. When conditions are right, there is minor to no spillage, but as soon as the demand changes, either a loss or overflow is eminent.

Flows are measured through a level/pressure sensor installed near the overflow spill and tight tolerances were used on the weir plate system for the purpose of flow measurement. Calculations utilized a standard weir equation and a reasonable coefficient was found and utilized for a

conservative and representative flow rate and volume. As downstream water users install their own on-farm meters, comparisons of upstream mainline meters and the on-farm meters would give an estimate to check the accuracy of the calculations. Based on ditchrider/board member experience in observing flows going down the natural drainage, the weir method is accurate in their opinions.

There is also a meter on the upstream side of the weir box, this meter collects total flow in the pipeline but not losses like the level sensor.

Proposed flow measurement devices will utilize existing pipeline meters and level sensor on the spill vent as well as a level sensor on the proposed pond itself. Since on-farm meters are either installed or being required in the near future, the pipeline system will have reasonably accurate metering with accuracy tolerances within the 5% range or less. Since the spill vent will not actually send water out of the system, it will not be as critical to know the flowrate because flows from the North Pipeline and the overflow will both go to the same proposed pond.

Farm delivery will become more consistent for both upstream and downstream users by reducing fluctuations using the large pond volume to buffer peaks and low flow rates rather than those fluctuations being inside a 6'x6' concrete vault. Water diverted for the UBIC system from the Duchesne River will also be more consistent with the proposed pond installed such that net benefits will be realized in the river system as well. Volumes may be reduced based on a steadier pressure at the delivery point and less startup and pressure losses. This reduction is being considered as negligible and has not been estimated.

Water savings will be verified using both the mainline meters and the on-farm meters, as well as the more efficient use of water and the ability to cover crop water requirements for water users in the system. Metering will provide quantifiable flow volumes and post-project meetings with shareholders annually will provide qualitative results of savings and other associated benefits due to the project.

Independent Diversion and Ditch Improvements: One of the purposes of this project is to improve the accuracy of the flow measurement flume on the UIDC Ditch. This may include updating the stilling well and reconstructing the flume. It would also include upgrading the level sensor. Level sensors on other structures are generally a Vega level sensor with Campbell scientific data logger. These will be tied to the telemetry used by the River Commissioner and linked onto www.duchesneriver.org for real time monitoring and data collection.

Some operational losses have been determined, the primary one being water leaking past the headgate and being sent down the ditch during the winter months. This has been documented and observed by the Uinta River Commissioner as well and is a concern to him and the ditch company.

Losses due to spills or overtopping have not been determined but generally when the ditch is at its maximum duty, it is overtopping somewhere in the upper system.

Diverted water is being measured by a Parshall flume, generally parshall flumes have a 3-5% accuracy. There is a staff gage on the side of the walls of the flume so data logged values have been checked using the physical staff gage to ensure accuracy.

The flume will be reworked if necessary and will be improved if necessary and it is anticipated that there would be some upgraded telemetry to ensure the accuracy.

Delivery volumes vary significantly depending on the year, on wet years volumes increase, on dry years volumes decrease. This is due to the water rights priority date. It is anticipated that the water will be delivered more efficiently because ditchriders won't have to worry about the ditch overtopping in the upper system. These improvements will allow for less water to be diverted to see the same results at the end of the ditch, due to the overall seepage being reduced.

Water usage before the project has already been calculated. After the implementation of the project data can be collected for a year to see how much water has been saved.

(4) ***Turf Removal**:*

No turf removal included in this application and scope of work.

(5) ***Smart Irrigation Controllers, Controllers with Rain Sensor Shutoff, Drip Irrigation, and High-Efficiency Nozzles**:*

No smart irrigation controllers in this application and scope of work.

(6) ***High-Efficiency Indoor Appliances and Fixtures**:*

No high-efficiency indoor appliances and fixtures in this application and scope of work.

(7) ***Commercial Cooling Systems**:*

No commercial cooling systems in this application and scope of work.

1.4.2. EVALUATION CRITERION B – RENEWABLE ENERGY (20 POINTS)

1.4.2.1. SUBCRITERION B.1 – IMPLEMENTING RENEWABLE ENERGY PROJECTS RELATED TO WATER MANAGEMENT AND DELIVERY

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

The Eastern Duchesne Projects Pipeline Metering and Water Efficiency and Control components of this project will include renewable energy systems. The renewable energy system included in this project includes solar panels for flow metering and data loggers. A typical panel that the irrigation companies would utilize should have an average capacity of 300 watts. The Independent Diversion and Ditch Improvement component of this project already uses solar panels and is self sufficient, not requiring any kind of overhead power.

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

The power generated in this project will be minor, with enough energy to operate sensors and SCADA system. This information will provide the irrigation companies with flow data or level data and allow them to make adjustments to the system as appropriate.

Describe the status of a mothballed hydropower plant.

Not applicable to this project.

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

- *How the system will combat/offset the impacts of climate change, including an expected reduction in greenhouse gas emissions*
- *Expected environmental benefits of the renewable energy system. 39 Notice of Funding Opportunity No. R24AS00052*
- *Any expected reduction in the use of energy currently supplied through a Reclamation project.*
- *Anticipated benefits to other sectors/entities.*
- *Expected water needs, if any, of the system.*

This projects telemetry and automation, with power supplied by renewable sources will reduce the required amount of travel and time spent measuring flows or attempting to find the source of losses. With flows and levels being monitored remotely there will be less power and fuel consumption, reducing greenhouse gas emissions.

AND

1.4.2.2. SUBCRITERION B.2 – INCREASING ENERGY EFFICIENCY IN WATER MANAGEMENT

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

- *If quantifiable energy savings is expected to result from the project, please provide sufficient details and supporting calculations. If quantifying energy savings, please state the estimated amount in kilowatt hours per year.*

Eastern Duchesne Projects Pipeline Metering: Currently, in order to accurately measure flows delivered to each user, flows would have to be manually measured or estimated based off of irrigation type. This project will directly benefit the irrigation companies because automation, telemetry, and SCADA will reduce the number of trips required to manually measure flows at each turnout.

Roundtrips to each of the canals differ in length, so the following list shows the average annual dollar savings using the IRS mileage rate of $0.655 per mile and assuming 200 trips per year along each of the proposed pipelines and canal linings in order to obtain flow measurements.

- Class B Pipeline – 30 miles roundtrip, total of 6,000 miles, savings of $3,930/year
- Arcadia Farms Pipeline – 40 miles roundtrip, total of 8,000 miles, savings of $5,267/year

Water Efficiency and Control Component: The UBIC system is designed such that gravity flow will provide sufficient pressures for agricultural users to utilize pressurized sprinkler systems for irrigation, therefore eliminating the need for pumping. This project will sustain that effort and reduce the down-time that has been experienced when lower users 'loose' their water and ditchriders are having to make adjustments and also drive the system to see where deliveries

have changed since their last adjustment. Having the proposed pond will allow for fluctuations to occur without the emergency-like actions that have to be taken currently to restore water to those who have a water turn. Another type of savings will be on the individual farmers aspect, where they won't have to chase water and slowly re-pressurize every time it goes down. While this is hard to quantify, it has been a common topic amongst the users on that pipeline and the downtime can sometimes cost production and crop watering turns.

Independent Diversion and Ditch Improvements: Surface irrigation is a very energy efficient way of delivering water and requires very little energy input. There are some pivots that do use a booster pump, but overall the system requires very little energy to operate. There are very few pivots on the system but at least two of them have buried irrigation lines that connect to the ditch near the heading structure. This allows the pivots to generate some pressure head due to elevation differences which helps decrease pumping costs and energy consumption.

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

Less physical travel for flow measurements and operation and maintenance will greatly reduce required vehicle usage and therefore reduce greenhouse gas emissions.

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

Eastern Duchesne Projects Pipeline Metering: The reduction in pumping will not be a result of installing meters; however, the reduction in pumping will be the result of installing the main pipelines. This project will reduce pumping due to the pressures that will be available off of the pipelines. The reduction in pumping would be a reduction in energy use, that would equate to approximately $90 per acre per year that the end user could save in pumping costs because of the PL-566 project.

Water Efficiency and Control Component: It is not anticipated that there will be reduced pumping cost due to this component of the project. This component will help reduce wear on any booster pumps, booster pumps are unique to each farm based on their elevation. Generally, most of the fields receive sufficient pressure due to elevation head beside some in the upper system. This component won't substantially change the pressures seen on each farm, it will however increase the reliability of the water being available and those in the upper portions of the system will not see the fluctuations that have occurred. The associated problems with the fluctuations has its own detrimental pressure surges and startup delays and wasted water with drains opening and closing and manual startup labor when there is a loss of pressure or flow.

Independent Diversion and Ditch Improvements: Like mentioned above most of the irrigators use some sort of flood irrigation, but the few pivots or wheel lines on the system use booster pumps to increase the pressure. Some of the pivots have inlets located near the heading and have long transmission water lines to utilize pressure generated from elevation differences.

- *Please indicate whether your energy savings estimate originates from the point of diversion, or whether the estimate is based upon an alternate site of origin.*

  Energy savings occurs at the points of diversion as well as along the length of the pipeline. The points of diversion will be where the solar panels are installed for the telemetry and

SCADA. The reduction in pumping costs and energy usage is along the length of the pipeline.

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

  Not applicable to this project.

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

  Yes, as mentioned above, the project will result in less miles driven, in turn reducing greenhouse gases. Roundtrips to each of the canals differ in length, so the following list shows the average annual dollar savings using the IRS mileage rate of $0.655 per mile and assuming 200 trips per year along each of the proposed pipelines and canal linings in order to obtain flow measurements.

  - Eastern Duchesne Projects Pipeline Metering - total of 14,000 miles, savings of $9,197/year
  - Water Efficiency and Control Component – total of 1,000 miles, savings of $655/year
  - Independent Diversion and Ditch Improvements – total of 800 miles, savings of $524/year

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

  Many of the irrigation companies that are in partnership for this funding application use gravity-fed systems with solar panel SCADA for flow control and measurement devices on other components of their system and have a network created that will integrate nicely into the proposed improvements. The small scale solar with SCADA and telemetry will result in energy savings over the long run, as well as a large upfront cost for power to be brought to the remote sites.

1.4.3. EVALUATION CRITERION C – OTHER PROJECT BENEFITS (15 POINTS)

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

- *Explain and provide detail of the specific issue(s) in the area that is impacting water resilience and sustainability. Consider the following:*
  - *Describe recent, existing, or potential drought or water scarcity conditions in the project area.*
  - *Is the project in an area that is experiencing, or recently experienced, drought or water scarcity?*
  - *Describe any projected increases to the severity or duration of drought or water scarcity in the project area. Provide support for your response (e.g., reference a recent climate informed analysis, if available).*

Water sustainability issues for the area are coming from shortages due to drought and any other change or reason for less precipitation, less snowpack during winter months, and increased pressure on agriculture for economically viable products despite growing costs of fuel, materials, and chemicals as well as increased demand upon certain products and services.

In recent years, much of Utah, including the Uintah Basin, has been in drought conditions, including times much of the state has been in extreme or exceptional drought as determined by the U.S. Drought Monitor (drought.gov). This has led to water scarcity in many of the recent years.

Winter snowpack usually sets the tone for drought in the Uintah Basin as well as the Colorado River Basin. Utah has had one of driest Decembers on record since 1895 this year with 0.6 inches of total precipitation, which is 0.51 inches lower than normal. If that trend continues, drought could be expected to persist for the Uintah Basin and much of Utah. A historical drought graph for the state of Utah from 2000 to present is shown below in Figure 1.

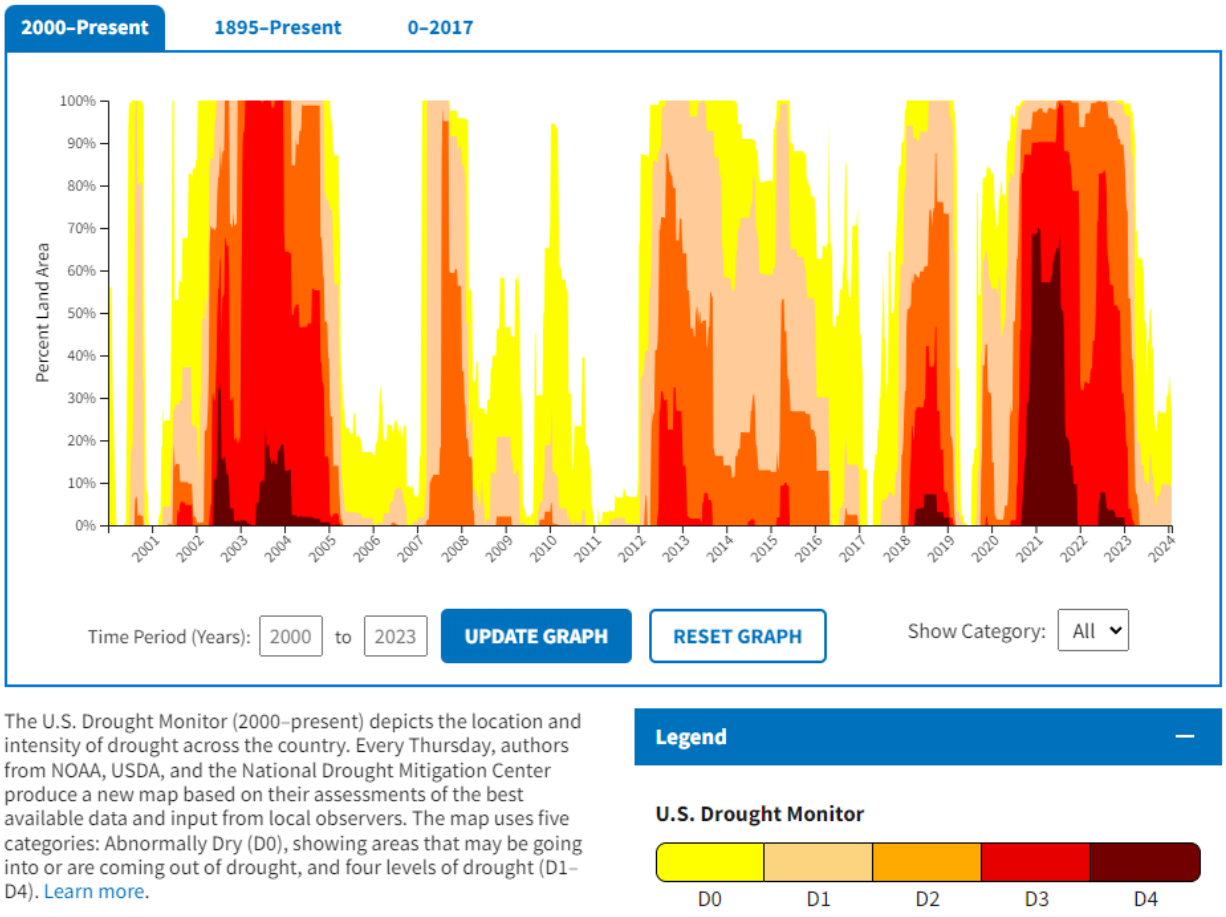


Figure 2 Historical Drought Conditions - Utah

- *Explain and provide detail of the specific issue(s) in the area that is impacting energy sustainability, such as reliance on fossil fuels, pollution, or interruptions in service.*

The Uintah Basin is a valuable source of fossil fuels and has impacts due to fossil fuel extraction, which has a strain on water resources in both population boom & bust cycles as well as production water for extraction activities. Irrigation water is sometimes targeted for lease by these companies and therefore unavailable for agriculture and other ecological resources.

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

Efficiency in irrigation will reduce impacts of shortages and improve drought conditions as much as possible with the water that is available. Reducing losses, improved measurement capability and accountability of water usage will benefit both the direct water users and indirect users/beneficiaries.

- *Will the project directly result in more efficient management of the water supply? For example, will the project provide greater flexibility to water managers, resulting in a more efficient use of water supplies?*

The river systems that are involved in this project are the Lake Fork, Yellowstone, Duchesne, Uinta River systems. Reference the exhibits attached to this application. Efficiencies in the delivery of irrigation water to water users holding water rights on the river systems benefit the entire systems and increase flow in the systems. Multiple ongoing water efficiency projects, similar to those within this application, are occurring in the basin. Completing these projects as well will just increase the water efficiency within the basin, benefiting those within the system. This project, along with the others in the basin will allow for greater flexibility on the delivery of water, allowing the irrigation seasons to be extended.

- *Please address where any conserved water as a result of the project will go and how it will be used, including whether the conserved water will be used to offset groundwater pumping, used to reduce diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.*
    - *Indicate the quantity of conserved water that will be used for the intended purpose(s).*
    - *Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use.*

As noted earlier in the application, the quantity of conserved water will be 18,506 acre-feet per year because of the implementation of this project.

Eastern Duchesne Projects Pipeline Metering: The saved water can be accurately utilized by the end users on each of the canals, ensuring that each user receives their required allotment of water when available without having some users receive more water than others because of the inaccuracy of the current measurements. Additionally, with the efficient delivery and measurement of water, the irrigation season can be extended, allowing more water to stay within the river systems, increasing flow downstream during the periods of high flow as the canals will reduce their diversions during that time period. This will benefit the environment and those downstream from the project area, reducing shortages seen downstream. The mechanism that will be used to conserve this water will be the accurate measuring devices that are implemented as part of this project.

Water Efficiency and Control Component: UBIC has a water right and will continue to divert up to that right when demands are high, however the water that is diverted will have a better chance of being used efficiently and therefore may present a lesser amount needing to be diverted from the river. The conserved water will be used on agricultural fields so that water users aren't burdened with a loss or 'shrink' factor to their water right and can use their full right and duty.

Independent Diversion and Ditch Improvements: This water will stay within the Uinta River benefiting the environment and those downstream from the project area. It will lessen the

shortages seen downstream. The mechanism that will be used to conserve this water will be the lining of the canals, reducing the amount diverted for users because of the savings that will be experienced.

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

This project increases efficiency and improves water stewardship in the Lake Fork River, Yellowstone River, Uinta River, and the Duchesne River systems, which are all tributaries of the Green and Colorado River systems, which is currently one of the most critical interstate river systems for the Lower Colorado states. Increased water savings on this system allows more flows into an already critically low and stressed river system.

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

This project has great potential for reducing conflict and building trust. Tribal water rights along the rivers in the basin have been a great source of tension and strain. Having accuracy and accountability in the delivery of water will remove doubt and questions as to how much each entity diverted from the system.

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

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

As discussed previously, the river systems that are affected as part of this project are tributaries of the Green River with four endangered fish species (bonytail, Colorado pikeminnow, humpback chub, and razorback sucker) and 3 threatened species (bluehead sucker, flannelmouth sucker, and roundtail chub). Efficiency in the irrigation systems along these rivers will directly benefit these species, which have been adversely affected by a Reclamation project such as the Flaming Gorge Dam. More water will stay within the river system because of the efficiency water delivery and measurements.

- *Will water remain in the system for longer periods of time? If so, provide details on current/future durations and any expected resulting benefits (e.g., maintaining water temperatures or water levels, recreational benefits, etc.).*

The water that is saved will be utilized by the end user to account for shortages in deliveries. The irrigation season will be able to be lengthened because of the saved water, accounting for increased agricultural production. Additionally, because of the lengthened irrigation season, the river systems will see an increase of flow downstream during the periods of high flow since the users will not be diverting as much water during that time. Additionally, the water temperatures will be maintained or improved for trout fishery and other riparian resources.

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

The project will reduce the likelihood of a species listing and will improve the species status. The rivers affected by this project are tributaries of the Green River with four endangered fish species (bonytail, Colorado pikeminnow, humpback chub, and razorback sucker) and 3 threatened species (bluehead sucker, flannelmouth sucker, and roundtail chub). Efficiency in the irrigation systems along these rivers will directly benefit these species.

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

The natural resource concerns addressed by this project includes Fish and Wildlife – Threatened and Endangered Fish and Wildlife Species and will decrease the chances for the resource concern of inadequate water becoming an issue for these and many other species using the Yellowstone, Duchesne, Uinta, and Lake Fork Rivers.

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

- *Describe how the project addresses climate change and increases resiliency. For example, does the project help communities adapt to bolster drought resilience?*

The project would help address climate change and increase resiliency in the project area. As discussed previously, the reduction in greenhouse gases will help combat climate change that is occurring. Additionally, more water will remain within the river systems instead. The project will also bolster drought resiliency within the project area due to the fact that less water will be utilized, allowing users to adapt to less water being available in the event of a persistent drought.

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

The project improves ecological resiliency by more efficiently utilizing water that is diverted from the Duchesne River, Lake Fork River, Uinta River, and the Yellowstone River allows agricultural products to be grown in an otherwise desert region. With climate change necessitating better stewardship of water resources, this project is a high priority for DCWCD and the project sponsors to continue their wise use of the water they are responsible for and the agricultural producers whom they serve.

- *Does the proposed project seek to reduce or mitigate climate pollutions such as air or water pollution? 42 Section E. Application Review Information*

This proposed project will reduce climate pollutions by reducing greenhouse gas emissions. Because of the fact that traveling will not be required for meter readings, trips to each meter will not be required. This will in turn eliminate greenhouse gas emissions from those trips. The proposed projects all have a 50-year plus life and trips during that time period would be substantial if they were required.

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

The proposed project includes green infrastructure through the solar panels that will be used for telemetry and SCADA. This allows for the use of power that is renewable to improve resiliency within the operations of the water users.

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

The impacts of climate change in the Uintah Basin are primarily evident in water supply and drought. This directly correlates with the amount of water available for agriculture, which is also a crisis waiting to happen. Conservation of the precious water resource that DGIC, DCWCD, UBIC, UIIP, and UIDC have is a top priority, and making operational changes and improvements, and infrastructure upgrades is an essential part of their mission. Installation of the pipelines and canal lining will help better manage and operate their system and reduce or eliminate spills and fluctuations is of great importance. Better water stewardship and reliable deliveries will allow crop yields to increase and may offset the drought with diligent metering, measurements, and awareness.

1.4.4. EVALUATION CRITERION D – DISADVANTAGED COMMUNITIES, INSULAR AREAS, AND TRIBAL BENEFITS

1.4.4.1. SUBCRITERION D.1. DISADVANTAGED COMMUNITIES

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

- *Please use the White House Council on Environmental Quality's interactive Climate and Economic Justice Screening Tool (CEJST), available online at Explore the map - Climate & Economic Justice Screening Tool (screeningtool.geoplatform.gov/ en/#17.59/36.63278/-105.181329) to identify any disadvantaged communities that will benefit from your project. The CEJST developed by the White House Council on Environmental Quality is a geospatial mapping tool that utilizes publicly available, nationally consistent data sets related to climate change, the environment, health, and economic opportunity to identify disadvantaged communities. In addition to identifying specific census tracts that are disadvantaged, the CEJST includes the lands of Federally 43 Notice of Funding Opportunity No. R24AS00052 recognized Tribes as disadvantaged communities. In addition, regardless of whether a Federally recognized Tribe has land, all Federally recognized Tribal entities are considered disadvantaged communities for the purposes of the Justice40 Initiative.*

The land that will benefit from this project is located within the following tracts, determined from the CEJST:

49013940300

49013940500

49013940600

All of these tracts are located within Duchesne County, Utah and are identified as disadvantaged. Additionally, the CEJST states "The lands of Federally Recognized Tribes that cover 100% of this tract are also considered disadvantaged."

- *If applicable, describe how the proposed project will serve or benefit a disadvantaged community, identified using the tool. For example, will the project improve public health and safety by addressing water quality, add new water supplies, provide economic growth opportunities, or provide other benefits in a disadvantaged community?*

These communities located within the disadvantaged tracts will benefit from the increased accountability of water delivery in the systems. Farmers and ranchers rely on water made available through these canals, and installation of the meters will increase the accountability of water that is delivered to the user for agricultural purposes. At this point, many of the landowners, farmers, and ranchers have felt a downturn in the economy due to economic challenges; however, if water is more accurately delivered due to this project, this could increase production throughout the project area, providing benefits to the disadvantaged community.

1.4.4.2. SUNCRITERION D.2. TRIBAL BENEFITS

The Department is committed to strengthening tribal sovereignty and the fulfillment of Federal Tribal trust responsibilities. The President's memorandum, Tribal Consultation and Strengthening Nation-to-Nation Relationships, asserts the importance of honoring the Federal Government's commitments to Tribal nations. Address the following, if applicable:

- *Does the proposed project directly serve and/or benefit a Tribe? Will the project increase water supply sustainability for an Indian Tribe? Will the project provide renewable energy for an Indian Tribe?*

Yes, the proposed Eastern Duchesne Projects Pipeline Metering component directly serves the Ute Indian Tribe, benefitting agricultural production for the tribe. The Arcadia Farms project directly serves 4,247.92 acres of tribal land. The installation of meters on this pipeline will increase the accountability of water and the accuracy of deliveries to the tribal land to ensure they are delivered the water that they are allotted. This could increase production, providing hay for tribal members and other tribal enterprises. In conjunction with the piping project, this project will supply a more consistent delivery of water, to fill the tribal duty needs and allow later appropriations of water in a timely and accurate manner.

The Water Efficiency and Control component of the project is also located in the Myton, Utah area. The demographics of the Myton area has approximately 25% of the residents as Native American, primarily of the Ute Tribe. This project is also closely tied to the Tribal water system, as UBIC shares the Gray Mountain Canal Diversion with the Ute Tribe, with operations of the canal and diversion from the Duchesne River happening in conjunction with Tribal water rights and a substantial portion of the canal flows. UBIC water and Tribal water are closely tied together in this system and improvements on the UBIC system will directly translate to more efficiency in deliveries to Tribal water rights and flow diversions.

Water is also delivered to Uintah Indian Irrigation project (UIIP) through the Independent Diversion and Ditch Improvements component of this project. UIIP is a subsidiary of the Ute Tribe. It should be noted that the ditch does not deliver water directly to tribal members, but delivers to fee users with Ute Tribe water rights. This project will allow water to be more efficiently delivered to them.

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

The proposed project supports the Moon Lake Project, which stores water in Moon Lake and the Bureau of Indian Affairs operated Midview Reservoir to supplement water supply for land along the Lake Fork River. Saving water with this proposed project would benefit that conservation effort. Additionally, there are many UIIP projects underway, including the PL-566 funded project to line the Gray Mountain Canal. Performing this project will directly benefit those other projects led by UIIP. This project is also directly tied to the UIIP led Arcadia Farms Pipeline as well, to benefit tribal users.

- *Does the proposed project directly support tribal resilience to climate change and drought impacts or provide other Tribal benefits such as improved public health and safety through water quality improvements, new water supplies, increased renewable energy, or economic growth opportunities?*

The project would help address climate change and increase tribal resiliency in the project area. As discussed previously, the reduction in greenhouse gases will help combat climate change that is occurring. Additionally, the accurate delivery of water will help in the conservation of water within the river systems, especially during time of high flow where less water would be diverted, instead of being lost due overuse or not being accounted for. This benefits downstream users which includes the Ute Tribe. The project will also bolster tribal drought resiliency within the project area due to the fact that less water will be utilized, allowing users to adapt to less water being available in the event of a persistent drought.

- *Does the proposed project support Reclamation's Tribal trust responsibilities or a Reclamation activity with a Tribe?*

Flow is delivered to the Ute Tribe through this project, so this project would support Reclamation's Tribal trust responsibility as it would better manage water resources for the Ute Tribe. Additionally, for the Class B portion of the project, water is received from Moon Lake Dam, which is a Reclamation owned dam and also part of the Moon Lake Project. The facilities of the project include Moon Lake Dam, Yellowstone Feeder Canal, and the Duchesne River Exchange. The project stores water in Moon Lake Reservoir and Midview Reservoir to supplement water supply for land along the Lake Fork and other river systems within the Uintah Basin, much of which is tribal waters in the river systems. The Moon Lake Project provides supplemental irrigation water for 75,256 acres of land in Duchesne and Uintah Counties plus 10,000 acres under the Midview Exchange.

1.4.5. EVALUATION CRITERION E – COMPLEMENTING ON-FARM IRRIGATION IMPROVEMENTS (8 POINTS)

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

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

Along with piping some of the canals, this project will allow users along the pipelines to more easily perform on-farm projects to convert from flood irrigation to sprinklers. Pressurized irrigation would assist the farms with sprinkler irrigation with either no pumping or reduced pumping due to the pressure that will be seen within the pipelines. Additionally, flow could increase to the farms enough to provide more reliable deliveries. Having meters at each turnout will also allow farms to know the flow they are getting and plan crops around that.

Farmers and Ranchers in the area regularly receive help from the NRCS to improve on farm infrastructure. These include but aren't limited to, pivot installations, improving soil health and evaporation ponds.

Many farmers in the area have requested financial assistance from the NRCS. The NRCS has funded several pivot projects through Salinity funding and the Utah Department of Ag & Food (UDAF) has also funded pivots through the Water optimization program. The UDAF has also funded some of this project through their water optimization program. The NRCS has funded the PL-566 portion of this project as well, and will assist with on-farm projects once that is completed. No documentation is available at this time for on-farm projects. No specific letters of intent available at this time.

- *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, installing a pressurized pipe through WaterSMART can help support efficient on-farm irrigation practices, such as drip-irrigation.*

OR

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

On-farm improvements have occurred within the DGIC, UIIP, UIDC, and UBIC service areas, including within areas directly affected by this project. These on-farm projects include piping projects and sprinkler conversion from flood irrigation. This project directly facilitates the ability to continue these on-farm projects through the piping and installation of metered turnouts as well as the water regulation structure because it maximizes the efficiency of the water delivery system. The water delivery will be more reliable, and the users will be able to better plan crops around a reliable delivery of water.

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

No specific on-farm estimates have been done at the time of this application, but there are expected benefits stemming from the increased efficiencies of the projects on the canals. On-farm improvements will be primarily from conversion from flood irrigation to sprinklers.

- *Please provide a map of your water service area boundaries. If your project is selected for funding under this NOFO, this information will help NRCS identify the irrigated lands that may be approved for NRCS funding and technical assistance to complement funded WaterSMART projects.*

1.4.6. EVALUATION CRITERION F – READINESS TO PROCEED (8 POINTS)

- *Identify and provide a summary description of the major tasks necessary to complete the project.* ***Note: Do not repeat the more detailed technical project description provided in Section D.2.2.2 Application Content. This section should focus on a summary of the major tasks to be accomplished as part of the project.***
- *Describe any permits that will be required, along with the process for obtaining such permits.*
- *Identify and describe any engineering or design work performed specifically in support of the proposed project.*
- *Describe any new policies or administrative actions required to implement the project.*
- *Describe the current design status of the project. If additional design work is required prior to construction, describe the planned process and timeline for completing the design work.*
- *Please also include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. Milestones may include, but are not limited to, the following: complete environmental and cultural compliance; mobilization; begin construction/installation; construction/installation (50% complete); and construction/installation (100% complete). Was the expected timeline for environmental and cultural compliance discussed with the local Reclamation regional or area office?*

Each of the components of this project are in different stages of readiness as described below.

Eastern Duchesne Projects Pipeline Metering: As mentioned previously, the main pipelines of these projects are funded by the NRCS PL-566 program, which is funding 75% of the construction of the projects. As part of that funding, each of these projects was required to perform a 30%+ design. Arcadia Farms has a hydraulic model built, which was used to size the pipe, and the Class B pipe has also been sized using hydraulic calculations. As part of the NRCS PL-566 program, an Environmental Assessment (EA) was also performed, which included cultural surveys, ULT surveys, and other environmental considerations. Having performed these surveys, the permits required to complete the projects will be obtained upon finalization of the EA. Information on these documents is available upon request.

No new policies or administrative actions are required to implement the project. The additional design required for the pipeline projects will need to be performed in order to implement those projects. As far as the metering project is concerned, coordination with land owners will need to occur to determine turnout locations, and the preliminary sizing of each of the turnouts that has occurred will be finalized. Reference the attached schedule in Appendix A for the planned design duration.

Water Efficiency and Control Component: Permits required may include an Army Corp Permit or Joint Stream Alteration Permit if the natural drainage is deemed a body of waters of the US.

Also cultural clearances through SHPO will be required and the UBIC has been proactive in preliminary surveys and pre-design work to be able to move forward quickly with a concept footprint of the project and permitting work and associated surveys have already commenced, allowing final design and permitting to be reached quickly once funding is obtained.

Approval from Utah Dam Safety is also a part of the project and will be addressed through the consultants both civil engineering and geotechnical engineering. Plans will be created with details to provide minimum requirements for a small embankment dam, which will be reviewed and approved by State staff. Preliminary Geotechnical work has already been completed.

The first task lists what has been previously completed this past summer, with topographic survey completed to be able to accurately estimate volumes, elevations for embankment and the North Pipeline itself, and also establish a concept embankment footprint and associated water volume impoundment. UBIC dug test holes to share with a geotechnical consultant for preliminary estimates and opinions on existing soil in the site and depth to bedrock, groundwater, etc. Review of existing system plans and quantification of water saving data in conjunction with this application have been the other engineering tasks specific to this project. There has also been preliminary surveys done to establish right-of-way and property acquisition.

The project is in the preliminary design phase, conceptual plans have been developed. Some survey work has been completed, and some additional survey work will be needed to complete the project. A SHPO consultation has been completed and no cultural resources were identified in the project area. Additionally a preliminary geotechnical investigation and associated report were completed by Gerhart Cole, and provided information that will be used in the design. A water resource delineation has also been completed by Jones & DeMille Engineering, which indicated that there is no suitable ULT habitat.

If funding for this project is obtained for the project through the WaterSMART program, a final design would be completed shortly thereafter. Construction would take place in the off season somewhere between October and April. UBIC has already received the necessary votes for the project to proceed.

The project has been discussed with Reclamation and has had several attempts to be funded, the past application through drought resiliency was denied due to problems with the SAM registration which were in a stalemate between the Government and UBIC, it has taken almost a year to get things straightened out where they had a change in leadership and the SAM website was not allowing updates to occur. See attached project schedule in Appendix A.

Independent Diversion and Ditch Improvements: The proposed projects have several key elements pertaining to environmental clearances and site design and analysis that are ready to proceed immediately once the weather will allow and no irrigation deliveries are required. The permits assumed to be required include cultural clearance through SHPO, biological assessment and surveys for potential Ute Ladies Tresses habitat, as well as surveys for actual plants in August-September. Additional wetlands and waters of the US determination will be necessary as well as a Stream Alteration permit from the State of Utah.

Conceptual design for the hydraulics of the Ditch have been performed, including the cross section of the Ditch. The alignments of the canals have also been included in the conceptual design, these alignments will follow the existing ditch. Discussion on design criteria and needs of the UIDC have been incorporated into this application as well.

No new policies or actions would be required. UIDC has a good system in place, the ditch just needs improvements to increase efficiency.

The design of the project is in the conceptual phases, so additional design would be needed prior to construction. The plan is to obtain funding from WaterSMART to go along with funds UIDC has already obtained from UDAF Water Optimization. This will allow the design process to continue and implementation of the measures. Reference the attached schedule in Appendix A for the planned design duration.

See the schedule in Appendix A. Since this will stay within existing footprints, this is likely going to be considered a Categorical Exclusion and should be able to be obtained in reasonable timeframes.

1.4.7. EVALUATION CRITERION G – COLLABORATION (5 POINTS)

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

- *Is there widespread support for the project? Please provide specific details regarding any support and/or partners involved in the project. What is the extent of their involvement in the process?*

This project has widespread support from DCWCD, DGIC, UIIP, UBIC, UIDC as well as Ute Ag Products & Tribal Farms. They are excited to make changes and improvements to increase efficiency, accuracy, and reduce conflicts.

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

The collaboration is key to the success of the project, with a broad group supporting and the Duchesne County Water Conservancy District supporting these individual companies and associations, it will solidify the process and help in obtaining funding together so that the projects can be affordable and successful. Without this support, the projects will likely not happen.

This project will be considered a huge success not only for its water managing improvements, but the partnering on water conservation and irrigation infrastructure between multiple entities, private irrigation companies, and the Ute Tribe.

Historically, there has been a conflict in the actions of entities within the river systems in the Uintah Basin to supply water during irrigation season and storage seasons. This project will continue to improve working relationships and trust by providing effective and operable canals that will show real time data on the flow rates for each turnout. Information in real time will prevent accusation and bad feelings between entities and individual users. Frequent tension is definitely felt with the present operations. The future possibility of water conservation projects is very evident and has already commenced.

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

This project collaboration could serve as an example and pathway for future groups and projects to come together. With the entities involved, including the Ute Tribe, this project will showcase that projects like these have everyone in mind including the irrigation users, tribal members, and

the environment, which could lead to future partnering efforts on other beneficial projects as well.

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

This project will benefit multiple sectors including agriculture, environmental, and recreational. The agricultural benefits have been discussed throughout this application, including the more accurate delivery of water. The environmental sector will benefit from the project because of the elimination or reduction in the loss of water that is currently experienced. The saving of water, especially during high flows, benefit threatened and endangered species of fish. Additionally, other fish species will also benefit, supporting the recreation sector with more fishing opportunities being available along the river system.

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

The letters of support are attached in Appendix B.

1.4.8. EVALUATION CRITERION H – NEXUS TO RECLAMATION (4 POINTS)

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

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

The proposed project is contributing to this basin where Reclamation has been actively engaged. The DCWCD has Green River water shares that are stored in Flaming Gorge Dam as well as Starvation Reservoir water interests. DCWCD has had a long history working with Reclamation and appreciates the opportunity to do so again.

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

DCWCD receives water in its Victory Pipeline through the Starvation Reservoir and Central Utah Water Conservancy District's treatment plant, as well as the Green River mentioned above.

- *Will the proposed work benefit a Reclamation project area or activity?*

As mentioned previously, the Moon Lake Project, which is a reclamation project, stores water in Moon Lake and the Bureau of Indian Affairs operated Midview Reservoir to supplement water supply for land along the Lake Fork River. Saving water with this proposed project would benefit that conservation effort. Additionally, this project will benefit the West Channel Uinta River Bifurcation structure which will be located approximately 500 feet upstream which will be built this fall. This project will add an extra flow measurement check for that structure. The West Channel Structure has also been funded through the BOR WaterSMART program.

- *Is the applicant a Tribe?*

DCWCD is not a tribe; however, Tribal water is involved with this project due to the delivery of water to nearly 4,250 acres of tribal land. Accurate and efficient use of water from the rivers and sources will benefit the entire system, including the Ute Tribe. Efficiency and elimination of water loss will indirectly benefit all water users and river systems downstream.

1.5. PERFORMANCE MEASURES

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

A non-technical performance measure that is important to DCWCD, DGIC, UBIC, UIDC, and UIIP is to have a project successfully built and funded together with the partners listed and working with the Ute Tribe for access and improvements on their lands. Success will be measured by the working relationships and successful completion of the project with all parties at the table participating in the design process, funding, and construction of the project.

The technical performance measure of each component is described below.

Eastern Duchesne Projects Pipleine Metering: The performance measure for the installation of meters at each turnout along the proposed pipelines will be the accurate measurement of delivered water to each of the turnouts and the comparison to diverted water in previous years. The inflow/outflow measurement method would be utilized to determine the amount that is being utilized with the turnouts installed versus the amount that is lost. Previous years data for what is diverted into the canals from the river systems have been recorded and logged in a database at www.duchesneriver.org. These measurements from turnouts once the project is completed would be stored with each individual irrigation companies. The water diverted in previous years versus the water delivered at each turnout will be the evidence of water savings within the systems. A percentage can then be determined to state the efficiency and accuracy of the delivery systems.

Water Efficiency and Control Component: The performance measures after the implementation of this project will be measured by how much water (if any) is spilled over the spillway of the water control structure. A level sensor will be installed, if water does spill there will be a way to quantify those spills. It is not anticipated that spills will occur to the volume of the water control structure because it will have a storage capacity of 30 acre-feet. The North Pipeline has a capacity of 32 CFS, even if water was overdelivered by 5 cfs and the regulating structure was half full it would be able to capture the water at this flow rate for up to a day and a half. Likewise if they were to underdelivered by 5 cfs, the water regulating structure would be able to supply a day and a half of water to downstream users. It is unlikely that this would happen, the level sensor would be able to alert ditchriders prior to any issues occurring.

Independent Diversion and Ditch Improvements: The performance measure for the UIDC will be the measurement of water delivered at the end of the lined section of the ditch. The inflow/outflow measurement method will be utilized to d determine what is being lost in the areas where the ditch has been lined. Previous years' data for the ditch have been recorded and logged in the database at duchesneriver.org. This project's measurements will also be stored on the website once the project is completed.

1.6. BUDGET NARRATIVE

In the budget detail and narrative section, applicants should describe and justify requested budget items and costs. Applicants should provide details to support the SF-424A, "Object Class" categories or the SF-424C, "Cost Classification" categories. The budget narrative must clearly identify all items of cost (total estimated project cost), including those contributed as non-Federal cost share by the applicant (required and voluntary), third-party in-kind contributions, and those covered using the funding requested from Reclamation, and any requested pre-award costs.

The total project cost is the sum of all allowable items of costs, including all required cost sharing and voluntary committed cost sharing, including third-party contributions necessary to complete the project. Applicants must include detailed descriptions of all cost justifications (see Reclamation's suggested format in Attachment B for more detail). Costs, including the valuation of third-party in-kind contributions, must comply with the applicable cost principles contained in 2 CFR, §200.

The funding plan for DCWCD, DGIC, UBIC, UIDC, and UIIP for performing this project hinges upon the successful funding application through the WaterSMART program. The funds required for the non-federal cost share are directly from DGIC, UBIC, and and UIIP shareholders, including non-federal funding that they have been awarded. An additional assessment may need to be imposed on shareholders and the Board to be able to cover this project. Options may be explored to finance the required amount if needed; however, this would likely wait until the determination on this WaterSMART application is announced.

The table below shows the breakdown of funding sources for the project. See the attached cost estimates for further breakdown of each item and budget in Appendix A.

FUNDING SOURCES	AMOUNT
Non-Federal Entities	
Dry Gulch Irrigation Company	$429,000
Uintah Indian Irrigation Project	$291,500
Uintah Basin Irrigation Company	$72,000
Uintah Independent Ditch Company	$100,000
UDAF Water Optimization - UIDC	$500,000
UDAF Water Optimization - UBIC	$420,000
Property In-Kind Donation - UBIC	$25,000
Non-Federal Subtotal	$1,837,500
REQUESTED RECLAMATION FUNDING	$1,670,500

1.6.1. PERSONNEL

See Contractual rates and title page for key personnel. The salaries and/or reimbursements of MLWUA or other support staff are not included in this budget nor are they anticipated to be part of it.

1.6.2. FRINGE BENEFITS

All fringe benefits are fixed rates for billing through engineering and construction contracts.

1.6.3. TRAVEL

Travel costs will be part of the contracted portion of the project. It is likely that the scope of this project will utilize local consultants and contractors so that travel costs are minimal.

1.6.4. EQUIPMENT

Equipment will be part of the contracted portion of the project.

1.6.5. SUPPLIES

Supplies will be part of the contracted portion of the project.

1.6.6. CONTRACTUAL

An engineering consultant will be contracted through the procurement process of each of the irrigation companies to perform the design of each of the project components. JDE has assisted in the preparation of this application and a budgetary estimate of time and rates anticipated for civil engineering scope of the project. The environmental consultant will provide the appropriate permitting and surveys for this project, along with coordination with USFWS for ULT flowers. The table below includes the design and environmental laborer classifications, billing rates, and estimated number of hours.

Role/Position	Rate	Hours	Total
Senior Project Manager	$219	80	$17,520
Project Engineer	$160	160	$25,600
Graduate Engineer	$140	240	$33,600
CAD Technician	$101	220	$22,220
Professional Land Surveyor	$175	100	$17,500
Survey Technician	$135	150	$20,250
Administrative Assistant	$84	100	$8,400

Environmental Scientist	$142	210	$29,820
Geotechnical Engineer	$200	450	$90,000
		TOTAL	$265,000

1.6.7. CONSTRUCTION

A general contractor will be contracted through DGIC, UIIP, UBIC, and UIDC procurement processes to perform the construction of the project. See Appendix A for a breakdown of construction items and tasks, which will be utilized for bidding purposes for construction contractors, with a price-based selection for qualified contractors to perform the work.

Additionally, an engineering consultant will be contracted through the procurement process of the respective irrigation company to perform construction staking, material testing, and construction observation during the construction of the project. The table below includes the construction engineering laborer classifications, billing rates, and estimated number of hours.

Role/Position	Rate	Hours	Total
Senior Project Manager	$219	75	$16,425
Project Engineer	$160	110	$17,600
Construction Project Manager	$140	180	$25,200
Construction Engineering Technician	$118	610	$71,980
Professional Land Surveyor	$175	40	$7,000
Survey Technician	$135	70	$9,450
		TOTAL	$148,000

1.6.8. OTHER

No other expenses are anticipated.

1.6.9. INDIRECT COSTS

No indirect costs are anticipated.

1.7. ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

To allow Reclamation to assess the probable environmental and cultural resources impacts and costs associated with each application, all applicants should consider the following list of

questions focusing on the NEPA, ESA, and NHPA requirements. Please answer the following questions to the best of your knowledge. If any question is not applicable to the project, please explain why. The application should include the answers to:

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

There will be effects on the surrounding environment because of the project. These effects include excavation for the placing of the turnouts and the associated meters. In order to minimize these impacts, the existing turnout locations will be utilized where appropriate and access roadways will be utilized, with minimal disturbance outside of the existing canals. The completed project would improve the quantity of water staying within the river systems during times of high flow, improving habitat for animals and fish species as well. No other impacts are anticipated.

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

There are four federally listed fish species (Colorado pikeminnow, razorback sucker, bonytail, and humpback chub) and 3 threatened species (bluehead sucker, flannelmouth sucker, and roundtail chub) within the river systems where these projects would be constructed. These projects will not directly impact these fish species; however, the project will benefit the fish as previously described. Additionally, there could be the endangered flower, Ute Ladies Tresses (ULT) or its habitat present near the project area. In order to eliminate or minimize disturbance, the project sites will be evaluated prior to the start of construction.

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

As part of the Watershed Plan Environmental Assessment (EA), certain portions of this project have had an aquatic resource delineation has been completed. There are wetlands that fall under CWA jurisdiction near the project areas. Impacts will be minimized by staying within the canal alignment where possible and installing meters at existing turnout locations. If any impacts to wetlands occurs, the proper permitting process through the Army Corps of Engineers and the Utah Division of Water Rights would occur. Since the delineation has occurred, it will be referenced during the final design process in order to minimize the impacts to not require mitigation.

- *When was the water delivery system constructed?*

DGIC built most of their canals between 1905 and 1915, and it is estimated that the Red Cap Extension (Arcadia Farms) was constructed in the 1930s. From available information, the Gray Mountain and Pleasant Valley Canals were built around 1920, and the North Pipeline and other supporting infrastructure was built in 2004-2005. The exact year for the UIDC Canal and diversion structure is unknown, but most of the canals in the basin were built between 1905-1915.

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

The purpose of this project is to install meters on turnouts for two pipeline projects, line a UIDC Ditch, and modifying the inlet of a pipeline and a small section of pipeline for UBIC. For the metering portion of this project, the pipelines will be constructed prior to the installation of the turnouts and meters, but in many cases, the meters will be installed at existing turnout locations and on existing pipelines. The age varies between the existing turnouts, with some being as old as the canal, and others being new within the past year, depending on when on-farm projects were performed.

Throughout the years, maintenance has occurred within the UIDC to keep it in service. Performing this project will extend the life of the ditch. The check structure was reconstructed around the 70's and the slide gate was reconstructed in 2023. Most of the system remains unmodified since the original construction including the flume.

As far as the water efficiency and control component of the project is concerned, the water regulation structure will replace an existing overflow box, but it is possible that the overflow box could stay in place. There are several ways to modify the pipeline, but the best alternative has not been selected yet. The pipeline was constructed from 2004-2005.

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

As far as the project area is concerned, a cultural survey has been completed as part of the EA for the metering component of this project. Throughout the project sites, there were properties that were identified as historic. During final design, the cultural surveys will be referenced in order to minimize disturbance to any cultural sites. Cultural mitigation is also budgeted and has commenced as part of the EA as well.

For the water efficiency and control component of the project, there are no known archeological sites or structures that are eligible for listing. A cultural resource survey has already been completed through the UDAF local planner, and coordination with SHPO has previously occurred.

For the Independent Diversion and Ditch Improvements component of the project, there could be eligible structures that could be listed within the irrigation district. As far as the project is concerned, only the existing ditch will be lined. There are no known archeological sites in the proposed project area. A cultural resources survey would need to be completed prior to construction to determine any archeological sites.

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

No, the project will not have a disproportionate or adverse effect on any communities with environmental justice concerns.

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

No, the proposed project will not limit access to ceremonial use of Indian sacred sites or result an any negative impacts to Tribal lands; however, increase in efficiency in Tribal water systems will be a result of this project.

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

No, the proposed project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area. Project specifications will require contractors to have a weed-free equipment and operation, with cleaning requirements between projects necessary and required.

1.8. REQUIRED PERMITS OR APPROVALS

You should state in the application whether any permits or approvals are necessary and explain the plan for obtaining such permits or approvals.

Eastern Duchesne Projects Pipeline Metering: Permits for the meter installation will be obtained as part of the respective pipeline projects. Permits anticipated for the piping include Ute Ladies Tresses (ULT) endangered flower survey. A stream alteration permit and potential Army Corp permit is also anticipated to some degree, with the critical path item being the ULT. A 401 certification is also anticipated.

The ULT survey, cultural survey, and aquatic resource delineation have been completed as part of the EA, and mitigation for cultural and ULT has already commenced as part of the EA project. Impacts to aquatic resources will be minimized where possible, but permitting is still anticipated.

Tribal lands will require the contractors to have an access permit and UTERO for work on Ute Tribe Lands. The DGIC and UIIP have their own access permits and prescriptive and sometimes descriptive easements for their canals and structures to do work and improvements on them. This is not anticipated to be a hurdle for access during construction.

Water Efficiency and Control Component: The project will require a stream alteration permit and also an approval from the State of Utah Division of Dam Safety, which has already been started in both cases. Once funding is approved and final design completed, the permits can approvals can be obtained during the irrigation season, so that construction can commence in the off-season.

Independent Diversion and Ditch Improvements: Permits anticipated for the ditch lining include Ute Ladies Tresses (ULT) endangered flower survey, which could lead to a Biological Opinion from the US Fish & Wildlife Service for the ULT, in response to the final design and impact areas to ULT habitat and individuals if present. A stream alteration permit and potential Army Corp permit is also anticipated to some degree, with the critical path item being the ULT. Some of the elevations may rule out that requirement. A cultural resource survey and a 401 certification is also anticipated.

Tribal lands will require the contractors to have an access permit and UTERO for work on Ute Tribe Lands. UDIC have their own access permits and prescriptive and sometimes descriptive easements for their ditch and structures to do work and improvements on them. This is not anticipated to be a hurdle for access during construction. Access to the heading is possible through private property.

1.9. OVERLAP OR DUPLICATION OF EFFORT STATEMENT

Applicants should provide a statement that addresses if there is any overlap between the proposed project and any other active or anticipated proposals or projects in terms of activities, costs, or commitment of key personnel. If any overlap exists, applicants must provide a description of the overlap in their application for review.

Applicants should also state if the proposal submitted for consideration under this program does or does not in any way duplicate any proposal or project that has been or will be submitted for funding consideration to any other potential funding source—whether it be Federal or non-Federal. If such a circumstance exists, applicants must detail when the other duplicative proposal(s) were submitted, to whom (Agency name and Financial Assistance Program), and when funding decisions are expected to be announced. If at any time a proposal is awarded funds that would be duplicative of the funding requested from Reclamation, applicants must notify the NOFO point of contact or the Program Coordinator immediately.

Eastern Duchesne Projects Pipeline Metering: There is additional funding that has been received from multiple sources for this project. As part of the PL-566 project to pipe and line 7 different canals in the Uintah Basin, DCWCD has received the following:

- NRCS Funded Engineering and Construction – $31,720,813.00
- Sponsor Funding, including UDAF Water Optimization Funding – $8,305,937.67

The funding received from this WaterSMART application will be utilized separately from the above funding to install meters on turnouts. The main pipelines and turnouts will be installed using the money associated with the PL-566 program including NRCS funding, sponsor funding, and UDAF Water Optimization funding. Once that is completed, this WaterSMART funding would be utilized for the installation of the meters. This would then allow the users to apply for on-farm funding to connect to the meter. The image below illustrates the allocation of the different funding.

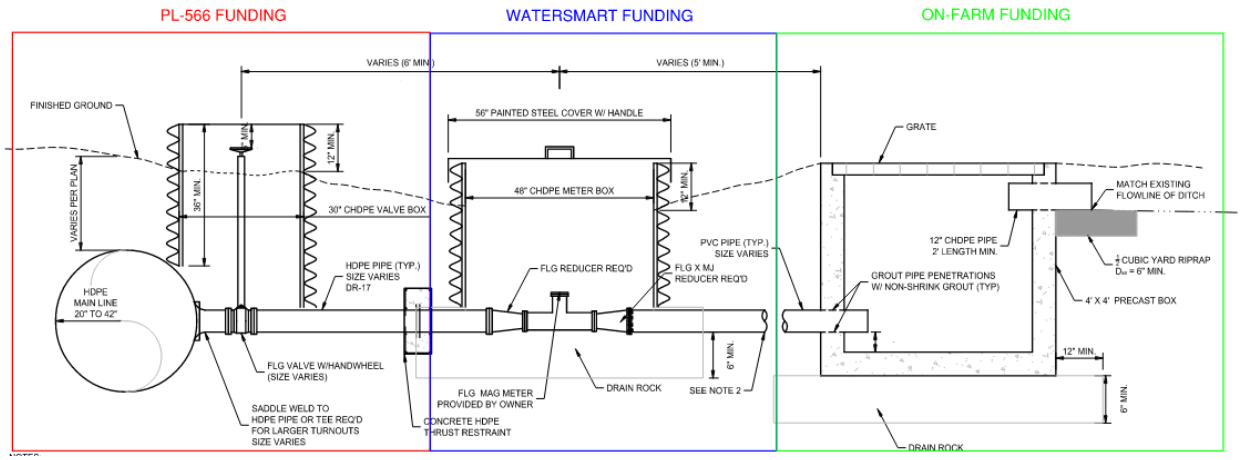


Figure 3 Funding Allocation

Water Efficiency and Control Component: Funding for this project was received from UDAF Water Optimization program, which is a non-federal source, in the amount of $420,000. This money will be utilized as part of the sponsor match that is required to the WaterSMART funding.

Independent Diversion and Ditch Improvements: An additional funding application was submitted to UDAF Water Optimization program for funding in the amount of $500,000. This application was submitted May 31, 2023, and an agreement has been signed. That application is from a non-federal funding source and would not be duplicative of the funding requested from Reclamation.

1.10. CONFLICT OF INTEREST DISCLOSURE STATEMENT

Per 2 CFR §1402.112, "Financial Assistance Interior Regulation" applicants should state in the application if any actual or potential conflict of interest exists at the time of submission. Submission of a conflict-of-interest disclosure or certification statement is mandatory prior to issue of an award.

There are no known actual or potential conflicts of interest that exist at the time of submission of this application.

1.11. UNIFORM AUDIT REPORTING STATEMENT

All U.S. states, local governments, federally recognized Indian Tribal governments, and non-profit organizations expending $750,000 USD or more in Federal award funds in the applicant's fiscal year must submit a Single Audit report for that year through the Federal Audit Clearinghouse's Internet Data Entry System. U.S. state, local government, federally recognized Indian Tribal governments, and non-profit applicants must state if your organization was or was not required to submit a Single Audit report for the most recently closed fiscal year. If your organization was required to submit a Single Audit report for the most recently closed fiscal year, provide the Employer Identification Number (EIN) associated with that report and state if it is available through the Federal Audit Clearinghouse website.

DCWCD has a single audit done each year for their accounting practices, it can be made available upon request and their EIN number is QXPAJYDRN7A3.

1.12. CERTIFICATION REGARDING LOBBYING

Applicants requesting more than $100,000 in Federal funding must certify to the statements in 43 CFR §18, Appendix A. If this application requests more than $100,000 in Federal funds, the authorized official's signature on the appropriate SF-424 form also represents the applicant's certification of the statements in 43 CFR § 18, Appendix A.

1.13. SF-LLL: DISCLOSURE OF LOBBYING ACTIVITIES (IF APPLICABLE)

If applicable, a fully completed and signed SF-LLL: Disclosure of Lobbying Activities form is required if the applicant has made or agreed to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. This form cannot be submitted by a contractor or other entity on behalf of an applicant.

1.14. LETTERS OF SUPPORT

You should include any letters from interested stakeholders supporting the proposed project. To ensure your proposal is accurately reviewed, please attach all letters of support as an appendix. Letters of support received after the application deadline for this NOFO will not be considered in evaluating your proposed project. These letters do not count within the 125 page maximum.

Letters of support are included in Appendix B.

1.15. LETTER OF PARTNERSHIPS (CATEGORY B APPLICANTS)

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

Not applicable as DCWCD is a Category A Applicant.

1.16. OFFICIAL RESOLUTION

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

• The identity of the official with legal authority to enter into an agreement

• The board of directors, governing body, or appropriate official who has reviewed and supports the application submitted

• That your organization will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement

An official resolution meeting the requirements set forth above is mandatory before an award of funding will be made.

If selected, an official resolution can be adopted by the board of directors and provided.

1.17. LETTERS OF FUNDING COMMITMENT

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

- *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*

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 execute a financial assistance agreement until non-Federal funding has been secured or Reclamation determines that there is enough evidence and likelihood that non-Federal funds will be available to the applicant after executing the agreement.

Letters of commitment are included in Appendix B.

APPENDIX B. LETTERS OF SUPPORT AND FUNDING COMMITMENT

OFFICIAL RESOLUTION
OF THE
UINTAH BASIN IRRIGATION COMPANY

RESOLUTION # 2021-10-09-01

WHEREAS, the United States Department of the Interior, Bureau of Reclamation has announced the *WaterSMART Water and Energy Efficiency Grants* in order to prevent water supply crises and ease conflict in the western United States, and has requested proposals from eligible entities to be included in the WaterSMART Program, and

WHEREAS, the Uintah Basin Irrigation Company (UBIC) has need for funding to complete an irrigation project that will install a regulation pond on the North Pipeline to increase operation efficiency and reduce water loss so that water can be conserved, measured, and efficiently delivered to the water users of UBIC.

NOW, THEREFORE, BE IT RESOLVED that the UBIC Board agrees and verifies that:

1. The application has been reviewed and supports the application submitted;
2. The UBIC is capable of providing the amount of funding as specified in the funding plan;
3. If selected for a WaterSMART Grant, the applicant will work with Reclamation to meet established deadlines for entering into a cooperative agreement; and
4. The Company Official signing this document has the legal authority to enter into this agreement.

DATED: 10/9/21

SIGNED: Lance Henderson
Water

NAME: Lance Henderson
TITLE: Chairman, UBIC

ATTEST: _____

DUCHESNE COUNTY WATER CONSERVANCY DISTRICT
275 West 800 South – Roosevelt, UT 84066

Office Phone – 435-722-4977
General Manager: Clyde Watkins
Admin Assistant: Carrie Lynn Shiner

Clyde Watkins Cell – 801-360-0312
email: clydedcwcd@stratanet.com
email: carriedcwcd@stratanet.com

February 12, 2024

RE: DCWCD Support Letter for the Independent Diversion & Ditch Improvement Project

Grant Application Review Committee:

The Duchesne County Water Conservancy District (DCWCD) is submitting this letter of support for the Uintah Independent Ditch Company's Diversion Structure and Ditch Improvement project. Independent is a small irrigation company serving the Neola area with a lower priority water right that loses a large portion of their precious water with high losses in their rocky ditch and an aging diversion structure. They have already obtained a Utah Department of Ag & Food Water Optimization grant and are now seeking funding assistance through the Bureau of Reclamation WaterSMART program.

The improvements proposed by this application include rehabilitation of the existing diversion structure with greater control and automation, measurement infrastructure, and impermeable lining through a mile of high seepage ditch. This project is near the Ute Tribal lands, but is contained within private property holdings with all the right-of-way necessary to complete the work. This project will complement another project on the Uintah River, the Bifurcation project that is being completed through the Uintah Water Conservancy District. The Independent ditch project lies within the Uinta River, Green River, and Colorado River systems.

We formally request your consideration and funding support for this project. We appreciate the support that has been given in the past and on behalf of the western side of the Uinta River, we are grateful for the improvements that have benefited agricultural water users, the river environment, the Ute Tribe, and the entities within the Duchesne County Water Conservancy district!

Sincerely,

Clyde Watkins
General Manager
Duchesne County Water Conservancy District