TITLE PAGE

WATERSMART: WATER AND ENERGY EFFICIENCY GRANT FOR FY 2019
FOA NO. BOR-DO-19-F004

FUNDING GROUP I

GRAND VALLEY PROJECT – DAM AND CANYON ELECTRICAL CONTROLS IMPROVEMENT PART 2 PROJECT

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1.1 Executive Summary

Grand Valley Water Users Association (GVWUA) understands the primary purpose of the U.S. Department of Interior's (Department) WaterSMART (Sustain Manage America's Resources for Tomorrow) Program is to: "…provide a framework for Federal leadership and assistance to stretch and secure water supplies for future generations in support of the Department's priorities."[1] This Program allows stakeholders to design and construct projects that will sustain our scarce water supplies and avoid conflicts over water and create a legacy of conservation stewardship, through sustainably developing natural resources, striking a regulatory balance, and restoring trust with local communities by improving relationships and communication with the Upper Colorado River Basin states, local governments, communities, landowners and water users. This application specifically aligns with the priority of modernizing critical infrastructure. The level of importance for the implementation of this project speaks volumes given the critical nature of the need for sustained operations of the GVWUA's Dam and Canyon (D&C) Facilities for the US Fish and Wildlife Services (USFWS) Recovery Program to protect the four Endangered fish within the 15 Mile Reach of the Colorado River; sustained water delivery to the irrigators of the Grand Valley; and operations of the Grand Valley Power Plant (GVPP), to name a few. The representation of the entities that provided Letters of Support for this application also emphasize the statewide importance of this project.

Date: March 19, 2019
Applicant Name: Grand Valley Water Users Association (GVWUA)
City: Grand Junction
County: Mesa
State: Colorado
Estimated Project Start: November 1, 2019
Project Length: 6-8 weeks
Estimated Project Completion: March 15, 2020 (no later than)
Federal Facility: Yes, Bureau of Reclamation (Grand Valley Project)

Project Summary

The Roller Dam Rehabilitation Project was identified as a Basinwide "Top Priority" project in the Colorado River Basin Implementation Plan (BIP). GVWUA initiated a Master Planning Study to help identify the specific rehabilitation needs and projects of the Roller Dam facilities. The outcome of the Master Planning project resulted in the identification of five priority projects. The Grand Valley Diversion Dam (Roller Dam/Gates) diverts water into the Government Highline Canal (GHC) for irrigation

[1] WaterSMART Grant 2019 FOA No. BOR-DO-19-F004

and hydropower purposes under very senior water rights that collectively make up the “Cameo Call.” The Roller Dam Electrical and Control Systems Upgrades Project, priority #2 of the Rehabilitation Master Plan project, identified the need to: replace all existing above ground utilities; install permanent on-site stand-by emergency power generation; construct new control panels and electrical service equipment throughout the Upper Canyon; rewire the Canal Headgate controls; and install a Supervisory Control and Data Acquisition and Automation (SCADA) and related system for integration of Upper Canyon Canal water levels, Roller Dam Facility and Roller Gate operations, and the Canal Headgates. The Roller Dam Electrical and Control Systems Upgrades Project was split into two parts. Part 1 replaced the existing primary electrical utilities, stand-by power, and installed a new electrical service and required equipment to and into the Roller Dam. This project was completed in December 2018 and allows for the implementation of Part 2. The Dam and Canyon Electrical Control Improvement Part 2 Project (D&C EP2) will provide improved water control and management and refinement, resiliency, and reliability of the electrical and control systems to assure the continued operations of the Roller Dam Facility and Canal Headworks. The electrical and control system upgrades are essential to complete the remaining priority projects identified in the larger Master Plan for complete rehabilitation of the facilities. Overall, this project aligns with the objective of the Funding Opportunity Announcement FOA No. BOR-DO-19-F004 (FOA) through its overall connection with other Reclamation priorities and projects, hydropower production, the mitigation of conflict risk in western Colorado and the Colorado River Basin as a whole, improve the diversion and delivery of water to the Grand Valley Project for multiple benefit.

1.2 Background Data

This section addresses the information requested in Section D.2.2.4, Technical Proposal and Evaluation Criteria, Background Data, of the FOA.

The D&C EP2 Project is a critical component of an overall system improvement initiative that includes several Reclamation-owned facilities. The Colorado Basin Roundtable (CBRT) recently identified the protection of the Cameo Call as a Top Basinwide Project as identified in the Colorado BIP and Colorado Water Plan (CWP). The efficient and sustained operation and administration of the Cameo Call’s irrigation and power water rights and the appurtenant facilities are rightly seen as being of fundamental importance to the entire Colorado Basin and the western United States. In addition, the reliable operations also support the Recovery Program’s objectives and support the on-going Reclamation Salinity Lining initiative (which has resulted in over $300 Million of Salinity improvements to date in the Grand Valley Project area).

1.2.1 Source of Water Supply

The mainstem of the Colorado River is the source of water supply for the D&C EP2 Project.

1.2.2 Water Rights

The water rights of the Grand Valley irrigation systems that comprise the "Cameo Call" are diverted from the Colorado River and, along with the water rights of the Shoshone Hydropower Plant upstream near Glenwood Springs, control administration of the Colorado River basin within Colorado. The flows generated by the "Cameo Call" help provide water for recreational activities on the Colorado River and for riparian habitat and aesthetic values along the entire Colorado River corridor. Flows generated by the Cameo Call also assist the state in complying with its obligations under the Colorado River Compact and in maintaining acceptable lake levels in Lake Powell. The water rights comprising the Cameo Call are for irrigation; power and domestic uses as presented in **Table 1**. Irrigation water is tied to specific lands within the Grand Valley Project and provides full and supplemental service. The domestic water right is a small water right primarily used for livestock watering purposes during non-irrigation season.

GVWUA was a co-Applicant in Case No. 91CW247 ("Check Case"), District Court, Water Division. The other co-applicants were Orchard Mesa Irrigation District (OMID) and the United States. Details of the Check Case are available upon request. The Check Case aimed to improve the stewardship of the Colorado River water for the irrigators and the Recovery Program and resulted in improvements throughout the Colorado River system by proving increased operational flexibility. This is one example of how water management improvements within the Colorado River system at the D&C facilities can reach far beyond the physical location of the project, providing multi-benefits to multiple water users.

All water users within the Grand Valley Project will benefit from better management of water at the Roller Gates and Headgates. The Irrigation Districts will see additional benefits in the Grand Valley with this project as it aims to maintain the critical delivery of water to support their users. GVWUA also has "carriage right"/agreements with these parties, including the GVPP, that require accurate water management at the Roller Dam. The Grand Valley Irrigation Providers directly impacted by this project include (**Figure 1**):

- Grand Valley Water Users Association (GVWUA)
- Mesa County Irrigation District (MCID)
- Orchard Mesa Irrigation District (OMID)
- Palisade Irrigation District (PID)

Figure 2 provides a schematic depiction of the Cameo Call water rights and uses within the Grand Valley area.

1.2.3 Current Water Uses

The current water uses include irrigation for multiple uses and hydropower. The irrigation water is provided to four irrigation entities: GVWUA and the Orchard Mesa, Palisade and Mesa County Irrigation Districts (Irrigation Districts), which provide

irrigation water to approximately 39,000 acres of land in the Grand Valley. The hydropower water is used to produce hydropower at the Grand Valley Power Plant (GVPP), which has a capacity of approximately 800 cubic feet per second (cfs) and a current electrical generation capacity of about 3.5 Mega Watts (MW).

Return flows from the GVPP are released to the Colorado River at the head of the 15 Mile Reach, which helps maintain flows in that reach for the Colorado pikeminnow, Humpback chub, Bonytail, and the Razorback sucker, all listed as endangered fish (**Table 2**).

Table 1. Summary of the Cameo Call Water Rights.

Owner	Amount (cfs)	Adjudication Date	Appropriation Date	Use
GVWUA/United States	730	7/22/1912	2/27/1908	Irrigation
GVWUA/United States	400/800	7/25/1941	2/27/1908	Hydro-electric Power
GVWUA/United States	220	7/25/1941	2/27/1908	Domestic & Livestock
Orchard Mesa Irrigation District	450	7/22/1912	10/25/1907	Irrigation
Orchard Mesa Irrigation District	10.2	7/22/1912	10/1/1900	Irrigation
Palisade Irrigation District	23.5	7/25/1941	6/1/1918	Irrigation
Palisade Irrigation District	80	7/22/1912	10/01/1889	Irrigation
Mesa County Irrigation District	40	7/22/1912	7/6/1903	Irrigation
Totals	**1,953.7 cfs (non-irrigation) / 2,353.7 cfs (irrigation)**			

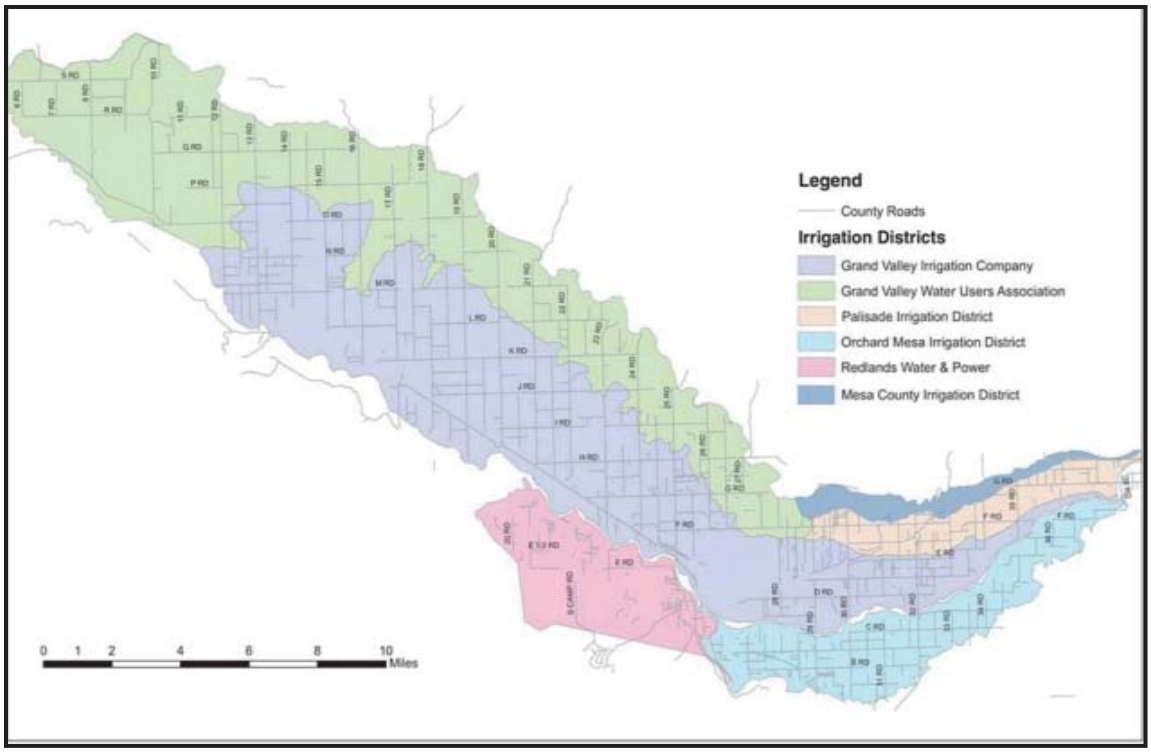


Figure 1. Grand Valley Irrigation Districts.

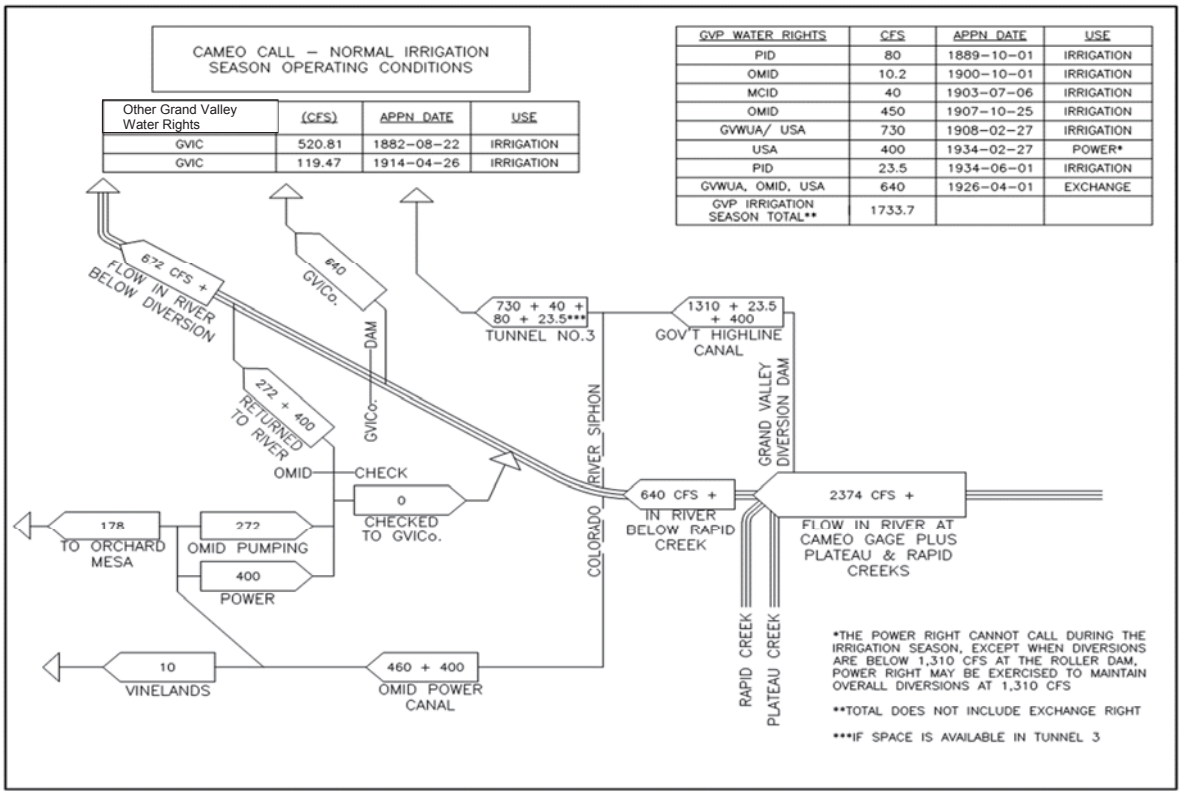


Figure 2. Typical Water Rights/Water Use Schematic.

Table 2. Endangered Fish in the 15 Mile Reach.

Species	Listing
Colorado pikeminnow *Ptychocelius lucius*	Endangered
Humpback chub *Gila cypha*	Endangered
Bonytail *Gila elegans*	Endangered
Razorback sucker *Xyrauchen texanus*	Endangered

There are no direct municipal uses associated with the water in the GHC; however, irrigation water is delivered to urban/suburban customers via the Irrigation Districts, which, in turn, offsets the responsibilities of the municipalities to provide water for outdoor residential irrigation. Hence, better management of the Roller Dam and Canyon facilities is important to allow the Grand Valley's dual-water system to operate more efficiently.

Table 3 summarizes the GVWUA diversions and reduced diversions, as compared to pre-1998, from 2002 through 2010 to show the amount of water that benefited the 15 Mile Reach. An excess of 49,000 acre-feet (AF) on average over this representative period benefited the Recovery Program and provided water for the protection of the endangered fish within the 15 Mile Reach of the Colorado River. Data from 2018 showed over 58,000 AF of foregone diversions benefited the 15 Mile Reach.

Table 3. GVWUA Water Management Benefits to the 15 Mile Reach.

	Water Year											
	1998 [1]	2002	2003	2004	2005	2006	2007	2008	2009	2010	2018	2002 -2010 Average
	Acre-Feet	Acre-Feet	Acre-Feet	Acre-Feet	Acre-Feet	Acre-Feet	Acre-Feet	Acre-Feet	Acre-Feet	Acre-Feet	Acre-Feet	Acre-Feet
Irrigation Diversion[2]	285,217	240,424	252,289	256,289	249,318	277,994	245,927	249,223	206,105	261,216	232,739	248,754
Reduced Diversion as Compared to 1998 (Pre-Project)	0	44,793	32,928	28,928	35,899	7,223	39,290	35,994	79,112	24,001	52,478	36,463
Palisade Pipeline[2]	0	2,053	10,161	13,654	19,143	10,812	10,625	15,997	18,302	20,617	6,438	13,485
Total Potential Benefit to 15 Mile Reach Flows	**0**	**46,846**	**43,089**	**42,582**	**55,042**	**18,035**	**49,915**	**51,991**	**97,414**	**44,618**	**58,916**	**49,948**
HUP Surplus Water Deliveries to the 15 Mile Reach	NA	**0**	**47,525**	**0**	**31,200**	**22,822**	**32,743**	**61,433**	**56,290**	**61,002**	**2,383**	**34,779**

[1] The 1998 water year was chosen to represent preproject baseline conditions as all Salinity Control Program improvements were in place and a full water supply was available to the Grand Valley Water Users Association.

[2] From Division 5 State Engineers Office

1.2.4 Number of Water Users Served

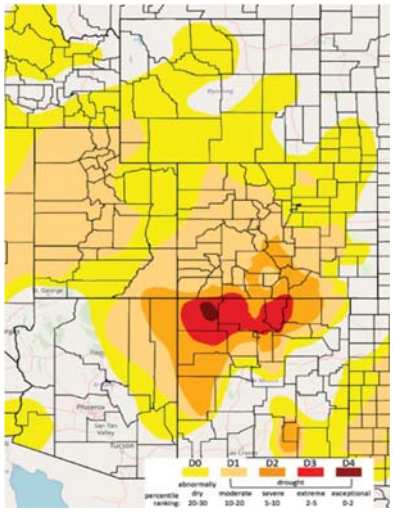
GVWUA and the Irrigation Districts deliver irrigation water to approximately 39,000 irrigated acres within their combined service areas, providing water to over 40,000 users daily during the irrigation season.

1.2.5 Current and Projected Water Demand

The current water demand is 1,730 cfs during the irrigation season and 800 cfs during the non-irrigation season.

1.2.6 Potential Shortfalls in Water Supply

The amount of water diverted by the GHC Headgates is dependent upon snowpack and annual precipitation; however, the water rights associated with the Grand Valley Project are very senior. Anticipated shortfalls for the Grand Valley Project could come with: 1) drought - the Colorado River water supply could decline during periods of drought; and 2) water seepage. The GVWUA has been lining segments of the GHC to decrease the amount of seepage losses. In 2017-2018 the GVWUA lined the upper 500 feet of the GHC (Master Plan priority project #1) (image to the right from http://climate.colostate.edu/~drought/index.ph, March 12, 2019).



1.2.7 Major Crops and Total Acres Served

In general, the irrigated crops include corn, dry beans, alfalfa, grass hay, pasture, small grains, and seed crops. Fruits and vegetables raised on Grand Valley Project lands include apples, pears, peaches, and grapes and a variety of truck crops. The total number of irrigated acres within the service area varies from year to year and some discrepancies exist between data sources. **Table 4** lists the total number of estimated acres within GVWUA, OMID, PID, and MCID service areas by crop type according to recent data.

Table 4. Irrigated Cropland.

Crop Type	Acres
Alfalfa	18,879
Row Crops	6,316
Special	1,921
Orchard/Vineyards	6,700
Other Hay/Pasture	1,667
Municipal/Residential/Civic	3,533
Total	**37,026**

GVWUA and OMID share in the cost of operation and maintenance of the GHC Canyon Canal per a 1955 agreement, at 71.6% and 28.4%, respectively. Daily operation of the Roller Dam and canyon facilities are performed by GVWUA. OMID conducts the daily operations of its facilities and of the GVPP, with each organization paying one-half of the associated operation and maintenance cost of the GVPP. GVWUA only has carriage agreements with PID and MCID as well.

1.2.8 Water Delivery System

The Roller Dam diverts water into the GHC for irrigation and hydropower purposes under very senior water rights that collectively make up the “Cameo Call” from the

Colorado River. The irrigation water is provided to GVWUA and the four Irrigation Districts (Orchard Mesa, Palisade and Mesa County), which provide irrigation water to approximately 39,000 acres of land in the Grand Valley. The hydropower water is used to produce hydropower at the GVPP, which has a capacity of approximately 800 cfs and a current electrical generation capacity of about 3.5 MW.

GVWUA and OMID are the managing entities for the federally owned Grand Valley Project. The Grand Valley Project facilities include the OMID, the Grand Valley Diversion Dam, known as the Roller Dam, on the Colorado River in DeBeque Canyon; an attendant headgate diversion structure; five miles of Canyon Canal and related facilities, including endangered fish recovery facilities; the Stub Ditch pump station; the 55-mile-long GHC; 150 miles of project laterals; 100 miles of drainage ditches; and the GVPP which is operated under a Lease of Power Privilege (LOPP) with Reclamation (**Figure 3**). These facilities: 1) provide irrigation water to the Irrigation Districts for 16,000 acres; 2) deliver water through GVWUA's GHC which provides irrigation water to approximately 23,600 acres in the Gravity Division of the Grand Valley Project; 3) deliver water year-round water to the 3.5 MW GVPP; and 4) maintain critical stream flows in the 15 Mile Reach of the Colorado River, which is critical habitat for four species of endangered fish. In recent years, approximately 130 miles of the laterals have been re-constructed into pressure piped laterals. GVWUA first delivered water in 1915 to lands under Reclamation's Grand Valley Project and since then it has supported the combined delivery of irrigation water to approximately 39,000 irrigated acres under the GHC year-round.

1.2.9 Energy Efficiency Elements

The Roller Dam and GHC provide 800 cfs of water to the GVPP (hydroelectric). The Roller Dam receives power from Xcel Energy. The D&C EP1 project ***brought*** power to the Roller Dam facility and this project, D&C EP2, will ***connect*** the power to the Roller Dam Facility. The D&C EP2 will also install a SCADA system that support centralized control of the Roller Dam Facility and Canal. The SCADA system will also allow for energy efficiency elements within the system. **Figure 4** provides a general depiction of the D&C EP2 Project Area.

1.2.10 Past Working Relationships with Reclamation

GVWUA worked closely with the Reclamation Western Area Office on the planning and implementation of projects at the Dam and Canyon facilities for years and will continue to coordinate with them on this Project.

GVWUA and OMID collectively have also coordinated and collaborated with the Reclamation Western Area Office and Technical Services staff on the continued operation of the Grand Valley Project and its facilities. For instance, Reclamation designed and constructed several significant salinity control projects on the GHC

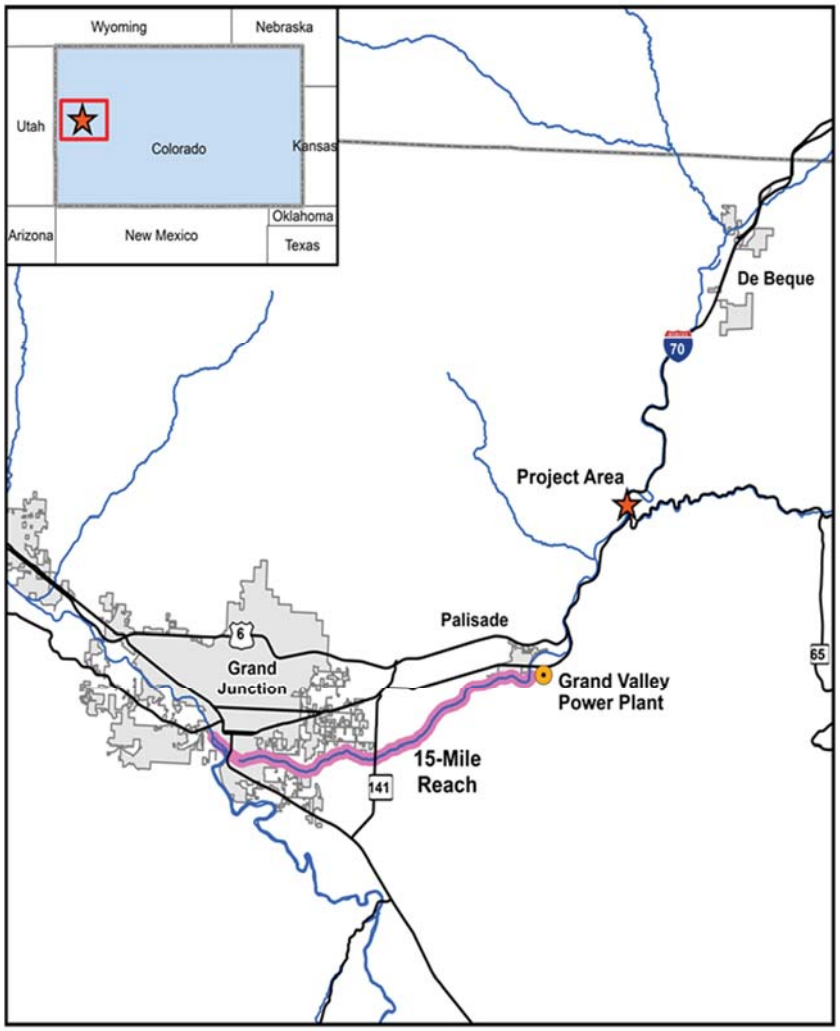


Figure 3. Project Geographical Location.

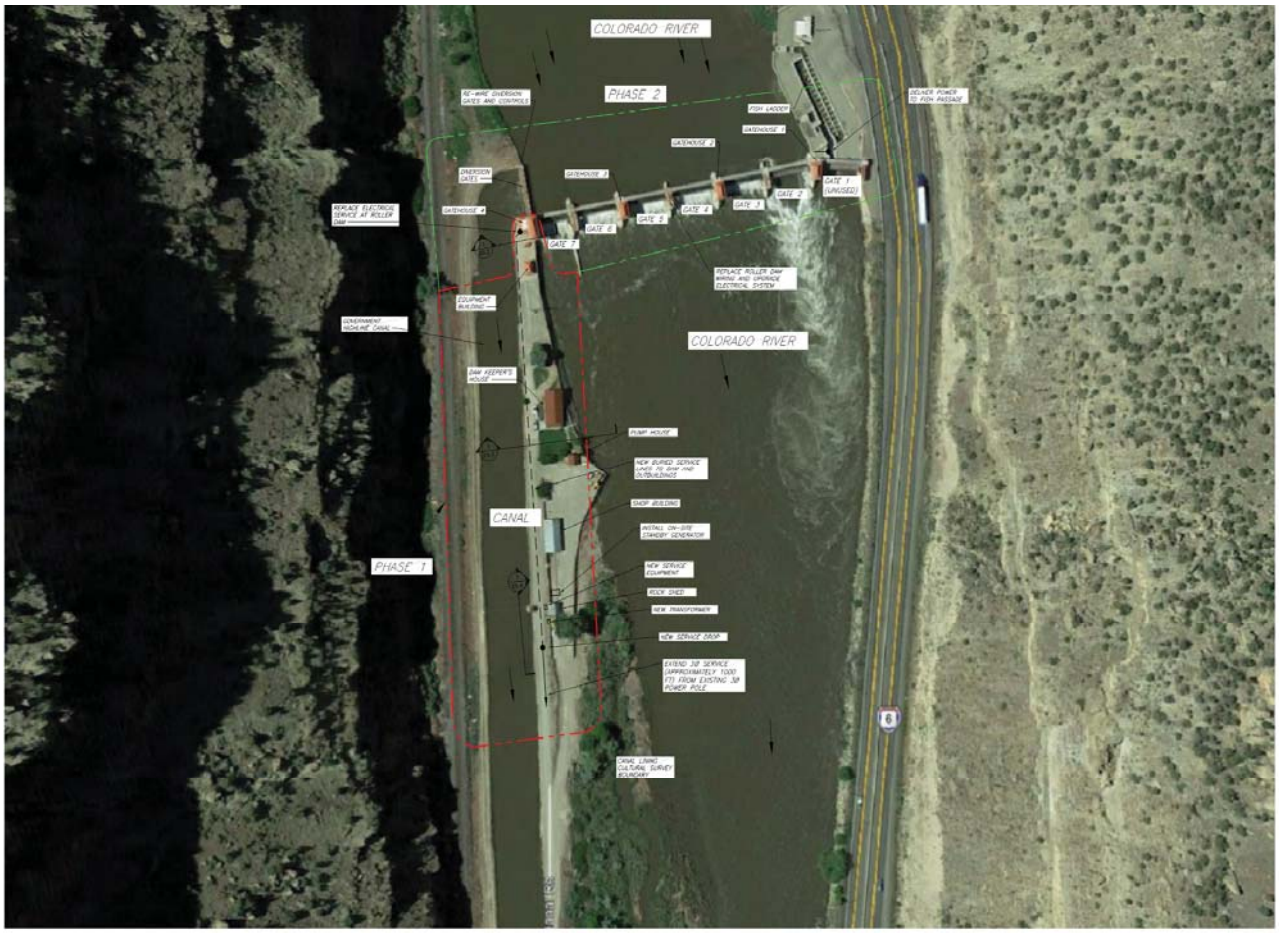


Figure 4. Overall Project Area (Draft version where 'Phase' also referred to as 'Parts').

Canal and has been supporting Part 1 and Part 2 of the electrical upgrades project. A summary of other recent Reclamation projects is described in the following subsections. More detail is also provided in Section 1.5.8, Evaluation Criterion H, Connection to Reclamation Project Activities.

Upper 500 Feet (of the GHC) Lining Project

Project Summary

Reclamation staff provided the design, technical and professional services, construction drawings and specifications, and attendant pricing estimates for this project. GVWUA and OMID received a Reclamation Field Services Grant for this project. Other funding sources included the Colorado Water Conservation Board (CWCB) and cash and in-kind contributions from GVWUA and OMID.

Dates

The project began on November 1, 2017 and was completed on March 15, 2018.

Water Management Plan

Project Summary

The GVWUA received grants from both the CWCB Water Supply Reserve Account (WSRA) and Reclamation (Field Services Grant) to match the in-kind and cash contributions of GVWUA to completely update its Water Management Plan (WMP). The objective of the WMP project was to prepare a conditional assessment and operational analysis of the 50 miles of the GHC below the outfall of Tunnel No. 3, identify and document water losses, identify priority projects, conduct a benefits analysis, ascertain environmental concerns, determine costs associated with the projects and create a strategic funding plan to implement the priority projects. The WMP project allows GVWUA to implement certain provisions of the Colorado River Cooperative Agreement (CRCA, Section 7, specific to conservation and avoidance of Colorado Compact issues).

Dates

The WMP project began in fall 2015 and was concluded in early 2017.

Reclamation Salinity Program –GHC Reach 1A Lower Section Lining Project

Project Summary

The overall purpose of the Reach 1A Lower Section Lining project was to install approximately 4,774 feet of PVC liner to an unlined and open section of the GHC. The section of canal that was lined was earthen and originally designed with a trapezoidal cross section with a 30-foot bottom and a 2:1 side slope. Over the years the slopes eroded and sloughed. In some sections heavy vegetation grew along the sides down to the high-water surface line in the canal. The improvements included lining with 2 layers of geotextile fabric on either side of a 30 mil PVC liner and covered with a protective 3-inch shotcrete layer. A gravel underdrain was also installed. The total project award was $3.6 M.

Dates

This project began in October 2015 and concluded in March 2018.

GHC Lining and Improvements Projects

Projects Summaries

GHC – Stage 1 - this project was constructed in the early 1980's. This project included reshaping and lining about 6.7 miles of canal. This section of canal had a 1-1/2:1 side slope with an 8-foot bottom width. Other features of this project included items such as an 8-foot diameter siphon with a radial gate check inlet, wildlife ponds, detention ditches, check structures with radial gates, wasteways, removal of original turnout structures, installation of constant head orifice turnouts, and relocating county roads.

East End GHC – Stage 2 – this project was constructed in the early 1990's. This project included constructing approximately 7.4 miles of buried PVC membrane-lined

canal having a bottom width of 30 feet and a 2-1/2:1 side slope with limited reaches of concrete or shotcrete lined sections. Other features of this project included check structures, lateral turnouts, culverts, cross drains, irrigation crossings, drain inlets, a canal underdrain system, and canal safety devices.

Reach 1A Salinity Lining Replacement – this project was undertaken by GVWUA and includes approximately $160,000 of replacement work on Stage 1A of the GHC. GVWUA performed approximately $40,000 of the work in FY 2015 and the remaining portions in FYs 2016 and 2017.

In addition, approximately 130 miles of laterals branching from GHC have been piped by the Salinity Control Project.

These projects have been operated and maintained by GVWUA since completion.

Other Grand Valley Improvement Projects
The recent $850,000 rehabilitation of the Roller Gates was funded entirely by GVWUA and OMID; the $250,000 Stub Pump refurbishment was funded by GVWUA; the forthcoming $5.3 M GVPP Rehabilitation Project is being jointly pursued jointly by GVWUA and OMID; Reclamation and US Fish and Wildlife (USFW) Upper Colorado River Recovery Program have invested $17 million in OMID canal system improvements; and millions of dollars have been invested in the continual improvements of the Grand Valley Project through a variety of arrangements by the Recovery Program, Reclamation, and the State of Colorado.

1.3 Project Location

The D&C EP2 is located at the Grand Valley Diversion Dam. The Grand Valley Diversion Dam is located on the Colorado River near the mouth of the DeBeque Canyon and approximately 5 miles northeast of Palisade, Colorado. The project is in Mesa County, Colorado approximately 21 miles east of Grand Junction via Interstate 70. The project latitude and longitude are 39°11'20.30"N; 108°16'54.73"W. **Figure 3** shows the project area relative to the nearest towns and Grand Valley beneficiaries, including, but not limited to, the 15 Mile Reach, the GVPP and the Grand Valley area. **Figure 4** shows the overall Project site plan.

1.4 Technical Project Description

The D&C EP2 Project is part of the #2 priority identified in the Dam and Canyon Master Plan recently completed. This Project which aimed to identify rehabilitation needs of the Dam and Canyon Facilities that will support long-term improvements of the existing water supply system. The overarching objectives of the Electrical Upgrades Project (Part 1 and Part 2 collectively) are to: 1) improve water delivery system operations, capacity and reliability of the Roller Dam and GHC Headgates; 2) sustain the ecological health of the river; and 3) preserve the agricultural economy of the Grand Valley. The Electrical Upgrades Project was divided up into two parts to phase the costs and timing of the project.

The technical project description within this application only includes details relating to the D&C EP2. The Part 1 project included the placement of the overhead powerlines into a trench, extension of three phase power to the Roller Dam Facility, installation of service equipment at the Roller Dam Facility, installation of power to the US Fish and Wildlife (USFWS) fish screen, and installation of an onsite stand-by generator. The Electrical Part 1 project was completed in Fall 2018.

The D&C EP2 Project will improve the measurement accuracy of diversions at the existing GHC and Roller Gates through the installation SCADA. More accurate measurement of water deliveries and conveyance at the GHC Headgates and Roller Gates will support the management of water throughout the Grand Valley, including the GVPP (hydroelectric). The quantifiable and sustained water savings and benefits realized with the construction of this project will allow GVWUA to be able to measure, conserve and promote better water use; increase the production of hydropower; mitigate conflict risk in areas at a high risk of future water conflict; and accomplish other benefits that contribute to water supply reliability in the western United States.

The Federal environmental and cultural resource laws and other regulations have been addressed. A Categorical Exclusion (CE) is being written by the Reclamation staff in the Western Area Office. The State Historical Office of Preservation (SHPO) and USFWS concurrences have been obtained and the final CE is awaiting signatures. A final copy of this document will be provided to Reclamation upon award of this grant.

The goals of the D&C EP2 project are to provide:

- Improved and modernized control system and process reliability;
- New hardware for the Roller Dam Facility and (facilitating the addition of the GHC Headgate controls for a future project part);
- Enhanced control systems;
- SCADA system integration;
- Efficient and redundant operations; and
- Operator safety.

The D&C EP2 project has five tasks:

1) Construct New Control Panels: new control panels and engineered customized remote-control panels for each Roller Gate will be installed. The project will replace obsolete equipment, provide an improved, modernized control system, and improve process reliability via new system hardware. This will deliver an integrated, long-term solution for the operations and controls of the Roller Gates and canal Headgates (in the future).
2) Install New Instrumentation: new instrumentation will be installed on the canal Headgate's level transmitter and Roller Gates. This instrumentation will

deliver information to the new SCADA system remotely. Instrumentation will be attached to each motor shaft to monitor the positions of each Roller Gate. An ultrasonic level transmitter will also be installed in front of the canal Headgate for future use.

3) Upgrade the Roller Dam Facility Controls: new hardware will be installed to provide long-term and sustainable control of the Roller Gates and canal Headgates, specifically the following will be implemented and installed as documented on the attached plan set (**Appendix A**):
   a. New branch circuits in the Roller Gate Houses
   b. Manual transfer switch
   c. The existing branch feeder will be demoed
   d. New lighting
   e. New disconnects for the Roller Gate House motors
   f. New control conduit and cabling/wiring, as necessary
   g. New DC Drives

   The project does not include upgrades to the fire controls and system nor concrete coring and cutting.
4) Install SCADA System Roller Dam Facility Integration: the SCADA system will modernize the operator experience, improve process safety and efficiency, and track key data points of the Roller Gates positions via customized, application-specific, software development. The system will also be designed to allow for the future addition of a stand-alone canal Headgate controller and integration to the SCADA system.
5) Decommission old Equipment: old equipment at the Dam and Canyon Facility will be decommissioned, including the: Roller Gate motor blade-style disconnect switch; Roller Gate motor rotary drum style switches; old conduit and wiring, and DC generator.

1.4.1 Project Need

The primary needs of the D&C EP2 Project are to improve the current manual operation of the Dam and Canyon Facility including updating the electrical wiring, as they do not meet current electrical codes and improving the controls that operate the Roller Gates and canal Headgates. The existing operations of the Roller Gates require the operator to first start the DC generator housed in the main control room, then, once the DC buss is charged, the operator walks across the catwalk to the desired roller where he then energizes the motor circuit by manually closing a blade style disconnect switch. Travel direction of the specific Roller Gate is then controlled by rotating a drum style rotary switch clockwise or counter clockwise.

After the completion of this project, the operator will walk out across the catwalk to the Roller Gate they wish to adjust and then plug the Mobile Human Machine Interface (HMI) into the new connector for that Roller Gate. When the system senses the Mobile HMI has been plugged in, it will close the main contractor for that gate. The operator will enter a travel speed setpoint into the Mobile HMI and select one of the two push buttons to initial travel of the roller in either a “UP” or “Down” direction. When the Roller Gate has traveled to the desired setting, the operator will unplug the Mobile HMI, and the main contractor will then open.

The D&C EP2 Project also aims to provide electronic control of the Roller Gates and future electronic control of the canal Headgates.

The D&C EP2 Project will provide worker safety and long-term, sustainable, reliability of the electrical and control systems of the Dam and Canyon Facility. The D&C EP2 Project is pivotal in the continued operations of the Roller Dam Facility and canal headworks, in addition to long-term accounting of the Cameo Call water rights and delivery of the USFWS’ obligations for supporting the Endangered Fish within the 15 Mile Reach of the Colorado River. **Table 3** shows over the represented period of 2002-2010 that over 49,000 AF of water on average was delivered to the 15 Mile Reach. The 2018 data realized over 58,000 AF in foregone diversions to the 15 Mile Reach. GVWUA estimates that for a 0.1” of adjustment in the level of the Roller Gates equates to approximately 20 cfs of water (checked/not-checked) into the GHC. The increased management of the Roller Dam facility equates to the management of water at the single digit cfs demonstrating the critical nature of its improved function. An additional benefit to the project will also be realized for the Fish Screen and Fish Passage.

1.4.2 Project Area of Influence

The area of influence (AOI) for construction activities is the Dam and Canyon Facility. The AOI had environmental and cultural surveys conducted as part of the Electrical Part 1 Project. See **Figure 5** for a map of the AOI and **Figure 6** the Overall Site Plan.

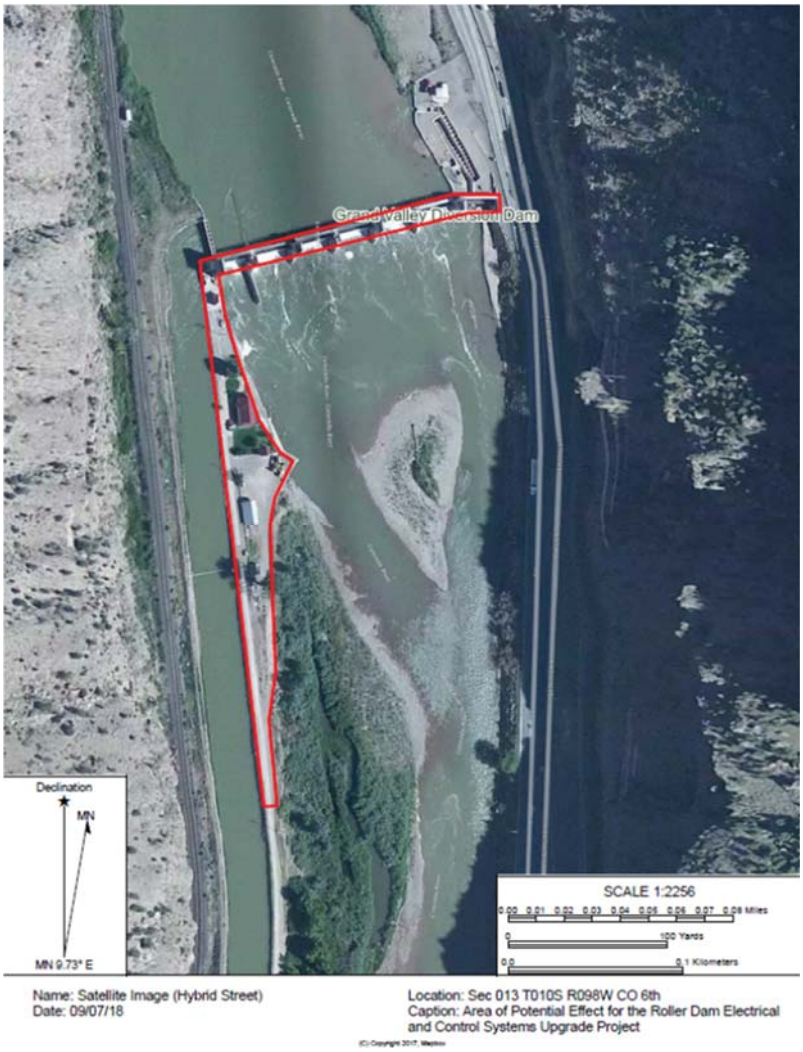


Figure 5. Project Area of Influence (AOI) for Parts 1 & 2.

Figure 6. Overall Project Site Plan.

1.5 Evaluation Criteria

This section thoroughly addresses the applicable criterion in the order presented as requested in the FOA, E.1. Technical Proposal: Evaluation Criteria.

1.5.1 Evaluation Criterion A – Quantifiable Water Savings

Describe the amount of estimated water savings.

The D&C EP2 Project will improve the measurement accuracy of diversions at the existing GHC and Roller Gates through the installation SCADA. More accurate measurement of water deliveries and conveyance at the GHC Headgates and Roller Gates will support the management of water throughout the Grand Valley, including the GVPP (hydroelectric). The quantifiable and sustained water savings and support broader water reliability benefits realized with the construction of this project will allow GVWUA to be able to measure, conserve and promote better water use; increase the production of hydropower; mitigate conflict risk in areas at a high risk of future water conflict; and accomplish other benefits that contribute to water supply reliability in the western United States.

The amount of estimated water savings as a result of this project are a challenge to specifically quantify given the expansive reach of how the Roller Dam and Canyon operations influence the diversion and delivery of Colorado River water in the larger Colorado River system.

Another way to describe estimated water savings is to understand the potential losses to the Recovery Program as depicted in **Table 3** where over 49,000 AF of water (annually) has been delivered to the 15 Mile Reach from foregone diversions. Better management of the facilities that foster this benefit can be great. Assuming a 5% improvement in the operations of the Roller Dam and facilities from the D & C EP2 project could result in over 4,000 AF annually of additional water to the 15 Mile Reach. Data from 2018 showed over 58,000 AF of foregone diversions benefited the 15 Mile Reach.

Describe the support/documentation of estimated water savings.

Appendix B includes copies of the Letters of Support for this application and demonstrates the statewide support and importance of this project in addition to the CWCB and CBRT grants.

Table 3 above depicts one method for calculating the estimated water savings from this project by documenting the foregone flow diversions which directly benefit the 15 Mile Reach. A second way for documenting the estimated water savings is through the improved management of the D&C facilities. Infrastructure improvements are specifically realized in the Upper GHC, by the Grand Valley irrigators, the GVPP, and the 15 Mile Reach. For example, the refinement of 0.1" of water in the GHC of the equates to 20 cfs, proving the benefit of this project to saved water. Overall, the ability to manage small amounts of water at the D&C facilities is critical. Additional information regarding the quantification of the estimated water savings from this project are discussed in Sections 1.2.3, Current Water Uses, and 1.4.1, Project Need.

Type of infrastructure improvement you are proposing for funding.
The D&C EP2 Project falls under the Irrigation Flow Measurement Infrastructure Improvement category, described below.

<u>Irrigation Flow Measurement</u>
The D&C EP2 Project best fits the Irrigation Flow Measurement Improvements category. This project will improve the measurement accuracy of water flowing into

the GHC, which in turn will provide more reliability and certainty of the water deliveries to the GHC, Irrigation Districts, and the Grand Valley water community. This project will also provide more reliable delivery of water to the GVPP and the 15 Mile reach of the Colorado River.

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

See narrative in the above sections referencing the data depicted in **Table 3** above. In summary an excess of 49,000 AF on average over the 2002-2010 period benefited the Recovery Program and provided water for the protection of the endangered fish within the 15 Mile Reach of the Colorado River. Data from 2018 showed over 58,000 AF of foregone diversions benefited the 15 Mile Reach.

b. ***Have current operational losses been determined? If water savings are based on a reduction of spills, please provide support for water currently being lost to spills.***

See narrative in the above sections referencing the data depicted in **Table 3** above. In summary an excess of 49,000 AF on average over the 2002-2010 period benefited the Recovery Program and provided water for the protection of the endangered fish within the 15 Mile Reach of the Colorado River. Data from 2018 showed over 58,000 AF of foregone diversions benefited the 15 Mile Reach.

c. ***Are flows currently measured at proposed sites and if so what is the accuracy of existing devices? How has the existing measurement accuracy been established?***

The flows used to provide the estimated water savings to the 15 Mile Reach alone (**Table 3** above) were obtained from the Division 5 Colorado State Engineer's Office. USGS flow gages exist above (Cameo, USGS 09105000) and below (Palisade, USGS 09106150) the Roller Dam facilities and can be used to support the long-term measurement of the project improvements. The Float House, approximately 500 feet down canal of the GHC diversion structure, can also be used to calibrate and validate water levels at the Roller Gates and GHC headgates. The SCADA system and programming will integrate relevant data from these sources, gages, and level sensors to record the water savings.

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

The flows used to provide the estimated water savings to the 15 Mile Reach alone (**Table 3**) were obtained from the Division 5 Colorado State Engineer's Office. USGS flow gages exist above (Cameo, USGS 09105000) and below (Palisade, USGS 09106150) and can be used to support the long-term measurement of the project improvements. The accuracy of the diversion records and USGS streamflow gages is a function of those entities' measurements. The GVWUA's Float House water level sensor, approximately 500 feet down canal of the GHC diversion structure, could be used to calibrate and validate water levels at the Roller Gates and GHC headgates concurrent with the proposed controls and SCADA programming improvements.

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

The USGS flow gages that exist above (Cameo, USGS 09105000) and below (Palisade, USGS 09106150) the Roller Dam facilities and the USGS flow gage at the Utah-Colorado state line (USGS 09163500) could be used to support the long-term measurement of on-farm project improvements, however would be explored in more depth upon implementation of this project.

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

Diversion records from the Division 5 Colorado State Engineer's Office and existing USGS flow gages above (Cameo) and below (Palisade) the Roller Dam facilities and could be used to support the long-term measurement of the project improvements. The Float House, approximately 500 feet down canal of the GHC diversion structure, could also be used to calibrate and validate water levels at the Roller Gates and GHC headgates. The SCADA system and programming will integrate relevant data from these sources, gages, and level sensors to record the water savings.

1.5.2 Evaluation Criterion B – Water Supply Reliability

The D&C EP2 Project will increase water supply reliability by providing more accurate and reliable diversion and measurement of water into the GHC. See Sections 1.2.3, Current Water Uses, 1.4.1, Project Need, and 1.5.1, Quantifiable Water Savings.

Will the project address a specific water reliability concern?

Since 2000, the Colorado River Basin (Basin) has been experiencing a historic, extended drought that has impacted regional water supply and other resources, such as hydropower, recreation, and ecologic services. During this time, the Basin has experienced its lowest 16-year period of inflow in over 100 years of record keeping, and reservoir storage in the Colorado River system has declined from nearly full to 40% of capacity. Concern is growing about the impacts of the ongoing drought and declining reservoir levels, such as decreasing water supply and the possibility of a first-ever shortage condition of drinking water for the Lower Basin; decreasing hydropower capacities at Lake Powell and Lake Mead; the potential for loss of hydroelectric generation at Lake Powell; reduced recreational opportunities; and changes to in-stream flows that support ecosystems.

In response to drought conditions, Federal agencies and stakeholders throughout the Basin have been working together to find creative ways to reduce the effects of the drought on the people and resources that rely on water from the Colorado River. The D&C EP2 Project is part of the solution to aid in the accurate water measurement into the Roller Dam and GHC that provides water to many entities.

Will the project make water available to achieve multiple benefits or to benefit multiple water users?

The D&C EP2 project will have significant and far-reaching benefits to water supply sustainability in western Colorado, the state of Colorado as a whole, and potentially

the entire Upper Colorado River Basin. The project aims to benefit the water users in western Colorado with a level of certainty in the face of significant drought. Agricultural water users will benefit from increased water reliability leading to successful farm operations and income. The Municipal and Industrial sectors will benefit from lowered risk during drought. The environmental and recreation sector will benefit from more accurate diversions and delivery of water to the Colorado River system.

The D&C EP2 project will also promote the full exercise of the "Cameo Call" water rights, support the continued operation of the Roller Dam and canyon facilities, provide reliability to Colorado River flows in the Upper and Lower Colorado River Basins, provide for more efficient operation of the GVPP and the production of more renewable energy from that facility, provide benefits for endangered fish, and provide associated environmental and cultural benefits.

Will the project benefit multiple sectors and/or users (e.g., agriculture, municipal and industrial, environmental, recreation, or others)?
All water users within the Grand Valley Project (all Pre-Compact water rights) will benefit from the D&C EP2 Project. The Irrigation Districts (GVWUA, OMID, MCID, and PID) are direct beneficiaries of the improved electrical at Dam & Canyon Facilities.

Local municipal providers will continue to have increasing benefits from a steady supply of irrigation water for their customers thus reducing the need for collection and treatment of increased amounts of domestic water.

Improved identification measurement, management, and stewardship of Project water supplies will help assist GVWUA in the search for productive solutions to the pressing problems created by population growth and climate change.

The Dam and Canyon facilities in combination with the GVPP are critical to the success of the D&C Facility activities that benefit the Grand Valley, stream flows, Recovery needs, and do not have negative consequences for other water users. Improved identification and management of available water by the use of more refined and safer operations and control systems is fundamental to manipulation of small quantities of water for possible D&C Facility activities. Properly functioning facilities, operationally resilient and redundant that can be operated under dramatically differing conditions are crucial to any progressive water management plans. Reclamation's commitment to improved water management in the West is clearly supported by investment in these increasingly important Colorado River facilities.

Will the project benefit species (e.g., federally threatened or endangered, a federally recognized candidate species, a state listed species, or a species of recreational, or economic importance)?

The D&C EP2 supports continued and enhanced benefits for environmental interests, Recovery program objectives, wildlife, and those seeking to preserve the scenic beauty of the Colorado River. Please See Sections 1.2.3, Current Water Uses, 1.4.1, Project Need, and 1.5.1, Quantifiable Water Savings, and **Table 3**.

Will the project benefit Indian tribes?
No, not applicable.

Will the project benefit rural or economically disadvantaged communities?
Yes, this Project supports economic development within the Grand Valley Project area through its support of the commercial agriculture, community, and civic activities in the Grand Valley area. The Cameo Call provides the required irrigation water for schools, parks, churches, business, and thousands of urban and suburban Grand Valley citizens. The attractiveness of the Grand Valley for existing business expansion and new business creation and relocation is enhanced by the environment and quality of life made possible by irrigation water made more secure and resilient by continued operation of the Roller Dam and GHC. The Grand Valley without irrigation water would be an unimaginably different place to live and work.

Describe how the project will help to achieve these multiple benefits.

The D&C EP2 Project aims to provide electronic control of the Roller Gates and future electronic control of the canal Headgates. The existing operations of the Roller Gates require the operator to first start the DC generator housed in the main control room, then, once the DC buss is charged, the operator walks across the catwalk to the desired roller where he then energizes the motor circuit by manually closing a blade style disconnect switch. Travel direction of the specific Roller Gate is then controlled by rotating a drum style rotary switch clockwise or counter clockwise.

After the completion of this project, the operator will walk out across the catwalk to the Roller Gate they wish to adjust and then plug the Mobile Human Machine Interface (HMI) into the new connector for that Roller Gate. When the system senses the Mobile HMI has been plugged in, it will close the main contractor for that gate. The operator will enter a travel speed setpoint into the Mobile HMI and select one of the two push buttons to initial travel of the roller in either a “UP” or “Down” direction. When the Roller Gate has traveled to the desired setting, the operator will unplug the Mobile HMI, and the main contractor will then open. Please see Section 1.5.1, Quantifiable Water Savings for additional information regarding the anticipated quantified benefits from this project.

Does the project promote and encourage collaboration among parties in a way that helps increase the reliability of the water supply?
Yes. The on-going efforts to promote drought resiliency in the Upper Colorado River Basin set the stage for how this project, and other GVWUA projects, will be instrumental in providing increases reliability of our water supply. GVWUA understands that it cannot address demand management alone and feels that this project establishes the need to engage broader collaboration from the multiple water users of the Upper Colorado River Basin. The Letters of Support for this project from entities across the state for this project emphasizes its importance and demonstrates collaboration.

Is there widespread support for the project?
Yes. Please see the Letters of Support in **Appendix B**.

What is the significance of the collaboration/support?
The significance of the Colorado and larger Colorado River Basin collaboration and support of the GVWUA's improvements to the existing Roller Dam and Canyon Facilities operations aligns with the collective efforts on-going throughout the Upper and Lower Colorado River Basins to prevent a water-related crisis or conflict. The on-going developments of the Upper and Lower Drought Contingency Plans and associated Demand Management strategies will require the efforts of multiple water users across the state of Colorado larger Colorado River Basin.

GVWUA, Reclamation, and the Upper Colorado River Endangered Fish Recovery Program have a long and successful collaborative history. The 15 Mile Reach of the Colorado runs from just below the Grand Valley Irrigation Company's diversion dam near Palisade, Colorado, to the confluence of the Colorado and Gunnison Rivers. The tail race of the GVPP discharges to the Colorado River at the head of the 15 Mile Reach. Increasing the river flows in this reach of the Colorado River has been identified as being critical to the recovery and down-listing of the following four species of endangered fish.

System improvements to Grand Valley Project facilities and more efficient operations have allowed for average annual foregone diversions more than 49,000 AF as determined by Reclamation for the years 2002-2010. Data from 2018 showed over 58,000 AF of foregone diversions benefited the 15 Mile Reach. Most of these foregone diversions have been directed to and have flowed through the 15 Mile Reach. Because of these efforts, combined with the administrative and operational opportunities for enhanced water management established by the Orchard Mesa check case, Colorado River flows in the Grand Valley have been greater and more consistent in recent years. See narrative in the above sections referencing the data depicted in **Table 3** above.

Is the possibility of future water conservation improvements by other water users enhances by the completion of this project?

Absolutely! The proactive involvement of the GVWUA to rehabilitate the Roller Dam and Canyon Facilities is widely known and understood. The benefits of the D&C EP2 Project provide benefits far beyond its specific location, reaching beyond the more immediate Grand Valley Project. The Colorado River Basin supplies water to seven western states and the Republic of Mexico. The Basin provides domestic water supplies to more than 36 million people and irrigates more than five million acres of agricultural lands. It also supports diverse wildlife and fish not found anywhere else in the world and fuels a multi-billion-dollar recreational economy. However, the Basin has experienced a severe drought since the late 1990s. While the region has had some "wet" years, the trend has been one of declining water supplies. The GVWUA does not expect significantly increased irrigation demand under their system moving forward. However, unknown climate change impacts may increase water use and/or shift the timing of irrigation demand within the system. Water demands from endangered species issues, drought, and population related pressures are concerns as well. Although not fully understood, the Colorado River compact issues may also affect water use within the GVWUA system. Future demand for irrigation water in the Upper Colorado River Basin of Colorado will likely mimic estimated water demand in the GVWUA. The pressures for future use seen within the GVWUA will be similar across the basin. Hence, the connectivity of GVWUA to better operate and manage their system aligns with the collective efforts on-going throughout the Upper and Lower Colorado River Basins to prevent a water-related crisis or conflict. The on-going developments of the Upper and Lower Drought Contingency Plans and associated Demand Management strategies will require the efforts of multiple water users across the state of Colorado larger Colorado River Basin.

GVWUA has been a leader in investigating the water security measures, they all take adequately functioning facilities to implement. The operation of all facilities, including the GVPP, will be key in supporting these efforts and the further refinement of the collective realized savings.

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

Describe the roles of any partners in the process (attach supporting documentation)
Yes, this Project supports commercial agriculture, benefits non-consumptive water users; and encourages collaborative solutions to water sustainability issues. There is widespread support of this project, see **Appendix B** Letters of Support. Letters of support where gathered from the following organizations:

- Colorado River Water Conservation District
- City of Grand Junction
- Orchard Mesa Irrigation District
- Palisade Irrigation District
- The Nature Conservancy

- Upper Gunnison River Water Conservancy District
- Colorado Springs Utilities
- Colorado Water Trust

Commercial agriculture - While all efforts are of great value, the Grand Valley Project continues to deliver significant volumes of water to commercial agriculture. The fresh fruit, vegetable, wine, nursery, corn, wheat, dry bean, seed, alfalfa, pasture grass, beef, and equine industries in the Grand Valley all depend upon reliable, consistent deliveries of irrigation water in face of challenges of climate change, periods, of drought, and population pressure. The efficiencies and flexibility gained by the D&C EP2 Project support the GVP's continued delivery of the most fundamental supporting input to production agriculture in the Grand Valley water.

Non-consumptive water uses - The Canyon Canal Improvement Project assures continued delivery of significant water to the 15 Mile Reach and beyond. The Grand Valley Project system has been successful in far exceeding the expected forgone diversions from the improvements that have been made to the system, while at the same time not reducing system deliveries. To continue to do will require increased attention to all facets of canal facilities, management, and operations in the future such as this Canyon Canal Improvement Project. These deliveries to the Colorado River through the 15 Mile Reach also benefit recreational use, wildlife habitat, and the beauty and overall aesthetic value of a large section of the Grand Valley that is receiving increasing attention from the community.

Encouraging collaborative solutions to water sustainability issues – GVWUA is working to address water supply sustainability in the face of changing demographic and environmental concerns exacerbated by increasing urbanization locally and regionally. Water conservation and the concerns over increasing pressure on water supplied by the Colorado River require that GVWUA stay ahead of the demands and plan for demographic changes and drought and climate changes.

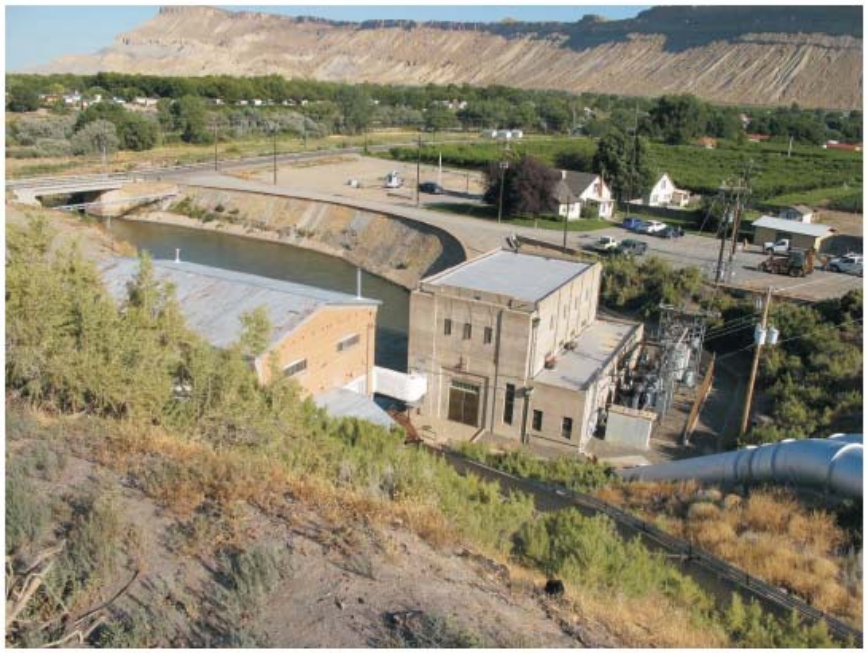
GVWUA and OMID must blend the need for improvements to the D&C Facility and D&C EP2 Project and the needs and potential benefits of other resource and economic communities. By developing comprehensive, prioritized, flexible water management and facilities improvements GVWUA and OMID can protect their interests while expanding the number of water users who benefit from improvements in the facilities and operations of the D&C Facility. Such benefits may be of sufficient magnitude that they be of monetary value to others. Improved canal facilities, administration, and operations can lead to maximizing water availability for all the Grand Valley Project partners and beneficiaries. Maximizing effectiveness, efficiency, and stewardship of water management have long term positive benefits to the environment, recreation and irrigation users, and the economies and general social and civic well-being of the entire Grand Valley, and indeed the entire Colorado River system and those who rely upon it.

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

The Colorado River system is complex and provides water to multiple water users. We anticipate that this project will address water supply reliability in other ways not discussed in this application due to the example it will set for others to follow and create their own projects to support water conservation, reliability in the spirit of avoiding a water crisis.

1.5.3 Evaluation Criterion C – Implementing Hydropower

This project does not include the installation of a new hydropower facility, however, supports the on-going delivery and measurement of power water to the GVPP. The GVPP, which is a component of Reclamation's Grand Valley Project, is operated jointly by GVWUA and OMID. Water is diverted from the Colorado River at the Grand Valley Diversion Dam into the Government High Line Canal approximately 23 miles Northeast of Grand Junction, Colorado.



The Roller Dam diverts water into the GHC for irrigation and hydropower purposes under very senior water rights that collectively make up the "Cameo Call" from the Colorado River. The irrigation water is provided to four irrigation entities: GVWUA and the Orchard Mesa, Palisade and Mesa County Irrigation Districts (Irrigation Districts), which provide irrigation water to approximately 39,000 acres of land in the Grand Valley. The hydropower water is used to produce hydropower at the GVPP, which has a capacity of approximately 800 cfs and a current electrical generation capacity of about 3.5 MW. OMID and GVWUA just completed a deal with the Colorado Water Trust, Reclamation and USFWS to use the GVPP to improve streamflows above and beyond the foregone diversions for the Recovery Program (for fish).

1.5.4 Evaluation Criterion D – Complementing On-Farm Irrigation Improvements

The project will not result in any direct on-farm irrigation improvements, however, without the D&C EP2 Project future on-farm irrigation improvements may not be possible. The D&C EP2 Project provides water to foster system water management. The new SCADA system and automation of the Roller Gates will provide reliable water and accurate allocation of water in the GHC.

Will the proposed WaterSMART project complement any ongoing or planned on-farm improvement?
The D&C EP2 Project supports several irrigation districts that provide water to about 40,000 acres of irrigated lands. The efficient and effective water delivery in the GHC promotes overall connectivity, adding multiple benefits to the system by combining the on-farm efficiency improvements.

1.5.5 Evaluation Criterion E – Department of Interior Priorities

The D&C EP2 Project supports the following DOI Priorities:

1. Creating a conservation stewardship legacy, second only to Teddy Roosevelt
2. Striking a regulatory balance
3. Modernizing our infrastructure through coordinated efforts in the western United States

Creating a conservation stewardship legacy second only to Teddy Roosevelt.
The GVWUA was the sole recipient of a System Pilot Conservation Program Grant that supported a two year Conserved Consumptive Use (CCU) Pilot Program aimed at identifying and investigating water-marketing strategies that do not require the permanent separation of water from the land. The overall goals of this program were to:

- Gauge farmer interest
- Determine scalability of CCU water conservation activities
- Mitigate risk and financial cost to the GVWUA and its membership
- Seek protection and benefit to the GVWUA
- Assure continue contract and operational compliance with the other Cameo Call water users and the broader Colorado River Basin water interests.

Additional information can be obtained at this website: https://www.coloradomesa.edu/water-center/grand-valley-water-banking-discussion.html.

The GVWUA through its involvement with the CCU, Salinity Lining, Water Management Plan, Water Marketing Strategies, and D&C Rehabilitation projects aligns well with the stewardship legacy by:

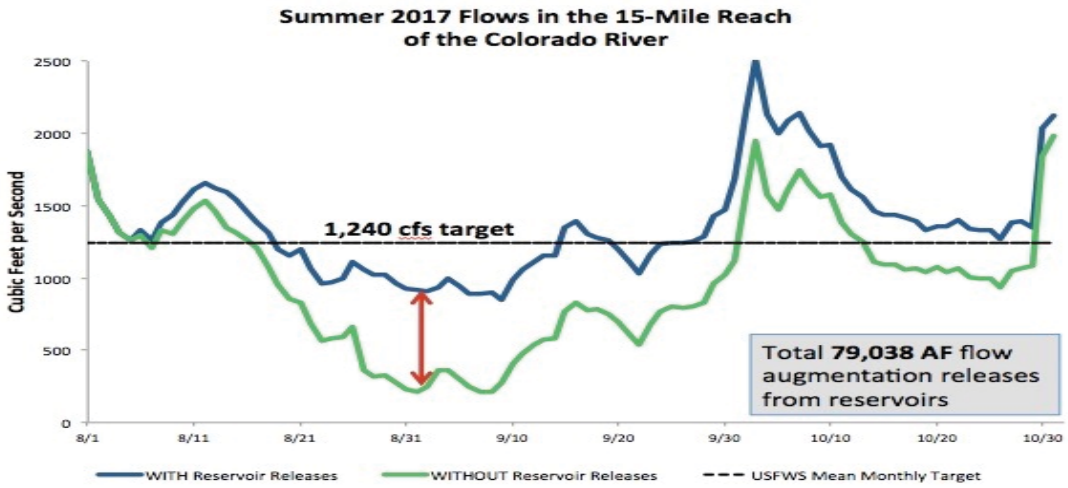
a) Utilizing science to identify best practices to manage land and water resources and adapt to changes in the environment;
b) Examining land use planning processes and land use designations that govern public use and access;
c) Revising and streamlining the environmental and regulatory review process while maintaining environmental standards.
d) Reviewing DOI water storage, transportation, and distribution systems to identify opportunities to resolve conflicts and expand capacity;
e) Fostering relationships with conservation organizations advocating for balanced stewardship and use of public lands;
f) Identifying and implementing initiatives to expand access to DOI lands for hunting and fishing; and
g) Shifting the balance towards providing greater public access to public lands over restrictions to access.

Overall, the GVWUA is active and engaged in the Upper Colorado River Basin's Drought Contingency Planning (DCP) efforts, specifically with its involvement in the pilot testing of Demand Management (DM) strategies.

Utilizing our natural resources
GVWUA's primary mission is to manage natural resources for the benefit of their shareholders, and the Colorado River Basin as a whole.

Striking a regulatory balance

The D&C EP2 project will support the regulatory balance by ensuring that Endangered Species Act and associated Recovery obligations are met, in addition, support collaboration with the USFWS, the US Army Corps of Engineers (ACOE), SHPO/Section 106 compliance by allowing input by the agency to consider opportunities for attaining multi-benefits and multi-purposes (e.g., regulations, flow obligations, permitting requirements, etc.).



Modernizing our infrastructure

The D&C EP2 project supports the White House Public/Private Partnership Initiative to modernize U.S. infrastructure. In President Trump's memorandum on Promoting the Reliable Supply and Delivery of Water in the West, he directed improving the use of technology to increase water reliability in the west (October 19, 2018). The D&C EP2 project supports the use of technology, SCADA installation and modernizing electrical functions, to increase water reliability in the GHC.

1.5.6 Evaluation Criterion F – Implementation and Results

Subcriterion F.1 – Project Planning

Does the applicant have a Water Conservation Plan and/or System Optimization Review (SOR) in place? If so, please self-certify and provide a copy.

Provide the following information regarding project planning:

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

Yes, the proposed activity was included as a component of the written Roller Dam and Canyon Rehabilitation Master Plan, specifically priority project #2. This project and GVWUA's Water Management Plan (completed in 2017) demonstrate their commitment to improving water management along the Colorado River, and across the state of Colorado. Specific goals from both plans include:

Goal #3- Improve the water delivery system. The objectives are to replace aging infrastructure and rehabilitation of the Roller Dam.

Goal #5- Resolve electrical and computer issues for the automated canal gates. The objective is to ensure all automated canal gates are operating correctly.

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

The following district-wide and state-wide plans have identified the D&C EP2 Project as a priority project in the area.

- Colorado Basin Implementation Plan (BIP) 2013 (https://www.colorado.gov/pacific/sites/default/files/CBIP-April-17-2015.pdf)
- Colorado Water Plan (CWP) 2015 (http://coloradowaterplan.com/)
- Colorado Drought Mitigation and Response Plan (DMRP) 2012 (http://www.usbr.gov/lc/region/programs/crbstudy.html)
- Colorado River Basin Water Supply and Demand Study (Study) under Reclamation's Basin Study Program 2013 (http://www.usbr.gov/lc/region/programs/crbstudy.html)
- GVWUA Water Management Plan 2015
- Reclamation's Sustainable Energy Mission 2012 (https://www.usbr.gov/power/Reclamation%20Sustainable%20Energy%20Strategy%20.pdf)
- Colorado River Cooperative Agreement 2013 (http://www.denverwater.org/SupplyPlanning/Planning/ColoradoRiverCooperativeAgreement/)
- Master Plan for the (BIP) Roller Dam Rehabilitation 2015

Colorado Basin Implementation Plan (BIP) 2013 - The Colorado BIP identified how future municipal, industrial, agricultural, recreational and environmental water needs will be met through existing or new projects, policies, and processes to the year 2050. The CBRT members worked alongside citizens and Colorado River Basin stakeholders to identify top projects across the basin and within each of the seven subregions. Projection of the Cameo Call and rehabilitation of the Roller Dam and facilities was one of the top projects. This Project is the second priority project as identified in the BIP. The project helps meet the needs of the Colorado Basin users and protecting the Cameo Call.

Colorado Water Plan (CWP) 2015 - The CWP is a roadmap that leads to a productive economy, vibrant and sustainable cities, productive agriculture, a strong environment, and a robust recreation industry. It sets forth the measurable objectives, goals, and actions by which Colorado will address its projected future water needs and measure its progress—all built on our shared values. Just as it was created, this plan will be implemented by working collaboratively with the basin roundtables, local governments, water providers, other stakeholders, and the general public. It includes a set of policies and actions that all Coloradans and their elected officials can support and help implement. The benefits of this Project were realized through the process that developed the CWP.

Colorado Drought Mitigation and Response Plan (DMRP) 2012 - Drought is real and the reality of water supply planning in the Project area. The DMRP was developed in response to drought conditions, Federal agencies and stakeholders throughout the Basin have been working together to find creative ways to reduce the effects of the drought on the people and resources that rely on water from the Colorado River. GVWUA is part of these conversations and efforts. The 2013 DMRP is incorporated into the Colorado Water Plan which is a blueprint for how to mitigate drought impacts. This Project was initiated as a result of these realizations (of drought) and the need to promote protection of the Cameo Call in light of the pending reality of less water.

Colorado River Basin Water Supply and Demand Study (Study) under Reclamation's Basin Study Program 2013

GVWUA Water Management Plan - The goal of this WMP was to evaluate the prioritized facility needs and potential operational enhancements of GVWUA within the Gravity Division of the Grand Valley Project. This Project addressed both the facility needs and considers the benefits of providing additional water via improve Canyon Canal efficiencies to the Grand Valley Project.

Reclamation's Sustainable Energy Strategy FY 2013-2017 - Reclamation has developed six long-term strategic objectives to further Reclamation's Sustainable Energy Mission including Strategic Objective #1 – Increase Renewable Energy Generation from Reclamation Projects. On-going Reclamation activities in support of this objective specifically include the use of WaterSMART grants to "provide cost-share assistance to support the development of renewable resources". This Project aligns with this objective.

Colorado River Cooperative Agreement 2013 - This agreement provides for:

- Resolution of historic conflicts and a holistic approach to resolving Colorado water disputes.
- Cooperative, long-term efforts to improve the health of the Colorado River mainstem and its tributaries.
- Additional water supply for those who live, work and play on the West Slope and for customers of Denver Water.

This Project aligns with the Colorado River Cooperative Agreement and GVWUA and OMID are both signatories to the agreement.

Master Plan for the (BIP) Roller Dam Rehabilitation 2015 - The overall purpose of this project is to protect the water rights associated with the "Cameo Call" by outlining and prioritizing the rehabilitation needs of the Roller Dam and the portion of the GHC immediately below the Roller Dam (collectively referred to as the 'Dam and Canyon facilities'). Exercise of these water rights and the continued operation of the Dam and Canyon facilities provide predictability to river flows and associated

environmental and cultural benefits. These benefits include more reliable flows in the upper portions of the Colorado River which improves water quality in the lower portions of the basin. The flows generated by the Cameo Call help provide water for recreational activities on the Colorado River and for riparian habitat and aesthetic values along the entire Colorado River corridor. Flows generated by the Cameo Call also assist the state in complying with its obligations under the Colorado River Compact and in maintaining acceptable lake levels in Lake Powell.

The Dam and Canyon Facilities Master Plan was the first step to understanding the rehabilitation needs of the Dam and Canyon facilities which aims to 1) identify and prioritize the rehabilitation needs (structural, cosmetic, additional hydropower potential, environmental, etc.); and 2) develop implementation plans for each prioritized need, specifically addressing the costs, funding opportunities, timeline, and list of potential teaming partners and sponsors.

This Project is the second rehabilitation need being addressed as part of the Master Plan.

Subcriterion F.2 – Performance Measures

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

See narrative in the above sections referencing the data depicted in **Table 3** above. Section 1.5.1 also provides information regarding the quantification of the Water Savings from this project, including how the success could be measured throughout the system.

A proposed performance measure must be proposed and include a method of quantifying the actual benefits of the project once completed.

See narrative in the above sections referencing the data depicted in **Table 3** above. Section 1.5.1 also provides information regarding the quantification of the Water Savings from this project, including how the success could be measured throughout the system.

Subcriterion F.3 – Readiness to Proceed

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

The D&C EP2 Project is ready to proceed. Environmental clearances and engineering are complete. Outside work across the Roller Dam will proceed through fall and winter 2019/2020 as weather allows. Work inside the Roller Gate Houses

will proceed concurrently. All work will be completed in first quarter 2020 with testing as soon as the Roller Gates can be safely operated once free of ice. **Table 5** provides a schedule for the project including major tasks, milestones, and dates.

With confirmation of the WaterSMART funding the project will begin in the fall of 2019. All required equipment and controls purchases will be made upon funding approval notification.

Table 5. Estimate Project Implementation Plan.

Project Task/Milestone	Anticipated Date (Start)	Anticipated Completion Date
Grant Award	June 30, 2019	Pre-Project
Select Contractor(s)/Award Project	July 31, 2019	
Purchase/Order Equipment	July 1 – November 1, 2019	
Initiate Winter Roller Dam Operations	November 1, 2019	
Mobilize	November 1, 2019	
Construct Project	November 1, 2019	March 15, 2020
Initiate Spring 2020 Roller Dam Operations	April 1, 2020	

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

All preliminary utility work required to facilitate this Project have been completed as part of D&C EP1 Project completed in Fall 2018. It is not anticipated that any electrical permits will be needed for D&C EP2, however, if needed a Mesa County Electrical Permit will be obtained. Potential suppliers and contractors required to complete the D&C EP2 have been identified and project delivery methods have been thoroughly discussed and set forth.

No USACE Permit is needed as no work will impact wetlands or a water of the United States. GVWUA, Reclamation, and SHPO have an MOU regarding cultural resources in the AOI area. The MOU states: Pursuant to Section 106 of the NHPA, Reclamation and the SHPO agree that the undertaking, Electrical and Control Systems Upgrade Project, shall be implemented in accordance with seven stipulations in order to take into account the effect on historic properties. The MOU is dated March 6, 2019.

Reclamation Western Area Office, Jenny Ward, requested concurrence with the FWS on this D&C Electrical Upgrades Project in February 2019. Once Ms. Ward receives notification of FWS concurrence she will issue a Categorical Exclusion for the D&C Electrical Upgrades Project that includes D&C EP2 Project.

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

SGM completed the engineering and design work on the project on January 16, 2019. The final designs are included in **Appendix A**.

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

No new polices or administrative actions are required to implement the project.

Describe how the environmental compliance estimate was developed. Has the compliance cost been discussed with the local Reclamation office?
All environmental compliance activities are completed for this project. A summary of the specific aspects of this compliance is listed in **Table 8**.

1.5.7 Evaluation Criterion G – Nexus to Reclamation Project Activities

Is the proposed project connected to Reclamation project activities? If so, how? Consider the following:
Yes. See below.

- ***Does the applicant receive Reclamation project water?***

Yes. See below.

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

Yes. See below.

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

Yes. See below.

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

Yes. See below.

This answer addresses all the above questions under Criterion G.

GVWUA is the managing entity for the federally owned Grand Valley Project pursuant to contracts with Reclamation. The Grand Valley Project facilities include the Grand Valley Diversion Dam, known as the Roller Dam, on the Colorado River in DeBeque Canyon, the attendant GHC Headgate diversion structure, five miles of Canyon Canal, the Stub Ditch pump station, the 55-mile-long GHC, 150 miles of project laterals, 100 miles of drainage ditches, and the Grand Valley Hydroelectric Power Plant operated by GVWUA and OMID under an LOPP with Reclamation.

The D&C EP2 Project is providing electrical improvements and SCADA system to the Grand Valley Diversion Dam that provides water to the GHC and the Reclamation Grand Valley Project.

Will the project benefit any tribe(s)?
This project does not have a direct nexus to a tribe.

1.5.8 Evaluation Criterion H – Additional Non-Federal Funding

The cash and in-kind contributions of the GVWUA have been determined and the required cash, $55,282, has been set aside, $20,000 from OMID and $100,000 from the Colorado Water Plan Grant Program have also been secured. Accommodation for the next phases of this overall electrical and controls improvements project (Part

3) have been investigated and planned for. Part 3 of the project includes GHC Headgate controls.

The ratio (as a percentage) of Non-Federal Funding to the Total Project Cost is equal to 55%.

$220,000 / $398,884 = 55%

2.0 Project Budget

The environmental and cultural compliance and engineering/design costs have already been incurred prior to July 1, 2018. The environmental and cultural compliance was completed during the D&C EP1 Project and the upper 500' canal lining project. Proof of compliance, specifically a copy of the cultural MOU is included in **Appendix C**. The engineering/design costs were incurred during the Master Plan Phase 2 Project and D&C EP1 Project. SGM completed the engineering/design in January 2019. Engineering plans are included in **Appendix A**.

2.1 Funding Plan and Letters of Commitment

The project is planned to be funded by GVWUA, OMID, CWCB, and Reclamation. GVWUA will contribute both in-kind time and cash. GVWUA will provide in-kind time by managing construction contractors, project management, and reporting. GVWUA will also provide approximately $55,282 in cash towards the project. The GVWUA commitment letter will be provided in 30 days. GVWUA next board meeting is April 11, 2019. OMID will provide approximately $20,000 cash, and their letter of funding commitment can be found in **Appendix D**. GVWUA and OMID received a grant from CWCB for $100,000 and the grant documentation is in **Appendix D**.

GVWUA has been incurring in-kind contributions for the project since August 14, 2018 and cash contributions since September 21, 2018. The in-kind contributions of time have been for project management and contractor oversight (equipment vendors and engineering consultants) management. GVWUA paid for a third-party contractor, SGM, to provide engineering services to develop and update the project drawings and specifications, participation in project meetings, and integration planning between Reclamation, electrical updates, and SCADA integrators. Note that none of the costs have been associated with the efforts to respond to this FOA application.

2.2 Budget Proposal

Table 6**6** shows the different funding partners and amount of planned contribution to the project. **Table 7** provides the budget proposal for the project.

Table 6. Total Project Costs.

Funding Source	Amount
Costs to be reimbursed with the requested Federal Funding	$178,884
Costs to be paid by the applicant	
In Kind	$44,718
Cash	$55,282
Value of third-party contributions	
Orchard Mesa Irrigation District	$20,000
CWCB Grant	$100,000
Total Project Cost	**$398,884**

Table 7. Budget Proposal.

Budget Item Description	Computation		Quantity Type	Total Cost
	$/Unit	Quantity		
Contractual/Construction				
Barnes Electric: Design, Drawings, Documentation, Programming, Training, Assembly, Commissioning	$88,757	1	Lump Sum	$88,757
SCADA Partners: Design, Drawings, Documentation, Programming, Training, Assembly, Commissioning	$75,211	1	Lump Sum	$75,211
Travel				
Barnes Electric	$175	25	hour	$4,375
SCADA Partners	$133	15	hour	$2,000
Supplies and Materials				
SCADA Partners: Main Control Panel, Instrumentation, 7 Remote I/O Panels	$70,790	1	Lump Sum	$70,790
Barnes Electric: Main Controls Panel, Instrumentation, 7 Remote I/O Panels	$96,200	1	Lump Sum	$96,200
Other				
Project Management (In-kind)	$7,123	1	2% of total construction costs	$7,123
Construction Management (In-kind)	$35,615	1	10% of total construction costs	$35,615
GVWUA Project Management from July 2018 to March 1, 2019	$18,814	1	Lump Sum	$18,814
Total				**$398,884**

2.3 Budget Narrative

2.3.1 Salaries and Wages

No GVWUA salaries or wages will be included. All services will be contracted. GVWUA staff time will not be requested for reimbursement and have been included

in the budget as in-kind services for project coordination ($) and construction management. The GVWUA Project Managers will be Mark Harris and Kevin Conrad.

2.3.2 Fringe Benefits

No fringe benefits will be required.

2.3.3 Travel

Travel expenses associated with the project have been accounted for within the consultant and construction costs identified in **Table 7** and **Appendix E**, Barnes Electric and SCADA Integration Partners, LLC cost proposal. No travel expenses will be billed for GVWUA.

2.3.4 Equipment

Equipment will be part of the contracted portion of the project and have been identified in **Table 7** and **Appendix E** of this application. No equipment will be provided by GVWUA.

2.3.5 Materials and Supplies

Materials and supplies will be part of the contracted portion of the project and are identified in **Table 7** and **Appendix E**. No materials and supplies will be provided by GVWUA.

2.3.6 Contractual

In order to determine unit costs which were included in the cost estimate for this project, GVWUA relied upon contract unit prices provided by Barnes Electric and SCADA Integration Partners, LLC. The cost proposal is in **Appendix E**. GVWUA also has retained SGM as a contract engineer for this project.

2.3.7 Third-Party In-Kind Contributions

There will be no third-party in-kind contributions for the D&C EP2 Project.

2.3.8 Environmental and Regulatory Compliance Costs

All environmental and regulatory surveys and documents were completed during the D&C EP1 portion of the project and incurred before July 1, 2018. Minor project management/correspondence costs may occur to receive the final categorical exclusion and USFWS concurrence. The project management associated with the regulatory compliance will be part of GVWUA in-kind costs.

2.3.9 Other Expenses

There are no other expenses for the D&C EP2 Project.

2.3.10 Indirect Costs

There are no indirect costs for the D&C EP2 Project.

3.0 Environmental and Cultural Resource Compliance

The D&C EP2 project is part of a larger Electrical Upgrades Project at the Dam and Canyon Facility, as such environmental and regulatory compliance has already been complete in the D&C EP2 AOI. The environmental and cultural resource compliance has been a cooperation among state, regional, and local agencies. GVWUA has made a significant investment of time collaborating the compliance needs of multiple projects at the same location. **Table 8** shows the environmental and cultural resource surveys conducted and permits received for this project.

Table 8. Environmental and Cultural Resource Compliance.

Resource Compliance	Description	Date of Approval
Cultural Resources	GVWUA has a Memorandum of Understanding (MOU) between Western Colorado Area Office of Reclamation and SHPO.	March 6, 2019
NEPA: Categorical Exclusion	Reclamation will issue a categorical exclusion once Reclamation receives the USFWS concurrence.	Pending
Endangered Species Act	A request of USFWS concurrence was sent to USFWS on February 20, 2019	Pending
Clean Water Act	No ACOE Permit is required on this project as there will be no impacts to wetlands or waters of the United States. Met with Travis Morse, ACOE Project Manager, in August 2019 to confirm that no river work will be conducted.	NA

4.0 Required Permits/Approvals

This section identifies the existing permits and approvals for the project. Section 3 describes the environmental permits that the project has. Although, not anticipated, the D&C EP2 Project may need a Mesa County Building Permit for Electrical. If needed, GVWUA will apply for the Mesa County Electrical Permit.

5.0 Letters of Support

The following organizations have provided letters of support for the D&C EP2 Project. The Project will provide improved water control and management and refinement, resiliency and reliability of the electrical and control systems and assure continued operations of the Roller Dam Facility and Canal Headworks. The level of importance for the implementation of this project speaks volumes given the critical nature of the need for sustained operations of the GVWUA's Dam and Canyon (D&C) Facilities for the US Fish and Wildlife Services (USFWS) Recovery Program to protect the four Endangered fish within the 15 Mile Reach of the Colorado River; sustained water delivery to the irrigators of the Grand Valley; and operations of the Grand Valley Power Plant (GVPP), to name a few. The representation of the entities that provided Letters of Support for this application also emphasize the statewide importance of this project. Letters of Support are in **Appendix B**.

- Colorado River Water Conservation District
- City of Grand Junction
- Orchard Mesa Irrigation District
- Palisade Irrigation District
- The Nature Conservancy
- Upper Gunnison River Water Conservancy District
- Colorado Springs Utilities
- Colorado Water Trust

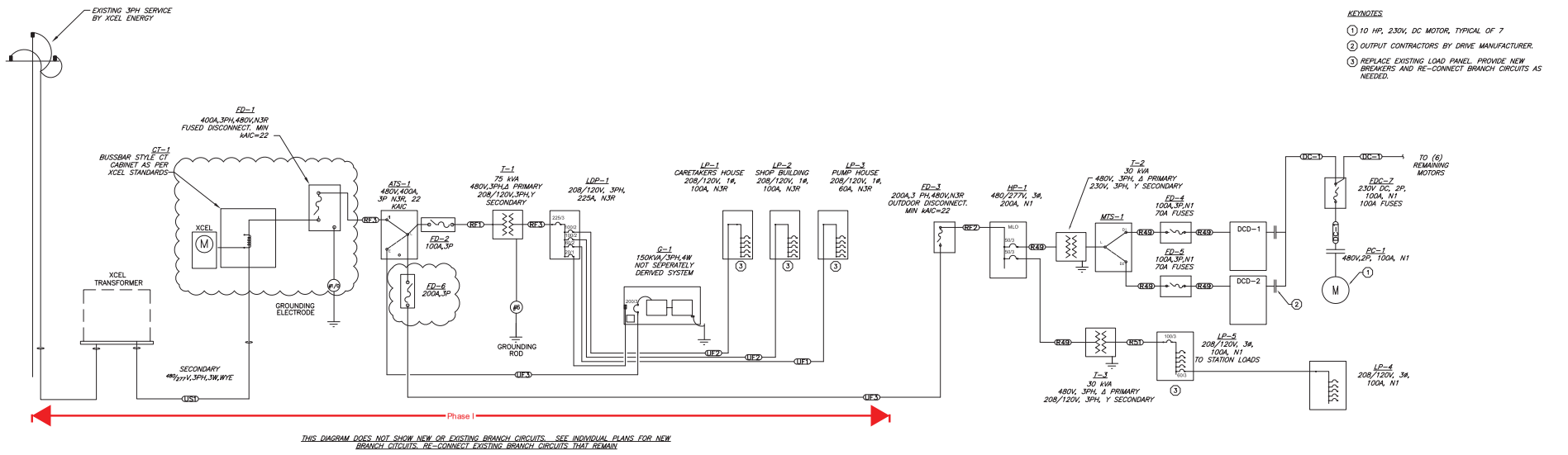
6.0 Official Resolutions

GVWUA's Board of Directors (BOD) is the governing body that authorizes the legal and financial obligations and commitments of its organization. GVWUA BOD approved its funding commitments and contributions specified in the Funding Plan (see Section 2.0) at the March 2019 GVWUA Board meeting. The Official Resolution is being prepared and will be executed at the April 10, 2019 BOD meeting and will be available for submittal no later than April 11, 2019. An Official Resolution has been obtained from OMID's BOD and is included in **Appendix D**.

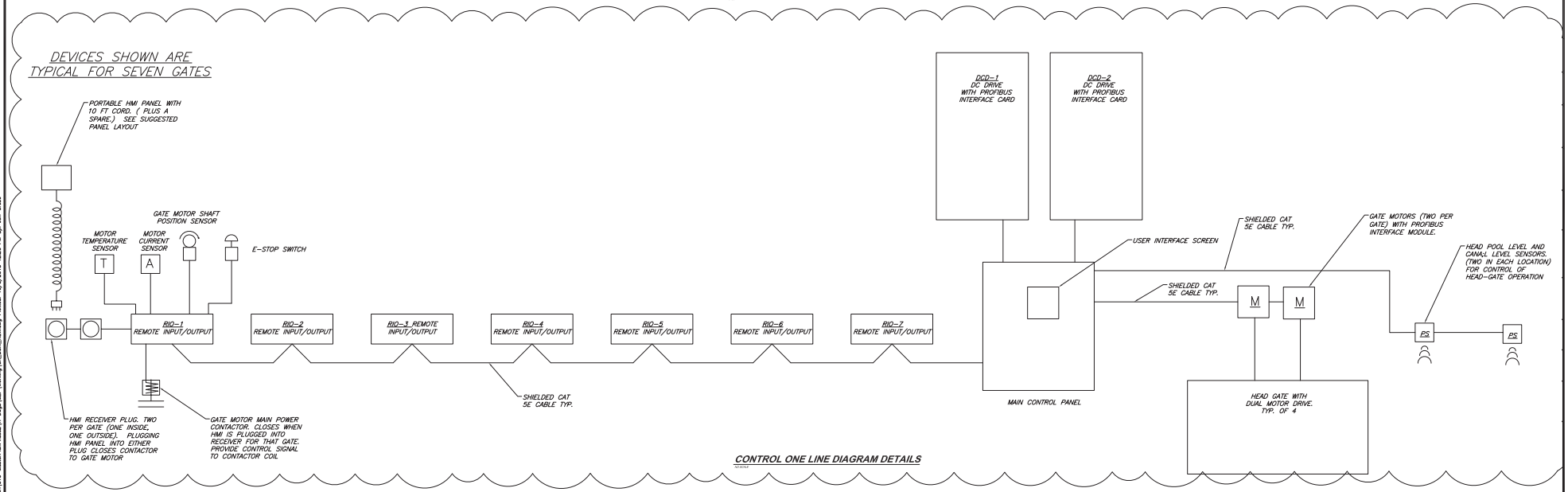
GVWUA has a strong working relationship with Reclamation staff and will continue to work collaboratively with them on the successful implementation of this Project.

Appendix A

D&C EP2 Drawings



POWER ONE-LINE DIAGRAM



CONTROL ONE LINE DIAGRAM DETAILS

Preliminary
Not For Construction
100% CD

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

GVWUA
Grand Valley Roller Dam

#	Revision	Date	By
1	ONE LINE REVISIONS	9-5-2018	JMG
2	CONTROL DIAGRAM	10-3-2018	JMG

Electrical One-Lines

Job No.	2015-514.010
Drawn by:	TC
Date:	10/05/2017
Checked by:	JG
File:	GR_Dam_NEW

E5.6

Appendix B

Letters of Support

COLORADO WATER TRUST

1420 Ogden Street, Suite A2, Denver, CO 80218
Tel: 720.570.2897 | www.coloradowatertrust.org

March 18, 2019

Bureau of Reclamation
Financial Assistance Support Section
Attn: Mr. Darren Olson
P.O. Box 25007, MS 84-27814
Denver, CO 80225

Dear Mr. Olson,

The Colorado Water Trust is pleased to support the Grand Valley Water Users Association's (GVWUA) and Orchard Mesa Irrigation District's (OMID) application to the Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant program for the Roller Dam Electrical and Control Systems Upgrades Part 2 (D&C EP2) Project. This Project will provide improved water control and management and refinement, resiliency, and reliability of the electrical and control systems and assure the continued operations of the Roller Dam Facility and Canal Headworks. The overall Roller Dam Electrical and Controls Systems Upgrade Project components include: replacement of all exiting above ground utilities, inclusion of permanent on-site stand by emergency power generation, construction of new control panels and electrical service equipment throughout the Upper Canyon; rewiring of the to be upgraded Canal Headgate controls; and installation of a SCADA and related system for integration of Upper Canyon Canal levels, Roller Dam Facility and Roller Gate operations, and the Canal Headgates.

The Roller Dam Rehabilitation Project was identified as a Basinwide "Top Priority" project in the Colorado River Basin Implementation Plan (BIP). Five specific priority projects were identified during the GVWUA Roller Dam Rehabilitation Master Plan efforts, including the Electrical Upgrades projects. The first priority project was lining the upper 500 feet of the Government Highline Canal (GHC) which was completed in June 2018. Priority #2, The Roller Dam Electrical and Control Systems Upgrades Project was further broken into Parts 1 and Part 2. Part 1, which replaced the existing primary electrical utilities, standby power, and new electrical service and required equipment to and into the Dam, needed to be complete before Part 2 commenced, and was completed in December 2018.

The Project aligns with the Bureau of Reclamation's WaterSMART program by supporting water supply reliability benefits, water savings, and improved water control and management. The electrical and control system upgrades are essential to complete the remaining priority projects. Overall, the Colorado Water Trust supports GVWUA efforts to rehabilitate the Roller Dam Facilities, as the Roller Dam is an integral part of the Grand Valley irrigation system, Grand Valley Power Plant, and the 15-Mile Reach on the Colorado River that supports threatened and endangered fish.

COLORADO WATER TRUST

1420 Ogden Street, Suite A2, Denver, CO 80218
Tel: 720.570.2897 | www.coloradowatertrust.org

The Colorado Water Trust works with GVWUA to use excess capacity in the Grand Valley Power Plant system to deliver water to the 15-Mile Reach on the Colorado River when it is needed most. GYWUA is a valued partner to us, and so we appreciate your consideration of this request and look forward to hearing from you!

Sincerely,

Andy Schultheiss, Executive Director
The Colorado Water Trust

PALISADE
IRRIGATION DISTRICT

777 35 3/10 Road, Palisade, CO 81526
970-464-4700 / Fax 970-464-1337

March 8, 2019

Bureau of Reclamation
Financial Assistance Support Section
Attn: Mr. Darren Olson
P.O. Box 25007, MS 84-27814
Denver, CO 80225

Dear Mr. Olson,

The Palisade Irrigation District is pleased to support the Grand Valley Water Users Association's (GVWUA) and Orchard Mesa Irrigation District's (OMID) application to the Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant program for the Roller Dam Electrical and Control Systems Upgrades Part 2 (D&C EP2) Project. This Project will provide improved water control and management and refinement, resiliency, and reliability of the electrical and control systems and assure the continued operations of the Roller Dam Facility and Canal Headworks. These facilities are critical to the reliable delivery of irrigation water to our District and we support continued efforts for their rehabilitation.

Sincerely,

Dan Crabtree, Superintendent
Palisade Irrigation District

The Nature Conservancy
Colorado River Program
2424 Spruce St.
Boulder, CO 80302

nature.org/coloradoriver

March 11, 2019

Bureau of Reclamation
Financial Assistance Support Section
Attn: Mr. Darren Olson
P.O. Box 25007, MS 84-27814
Denver, CO 80225

Dear Mr. Olson,

The Nature Conservancy (TNC) is pleased to support the Grand Valley Water Users Association's (GVWUA) and Orchard Mesa Irrigation District's (OMID) application to the Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant program for the Roller Dam Electrical and Control Systems Upgrades Part 2 (D&C EP2) Project. This Project will provide improved water control and management and refinement, resiliency, and reliability of the electrical and control systems and assure the continued operations of the Roller Dam Facility and Canal Headworks.

TNC is an active partner with GVWUA, OMID, Reclamation and others in the Upper Colorado River Endangered Fish Recovery Program. The continued operation of the Roller Dam is a critical component of the Recovery Program in order to help meet flow targets in the 15-mile reach. The electrical and control system upgrades are essential to continued operations of the Roller Dam. This project also aligns with the Bureau of Reclamation's WaterSMART program by supporting water supply reliability benefits and improved water control and management. Additionally, the project was identified as a Basinwide "Top Priority" project in the Colorado River Basin Implementation Plan (BIP), and TNC has supported past work to line the upper 500 feet of the Government Highline Canal.

Overall, TNC supports GVWUA efforts to rehabilitate the Roller Dam Facilities, as the Roller Dam is an integral part of the Grand Valley irrigation system, Grand Valley Power Plant, and the 15-Mile Reach on the Colorado River that supports threatened and endangered fish.

We appreciate your consideration of this request and urge you to support this important project.

Sincerely,

Aaron Derwingson

Aaron Derwingson
The Nature Conservancy
Agriculture Coordinator, Colorado River Program

CITY OF
Grand Junction
COLORADO
UTILITIES

March 12, 2019

Bureau of Reclamation
Financial Assistance Support Section
Attn: Mr. Darren Olson
P.O. Box 25007, MS 84-27814
Denver, CO 80225

Dear Mr. Olson,

The City of Grand Junction is pleased to support the Grand Valley Water Users Association's (GVWUA) and Orchard Mesa Irrigation District's (OMID) application to the Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant program for the Roller Dam Electrical and Control Systems Upgrades Part 2 (D&C EP2) Project. The Roller Dam Rehabilitation Project was identified as a Basinwide "Top Priority" project in the Colorado River Basin Implementation Plan (BIP).

The Project aligns with the Bureau of Reclamation's WaterSMART program by supporting water supply reliability benefits, water savings, and improved water control and management. Overall, the City of Grand Junction supports GVWUA efforts to rehabilitate the Roller Dam Facilities, as the Roller Dam is an integral part of the Grand Valley irrigation system and the Grand Valley Power Plant.

City of Grand Junction is a long-term participant in and supporter of the Upper Colorado River Endangered Fish Recovery Program. The benefit of the D&C EP2 Project to the Upper Colorado River Endangered Fish Recovery Program is that it will support the long-term maintenance of adequate flows in the 15 Mile Reach, designated critical habitat of federal listed endangered fish federally-recognized in this section of the Colorado River and downstream of the f15-mile Reach. Increasing the river flows in this reach of the Colorado River has been identified as being critical to the recovery of the endangered fish. These flow improvements have been achieved in a manner consistent with state water law.

System improvements to Grand Valley Project facilities and more efficient operations have allowed for average annual foregone diversions more than 46,000 Acre-Feet (AF) as determined by Reclamation for the years 2002-2013, the last year for which data is available. Most of these foregone diversions have been directed to and have flowed through the 15 Mile Reach. Because of these efforts, combined with the administrative and operational opportunities for enhanced water management established by the Orchard Mesa check case, Colorado River flows in the Grand Valley have been greater and more consistent in recent years.

We appreciate your consideration of our support for the project.

Sincerely,

Randi M. Kim,
Utilities Director

CC: Greg Caton,
City Manager

Colorado Springs Utilities
It's how we're all connected

March 15, 2019

Bureau of Reclamation
Financial Assistance Support Section
Attn: Mr. Darren Olson
P.O. Box 25007, MS 84-27814
Denver, CO 80225

Dear Mr. Olson,

Colorado Springs Utilities is pleased to support the Grand Valley Water Users Association's and Orchard Mesa Irrigation District's application to the Bureau of Reclamation (Reclamation) WaterSMART Water and Energy Efficiency Grant program for the Roller Dam Electrical and Control Systems Upgrades Part 2 (D&C EP2) Project. The Roller Dam Rehabilitation Project was identified as a Basinwide "Top Priority" project in the Colorado River Basin Implementation Plan (BIP). The Project aligns with Reclamation's WaterSMART program by supporting water supply reliability benefits, water savings and improved water control and management.

Colorado Springs Utilities is a long-term participant and supporter of the Upper Colorado River Endangered Fish Recovery Program. The benefit of the D&C EP2 Project to the Upper Colorado River Endangered Fish Recovery Program is that it will support the long-term maintenance of adequate flows in the 15-Mile Reach, designated critical habitat of federally-listed endangered fish in this section of the Colorado River and downstream of the 15-Mile Reach. Increasing the river flows in this reach of the Colorado River has been identified as being crucial to the recovery of the listed fish. These flow improvements have been achieved in a manner consistent with state water law.

System improvements to Grand Valley Project facilities and more efficient operations have allowed for average annual foregone diversions of more than 46,000 acre-feet (AF) as determined by Reclamation for the years 2002-2013. As a result of these efforts, combined with the administrative and operational opportunities for enhanced water management established by the Orchard Mesa check case, Colorado River flows in the Grand Valley have been greater and more consistent in recent years.

We appreciate your consideration of this project.

Sincerely,

Kirsta J. Scherff-Norris

Kirsta Scherff-Norris
Senior Wildlife Biologist
Colorado Springs Utilities

121 South Tejon Street, Fourth Floor
P.O. Box 1103, Mail Code 940
Colorado Springs, CO 80947-0940

Phone 719-668-8688
Fax 719-668-8666
http://www.csu.org

Upper Gunnison River Water Conservancy District

210 West Spencer Avenue, Suite B • Gunnison, Colorado 81230
Telephone (970) 641-6065 • Facsimile (970) 641-1162 • www.ugrwcd.org

March 14, 2019

Bureau of Reclamation
Financial Assistance Support Section
P.O. Box 25007, MS 84-27814
Denver, CO 80225

Attention: Mr. Darren Olson

Dear Mr. Olson,

The Upper Gunnison River Water Conservancy District supports the Grand Valley Water Users Association and Orchard Mesa Irrigation District application to the WaterSMART Water and Energy Efficiency Grant program for the Roller Dam Electrical and Control Systems Upgrades Part 2 (D&C EP2) Project.

The Upper Gunnison District is a long-term participant in, and supporter of, the Upper Colorado River Endangered Fish Recovery Program. The benefit of the D&C EP2 Project to the Recovery Program is support of long-term maintenance of adequate flows in the 15 Mile Reach, designated critical habitat of endangered fish in this section of the Colorado River and downstream

Thank you for considering our support for the D&C EP2 project.

Sincerely,

Frank J. Kugel
General Manager

Colorado River District

Protecting Western Colorado Water Since 1937

March 12, 2019

U.S. Bureau of Reclamation
Financial Assistance Support Section
Attn: Mr. Darren Olson
P.O. Box 25007, MS 84-27814
Denver, CO 80225

Dear Mr. Olson:

The Colorado River Water Conservation District (Colorado River District) supports the Grand Valley Water Users Association's (GVWUA) and Orchard Mesa Irrigation District's (OMID) application to the Bureau of Reclamation's WaterSMART Water and Energy Efficiency Grant program for the Roller Dam electrical and control systems upgrades part 2 (D&C EP2) project. The Roller Dam Rehabilitation Project (Project) was identified as a Basinwide "Top Priority" project in the Colorado River mainstem's Basin Implementation Plan (BIP), a key component to Colorado's Water Plan.

The Project qualifies for Reclamation's WaterSMART program by supporting water supply reliability benefits, water savings, and improved water control and management. The Colorado River District fully supports GVWUA efforts to rehabilitate the Roller Dam Facilities, as the Roller Dam is the key component of the integrated Grand Valley irrigation system including the Grand Valley Power Plant.

The Colorado River District is a founding member of the Upper Colorado River Endangered Fish Recovery Program. The D&C EP2 supports the long-term maintenance of adequate flows in the 15-Mile Reach, designated critical habitat for the federal listed endangered fish. Increasing the river flows in this reach of the Colorado River has been identified as critical to the recovery of the endangered fish. Importantly, these flow improvements have been achieved consistent with state water law.

System improvements to Grand Valley Project facilities and more efficient operations have allowed for average annual foregone diversions of more than 46,000 acre-feet as determined by Reclamation for the years 2002-2013, the most recent years for which data are available. Most of these foregone diversions have been directed to and have flowed through the 15-Mile Reach. Because of these efforts, combined with the administrative and operational opportunities for enhanced water management established by the Orchard Mesa Check Case, Colorado River flows in the Grand Valley have been greater and more consistent in recent years.

We encourage your favorable consideration of the D&C EP2 project.

Sincerely,

Andrew A. Mueller, General Manager

201 Centennial Street / PO Box 1120 • Glenwood Springs, CO 81602
(970) 945-8522 • (970) 945-8799 Fax
www.ColoradoRiverDistrict.org

March 10, 2019

Bureau of Reclamation
Financial Assistance Support Section
Attn: Mr. Darren Olson
P.O. Box 25007, MS 84-27814
Denver, CO 80225

Dear Mr. Olson,

RE: GVWUA and OMID WaterSMART Grant Application

American Rivers is the nation's leading river conservation organization. We are pleased to support the Grand Valley Water Users Association's (GVWUA) and Orchard Mesa Irrigation District's (OMID) application to the Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant program for the Roller Dam Electrical and Control Systems Upgrades Part 2 (D&C EP2) Project. This important project will provide improved water control and management and refinement, resiliency, and reliability of the electrical and control systems and assure the continued operations of the Roller Dam Facility and Canal Headworks.

The Roller Dam Rehabilitation Project was identified as a Basinwide "Top Priority" project in the Colorado River Basin Implementation Plan (BIP) prepared by the Colorado River Basin Roundtable as a part of Colorado's 2015 Water Plan. Five specific priority projects were identified during the GVWUA Roller Dam Rehabilitation Master Plan efforts, including the Electrical Upgrades projects. All of these projects are important for the upgrading and improved efficiency of Roller Dam and the GVWUA and OMID systems. These improvements in turn can help needed environmental benefits and flows for the Colorado River downstream of the dam.

The Project fits well with the Bureau of Reclamation's WaterSMART program by supporting water supply reliability, water savings, and improved water control and management. The electrical and control system upgrades are essential to complete the remaining priority projects. American Rivers strongly supports GVWUA efforts to rehabilitate the Roller Dam Facilities. The Roller Dam is an integral part of the Grand Valley irrigation system, Grand Valley Power Plant, and the 15-Mile Reach on the Colorado River that supports threatened and endangered fish. Projects like this that improve the overall condition of both irrigation and power infrastructure while also benefiting the Colorado River ecosystem benefit all of us.

We appreciate your consideration of this grant request. Please feel free to contact me if you have any questions.

Sincerely,

Ken Neubecker,
Colorado Projects Director
24 S Meadow View Ct.
Glenwood Springs, CO 81601
(970) 230-9300

Appendix C

Environmental Compliance Documentation

AMMENDMENT TO
MEMORANDUM OF AGREEMENT
AMONG
THE BUREAU OF RECLAMATION, WESTERN COLORADO AREA OFFICE,
THE GRAND VALLEY WATER USERS ASSOCIATION,
AND
THE COLORADO STATE HISTORIC PRESERVATION OFFICER
REGARDING
THE GRAND VALLEY DIVERSION DAM
ELECTRICAL AND CONTROL SYSTEMS UPGRADE PROJECT

WHEREAS, the Bureau of Reclamation (Reclamation), the Grand Valley Water Users Association (GVWUA), and the Colorado State Historic Preservation Office (SHPO) entered into a Memorandum of Agreement (MOA) for the electrical and control system upgrade to the Grand Valley Diversion Dam which was fully executed by all parties as of October 4, 2018 (see Attachment A); and

WHEREAS, GVWUA is also proposing to replace the headworks on the Grand Valley Diversion Dam in efforts to upgrade the in-use structure; and

WHEREAS, Reclamation has evaluated the headworks replacement for potential impacts and the additional project area has increased the Area of Potential Effect (see Attachment B for updated APE map); and

WHEREAS, Reclamation as the lead Federal agency has determined, in consultation with the Colorado State Historic Preservation Officer (SHPO), that the Grand Valley Diversion Dam (5ME.301) is listed on the National Register of Historic Places and the Government Highline Canal (5ME.4676.24) is eligible for listing on the NRHP under Criteria A and C, and that the headworks replacement project will result in an adverse effect to 5ME.301 and no adverse effect to 5ME.4676.24; and

WHEREAS, Reclamation has consulted with the Mesa County Commissioners, the Town of Palisade, and the Palisade Historical Society on the proposed undertakings, and they have all chosen not to participate in the consultation as a concurring party; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1), Reclamation has notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determinations providing the specified documentation, and the Council has chosen not to participate in the consultation pursuant to 36 CFR § 800.6(a)(1)(iii);

WHEREAS, pursuant to 36 CFR § 800.6(c)(7), the parties to the MOA desire to amend the MOA;

NOW, THEREFORE, the parties agree as follows:

I. The MOA shall be amended to replace Stipulation III in full with the following language:

A Rehabilitation Act Section 508 compliant copy of the Level II Documentation of 5ME.12482 (CCC Work Complex), the existing Level II Documentation of 5ME.4676.24 (Government Highline Canal), and the HAER documentation of 5ME.301 (Grand Valley Diversion Dam) will be placed on the Reclamation Western Colorado Area Office's cultural resource webpage. Copies of the documents will also be sent to the Palisade Historical Society to be retained and made available to the public. The SHPO shall receive notification once Reclamation has completed this step.

II. All other provisions of the MOA, are unchanged and shall remain in full force and effect.

SIGNATORIES:

Colorado State Historic Preservation Office

By: Holly K. Norton Date: 3/6/2019
~~for~~ Steve Turner, AIA, State Historic Preservation Officer

Bureau of Reclamation, Western Colorado Area Office

By: _____ Date: 1-24-19
Ed Warner, Area Manager

INVITED SIGNATORIES:

Grand Valley Water Users Association

By: Mark Harris Date: 1-24-19
Mark Harris, Manager

ATTACHMENT A - MOA

MEMORANDUM OF AGREEMENT
AMONG
THE BUREAU OF RECLAMATION, WESTERN COLORADO AREA OFFICE,
THE GRAND VALLEY WATER USERS ASSOCIATION,
AND
THE COLORADO STATE HISTORIC PRESERVATION OFFICER
REGARDING
THE GRAND VALLEY DIVERSION DAM
ELECTRICAL AND CONTROL SYSTEMS UPGRADE PROJECT

WHEREAS, the Bureau of Reclamation (Reclamation) and the Grand Valley Water Users Association (GVWUA) plan to implement electrical utility service modifications at the Grand Valley Diversion Dam (Project); and

WHEREAS, Reclamation plans to authorize GVWUA to implement the Project on federal facilities, thereby making the Project an undertaking subject to review under Section 106 of the National Historic Preservation Act (NHPA), 54 U.S.C. § 306108, and its implementing regulations, 36 CFR Part 800; and

WHEREAS, Reclamation has defined the undertaking's Area of Potential Effect (APE) as contained within Reclamation land adjacent to facilities associated with the Grand Valley Diversion Dam, as described in Attachment A; and

WHEREAS, Reclamation as the lead Federal agency has determined, in consultation with the Colorado State Historic Preservation Officer (SHPO), that the Grand Valley Diversion Dam (5ME.301) is listed on the National Register of Historic Places, and the CCC Work Complex (5ME.12482) is eligible for listing on the NRHP under Criteria A, B, and C, and that the Project will result in an adverse effect to 5ME.12482; and

WHEREAS, the GVWUA, as the sponsor of the Project, has participated in the consultation, and has been invited to sign the Memorandum of Agreement (MOA); and

WHEREAS, Reclamation has consulted with the Mesa County Commissioners, the Town of Palisade, and the Palisade Historical Society on the proposed undertaking, and they have all chosen not to participate in the consultation as a concurring party; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1), Reclamation has notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determination providing the specified documentation, and the Council has chosen not to participate in the consultation pursuant to 36 CFR § 800.6(a)(1)(iii);

NOW, THEREFORE, pursuant to Section 106 of the NHPA, Reclamation and the SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect on historic properties.

STIPULATIONS

Reclamation shall ensure that the following measures are carried out:

I. MITIGATION

Prior to any modification of the CCC Work Complex, Reclamation will ensure that the site (5ME.12482) shall be recorded in accordance with the guidance for Level II Documentation found in "Historic Resource Documentation, Standards for Level I, II, and III Documentation" (Office of Archaeology and Historic Preservation Publication 1595, March 2013). The documentation will be of archival quality, and will include a detailed narrative history, mapping of the property and photographic documentation of the portions of the historic property to be included in the project. Photographs will be black and white archival quality (4" x 6") prints. Features will be plotted on the maps with GPS waypoints and will be extensively described and indexed in the report. Representative design drawings will not be necessary for this property, as it is not significant for its design characteristics.

Stipulation I shall be satisfied prior to construction and/or any earth disturbances within the APE.

II. GENERAL REQUIREMENTS AND STANDARDS

Reclamation will submit a copy of the Level II Documentation to the SHPO within one (1) year of the execution of this MOA. The SHPO shall review and provide comments within thirty (30) calendar days of receipt. Once accepted by SHPO, SHPO shall receive a minimum of one archivally stable copy of the final recordation for its files and provide documentation of acceptance. The activities prescribed by the stipulations of this MOA shall be carried out by or under the direct supervision of a person or persons meeting, at minimum, the Secretary of the Interior Professional Qualifications Standards (48 FR 44738-39) (PQS) in the appropriate discipline. This does not preclude the use of properly supervised persons who do not meet the PQS.

III. INFORMATION ACCESSIBILITY

A Rehabilitation Act Section 508 compliant copy of the Level II Documentation and the existing HAER documentation on the Grand Valley Diversion Dam will be placed on the Reclamation Western Colorado Area Office's cultural resource webpage. Copies of the documents will also be sent to the Palisade Historical Society to be retained and made available to the public. The SHPO shall receive notification once Reclamation has completed this step.

IV. DURATION

This MOA will be null and void if its terms are not carried out within two (2) years from the date of its execution. Prior to such time, Reclamation may consult with the other signatories to reconsider the terms of the agreement. Unless terminated pursuant to Stipulation VII, below, this MOA will be in effect through Reclamation's implementation

of the stipulations of this MOA, and will terminate and have no further force or effect when Reclamation, in consultation with the SHPO, determines that the terms of the MOA have been fulfilled in a satisfactory manner.

V. POST-REVIEW DISCOVERIES

If potential historic properties are discovered or unanticipated effects on historic properties found, the GVWUA on behalf of Reclamation shall implement the discovery plan included as Attachment B of this MOA.

VI. MONITORING AND REPORTING

No later than June 30th of each year following the execution of this MOA until its stipulations are carried out, it expires, or is terminated, GVWUA on behalf of Reclamation shall provide all parties to this MOA a summary report detailing work carried out pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received in GVWUA's efforts to carry out the terms of this MOA.

The signatories may monitor activities pursuant to this MOA, and the Council will review such activities if so requested by a party to this MOA. Reclamation will cooperate with the signatories in carrying out their review and monitoring responsibilities.

VII. DISPUTE RESOLUTION

Should any signatory or concurring party to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, Reclamation shall consult with such party to resolve the objection. If Reclamation determines that such objection cannot be resolved, Reclamation will:

a. Forward all documentation relevant to this dispute, including Reclamation's proposed resolution, to the ACHP. The ACHP shall provide Reclamation with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, Reclamation shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. Reclamation will then proceed according to its final decision.

b. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, Reclamation may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, Reclamation shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA, and provide them and the ACHP with a copy of such written response.

c. Reclamation's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

VIII. AMENDMENTS

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

IX. TERMINATION

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other signatories to attempt to develop an amendment per Stipulation VI, above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated, and prior to work continuing on the undertaking, Reclamation must either (a) execute an MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. Reclamation shall notify the signatories as to the course of action it will pursue.

Execution of this MOA by GVWUA, Reclamation and SHPO and implementation of its terms evidence that Reclamation has taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

SIGNATORIES:

Colorado State Historic Preservation Office

By: Holly K. Norton for Date: 10/4/18
Steve Turner, AIA, State Historic Preservation Officer

Bureau of Reclamation, Western Colorado Area Office

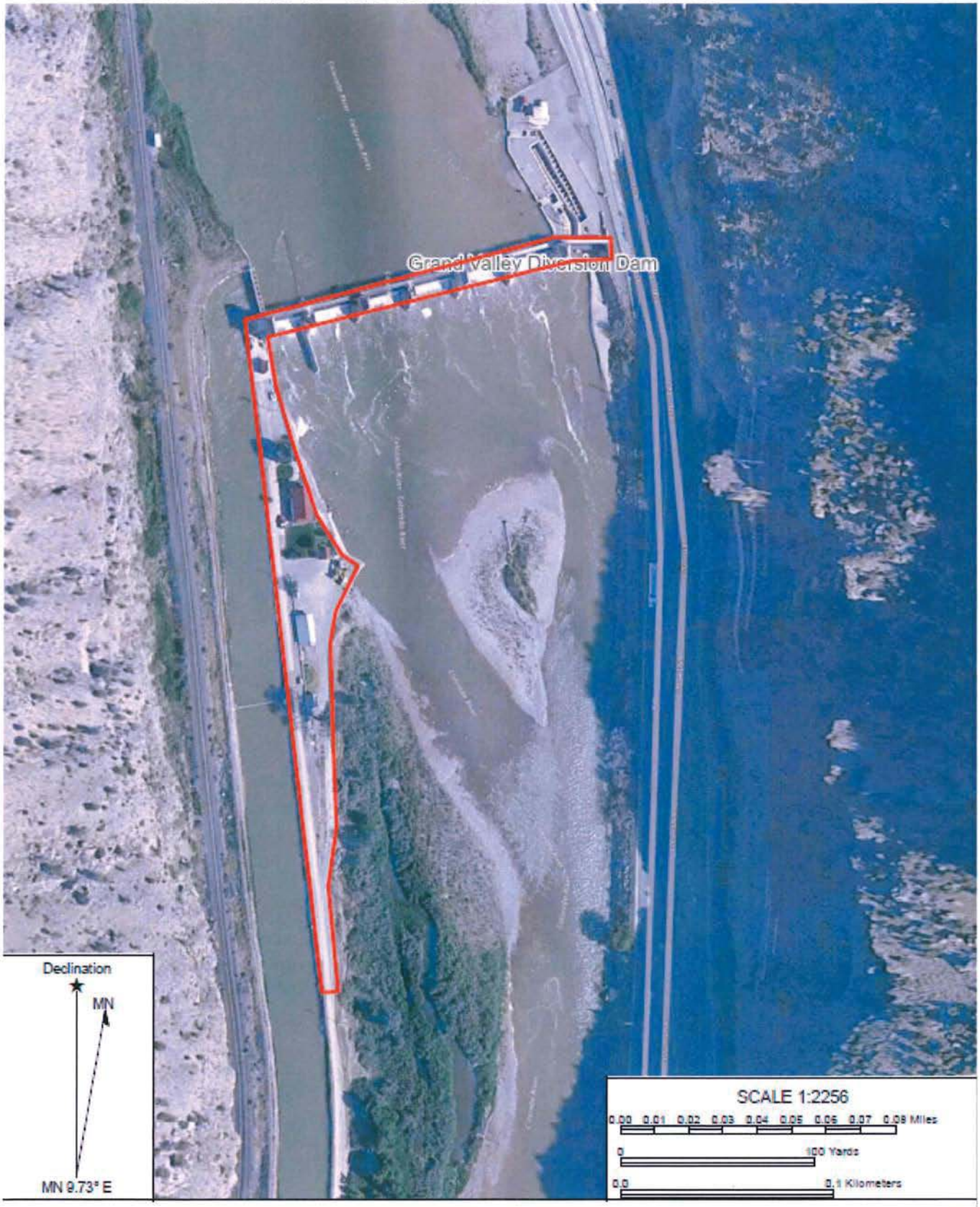
By: _____ Date: 10-02-18
Ed Warner, Area Manager

INVITED SIGNATORIES:

Grand Valley Water Users Association

By: _____ Date: 9/28/18
Mark Harris, Manager

ATTACHMENT A – AREA OF POTENTIAL EFFECT



Name: Satellite Image (Hybrid Street)
Date: 09/07/18

Location: Sec 013 T010S R098W CO 6th
Caption: Area of Potential Effect for the Roller Dam Electrical and Control Systems Upgrade Project

ATTACHMENT B – UNANTICIPATED DISCOVERY PLAN

PLAN AND PROCEDURES FOR THE UNANTICIPATED DISCOVERY OF CULTURAL RESOURCES

GRAND VALLEY DIVERSION DAM ELECTRICAL
AND CONTROL SYSTEMS UPGRADE PROJECT
GRAND VALLEY PROJECT,
MESA COUNTY, COLORADO

1. INTRODUCTION

The Grand Valley Water Users Association (GVWUA) plans to implement electrical utility service modifications at the Grand Valley Diversion Dam. The following Unanticipated Discovery Plan (UDP) outlines procedures to follow, in accordance with state and federal laws, if archaeological materials are discovered.

2. RECOGNIZING CULTURAL RESOURCES

A cultural resource discovery could be prehistoric or historic. Examples include, but are not limited to:

- An accumulation of shell, burned rocks, or other food related materials
- An area of charcoal or very dark stained soil with artifacts,
- Lithic tools or waste flakes (i.e. an arrowhead, or stone chips),
- Clusters of tin cans or bottles, logging or agricultural equipment that appears to be older than 50 years,
- Abandoned mining structures and features (i.e. mine shafts or adits, head frames, processing mills, or tailings and waste rock piles),
- Buried railroad tracks, decking, or other industrial materials.

When in doubt, assume the material is a cultural resource.

3. ON-SITE RESPONSIBILITIES

STEP 1: STOP WORK. If any GVWUA employee, contractor or subcontractor believes that he or she has uncovered a cultural resource at any point in the project, all work adjacent to the discovery must stop immediately. The discovery location should be secured at all times.

STEP 2: NOTIFY MONITOR. If there is an archaeological monitor for the project, notify that person. If there is a monitoring plan in place, the monitor will follow its provisions. If there is not an archaeological monitor, notify the project manager.

STEP 3: NOTIFY BUREAU OF RECLAMATION. Contact the Project Overseer at the Bureau of Reclamation:

Project Manager:	Reclamation Project Overseer:
Mark Harris	Jennifer Ward
970-242-5065	970-248-0651
mharris@gvwua.com	jward@usbr.gov

The Project Manager or the Reclamation Project Overseer will make all other calls and notifications.

If human remains are encountered, treat them with dignity and respect at all times. Do not take, or allow anyone to take, any photographs of human remains at any time. Cover the remains with a tarp or other materials (not soil or rocks) for temporary protection in place and to shield them from being photographed. Do not call 911 or speak with the media.

4. FURTHER CONTACTS AND CONSULTATION

A. Project Manager's Responsibilities:

- Protect Find: The GVWUA Project Manager is responsible for taking appropriate steps to protect the discovery site. All work will stop in an area adequate to provide for the total security, protection, and integrity of the resource. Vehicles, equipment, and unauthorized personnel will not be permitted to traverse the discovery site. Work in the immediate area will not resume until treatment of the discovery has been completed following provisions for treating archaeological/cultural material as set forth in this document.

- Direct Construction Elsewhere On-site: The GVWUA Project Manager may direct construction away from cultural resources to work in other areas prior to contacting the concerned parties.

- Contact CR Manager: If the Reclamation CR Program Manager has not yet been contacted, the Project Manager will do so.

- Contact Project Overseer: If the Project Overseer at the Bureau of Reclamation has not yet been contacted, the Project Manager will do so.

- Identify Find: The Project Manager will ensure that a qualified professional archaeologist examines the find to determine if it is archaeological.

    - If it is determined not archaeological, work may proceed with no further delay.

    - If it is determined to be archaeological, the Project Manager will continue with notification.

- If the find may be human remains or funerary objects, the Project Manager will ensure that a qualified physical anthropologist examines the find. If it is determined to be human remains, the procedure described in Section 5 will be followed.

B. Project Overseer's Responsibilities

- Notify SHPO: The Project Overseer will notify the Colorado State Historic Preservation Office (SHPO) within 48 hours of the discovery.

Colorado State Historic Preservation Office:
Mr. Steve Turner, AIA
State Historic Preservation Officer
History Colorado
1200 Broadway
Denver CO, 80203
(303)866-3355

C. Further Activities

- Archaeological discoveries will be documented as described in Section 6.
- Construction in the discovery area may resume as described in Section 7.

5. SPECIAL PROCEDURES FOR THE DISCOVERY OF HUMAN SKELETAL MATERIAL

Any human skeletal remains, regardless of antiquity or ethnic origin, will at all times be treated with dignity and respect, and no photographs will be taken.

The project is located entirely on federal lands, and the requirements under the Native American Graves Protection and Repatriation Act (NAGPRA) apply (43 CFR Part 10). For all discoveries, the kinds of objects considered and referred to as NAGPRA items as defined in 43 CFR 10.2 (d) include: human remains, funerary objects, sacred objects, and objects of cultural patrimony.

In the event that possible human skeletal remains are discovered, GVWUA will coordinate with the following contacts, in the following order:

1. Reclamation CR Manager
   970-385-6500

2. Mesa County Coroner
   (970) 256-6462

2. Colorado State Historic Preservation Office State Archaeologist

Holly Norton
(303) 866-2736

Until disposition is determined, if at all possible, discovered NAGPRA items will be left in situ. GVWUA will establish adequate measures to safeguard the site. If the remains are under imminent or anticipated threat of disturbance, and therefore the Reclamation CR Manager decides it is necessary to remove the NAGPRA items from the site, they will be held at a secure facility approved by the Reclamation CR Manager until a decision on final disposition is made. All items will be placed in containers made of natural materials (e.g. linen, cotton, new cardboard boxes) and each box will be placed on a shelf with nothing stacked upon it. NAGPRA items will only be recorded at a descriptive non-invasive level, and no destructive analysis of any kind will be conducted on the remains.

A. Further Activities:

When consultation and documentation activities are complete, construction in the discovery area may resume as described in Section 7.

6. DOCUMENTATION OF ARCHAEOLOGICAL MATERIALS

Archaeological deposits discovered during construction will be assumed eligible for inclusion in the National Register of Historic Places under Criterion D until a formal Determination of Eligibility is made.

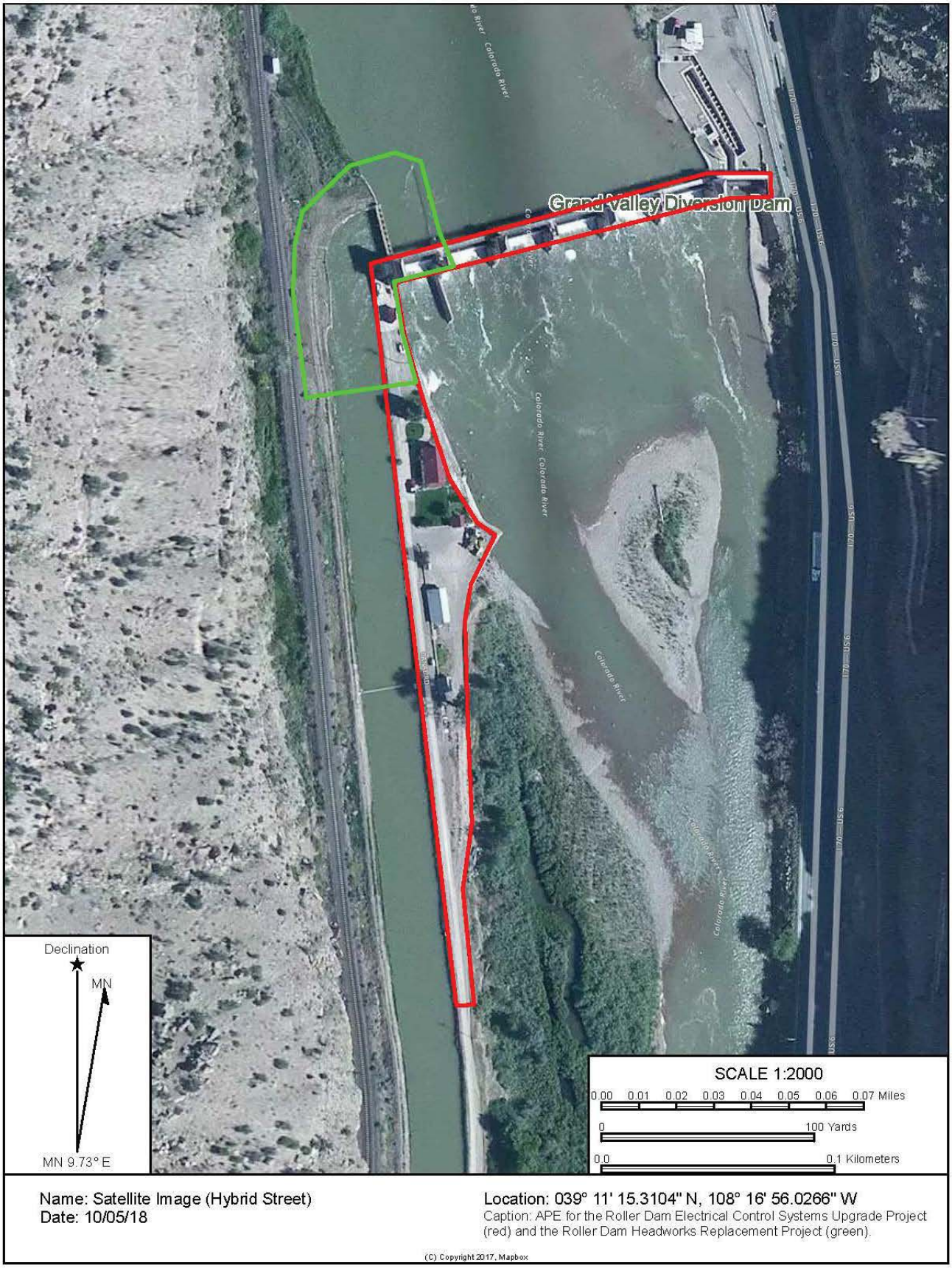
The Project Manager will ensure the proper documentation and assessment of any discovered cultural resources in cooperation with Reclamation, SHPO, affected tribes, and a contracted consultant (if any). All prehistoric and historic cultural material discovered during project construction will be recorded by a professional archaeologist in accordance with all state and federal laws.

7. PROCEEDING WITH CONSTRUCTION

Project construction outside the discovery location may continue while documentation and assessment of the cultural resources proceed. A professional archaeologist must determine the boundaries of the discovery location. In consultation with SHPO and affected tribes, the Reclamation CR Program Manager will determine the appropriate level of documentation and treatment of the resource.

Construction may continue at the discovery location only after the process outlined in this plan is followed and the Reclamation CR Program Manager determines that compliance with state and federal laws is complete.

ATTACHMENT B – AREA OF POTENTIAL EFFECT MAP



From: Ward, Jennifer <jward@usbr.gov>
Sent: Wednesday, March 13, 2019 2:47 PM
To: Angie Fowler
Cc: Mark Harris; Cindy Adams
Subject: Re: [EXTERNAL] FW: Amendment to MOA for signature - GHC Headworks Replacement

Hi Angie!
We are waiting on the concurrence from FWS. I believe that memo went over to them on or around February 20. Once we hear back from them, I can attach their letter to the CE and route it for signature.
Thanks,
Jenny

Appendix D

OMID Funding Letter of Commitment
CWCB Grant Information

Orchard Mesa Irrigation District

668 38 Road
Palisade, CO 81526

970-464-7885
FAX 970-464-5928

March 7, 2019

Bureau of Reclamation
Financial Assistance Support Section
Attn: Mr. Darren Olson
P.O. Box 25007, MS 84-27814
Denver, CO 80225

Dear Mr. Olson,

This letter is provided as part of the Grand Valley Water Users Association's (GVWUA) and Orchard Mesa Irrigation District's (OMID) application to the Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant program for the Roller Dam Electrical and Control Systems Upgrades Part 2 (D&C EP2) Project.

OMID is an irrigation district governed by the Colorado Irrigation District Law of 1921, C.R.S. §37-42-101, *et seq*. As such, OMID is governed by a Board of Directors. The OMID Board of Directors (Board) is fully supportive of OMID's and GVWUA's application to the Bureau of Reclamation for the D&C EP2 Project.

At the March 7, 2019, Board meeting, the Board approved a funding commitment to the D&C EP2 Project in the amount of $20,000. These funds are currently available for the D&C EP2 Project and there are no timing constraints on the availability of these funds and no contingencies for the use of these funds for the D&C EP2 Project.

If you require any additional information form the Board, please let me know.

Sincerely,

ORCHARD MESA IRRIGATION DISTRICT

By: _____
Melvin Rettig, President

ATTEST:

By: _____
Neil Jaquet, Secretary

STATE OF COLORADO

Department of Natural Resources

ORDER

Number: POGG1,PDAA,201900002509

Date: 12/11/18

Description:

Water Plan Grant AG GVWUA Roller Dam Upgrades Part 2

Effective Date: -

Expiration Date: -

*****IMPORTANT*****

The order number and line number must appear on all invoices, packing slips, cartons, and correspondence.

BILL TO

COLORADO WATER BOARD CONSERVATION
1313 SHERMAN STREET, ROOM 718
DENVER, CO 80203

BUYER

Buyer:

Email:

VENDOR

GRAND VALLEY WATER USERS ASSN
1147 24 RD
GRAND JUNCTION, CO 81505-9639

Contact: .

Phone: .

SHIP TO

COLORADO WATER BOARD CONSERVATION
1313 SHERMAN STREET, ROOM 718
DENVER, CO 80203

SHIPPING INSTRUCTIONS

Delivery/Install Date: -

FOB:

VENDOR INSTRUCTIONS

EXTENDED DESCRIPTION

Line Item	Commodity/Item Code	UOM	QTY	Unit Cost	Total Cost	MSDS Req.
1	G1000		0	0.00	$100,000.00	☐

Description: Water Plan Grant AG GVWUA Roller Dam Upgrades Part 2

Service From: 12/11/18 Service To: 12/11/23

TERMS AND CONDITIONS

https://www.colorado.gov/pacific/osc/small-dollar-grant-award-terms-conditions

DOCUMENT TOTAL = $100,000.00

Appendix E

Cost, Material and Equipment Information

MARCH 1, 2019

This Proposal Price is good for 30 days.

2811 Riverside Parkway
Grand Junction, CO 81501
(970) 242-6473 Fax (970) 241-7879

Proposal

Proposal Submitted To:

Grand Valley Water Users Association
Mark Harris

Work to be performed at:

GRAND VALLEY ROLLER DAM
PHASE II AUTOMATION UPGRADE
CAMEO CO.

This Proposal Consists of: Electrical work as per plans dated 10-31-18

This Proposal Also Includes: ALL WORK LISTED BELOW AS PER PLANS

1) Install new branch circuits in the Gate Houses as per plan.
2) Provide and install Manual Transfer Switch.
3) Demo existing branch feeder as shown.
4) Provide new lighting as per the fixture schedule.
5) Provide new disconnects for the Gate House Motors.
6) Provide and install all automation control cabinets.
7) Install all new control conduit and cabling as necessary.
8) Provide new DC Drives as specified.
9) SEE THE ATTACHED SCOPE OF WORK BY SCADA PARTNERS THAT IS INCLUDED IN THIS PROPOSAL.

This Proposal Does Not Include:

1) Fire Controls and Systems.
2) Concrete Coring and Cutting.

All material is guaranteed to be as specified, and the above work to be performed in accordance with the drawings and specifications submitted for above work and completed in a substantial workmanlike manner for the sum of:$337,331.00

THREE HUNDRED THIRTYSEVEN THOUSAND THREE HUNDRED THIRTYONE DOLLARS

With payments to be made as follows: **Progress Billing**

Any alteration or deviation from above specifications involving extra costs, will be executed only upon written orders, and will become an extra charge over and above the estimate.
All agreements are contingent upon strikes, accidents or delays beyond our control.

Respectfully Submitted by:
Barnes Electric Company
By: Chad Currie

ACCEPTANCE OF PROPOSAL

The above prices, specifications and conditions are satisfactory and are hereby accepted.
You are authorized to do the work as specified. Payment will be made as outlined above.

*Signature*_____ *Signature*_____ *Date*_____

This estimate applies only to the job described above and does not include additional materials or labor that may be required due to any unforeseen problems that arise once the job has begun.

We will charge 1.5% (18% annum) on accounts 30 days past due.
"Contractor is entitled to recover from purchaser all costs of collection for any amounts owed under this contract. Costs collectable include reasonable attorney's fees."

Grand Valley Water Users Association

Grand Valley Roller Damn Control System Upgrade
Mesa County, CO

SCADA Integration Partners, LLC

Quote Number: 020-1702

February 26, 2019

Mark Harris
Grand Valley Water Users Association
1147 24 Road
Grand Junction, CO 81505

Grand Valley Roller Damn Control System Upgrade

Mr. Harris,

Thank you for giving SCADA Integration Partners, LLC the opportunity to provide a proposal for this project. This proposal reflects the cost to upgrade the Grand Valley Roller Damn Control System.

I hope you find this offering favorable and if there are any questions, comments, or concerns, please contact me at (970) 639-0049.

Sincerely,

Michael Ligrani
SCADA Integration Partners, LLC

1. Existing Equipment and Operation

1.1. Main Control Cabinet

1.1.1. SCADAPack RTU

1.1.1.1. Existing control cabinet houses a single SCADAPack RTU with ISAGraf firmware. All existing transmitters are terminated on the RTU's physical I/O.

1.1.2. Maple Systems HMI

1.1.2.1. On the exterior of the existing control cabinet is mounted a 520C Series Maple Systems HMI. This HMI is used to monitor live transmitter data.

1.2. Instrumentation

1.2.1. Canal

1.2.1.1. Level - Two Magnetrol ultrasonic level transmitters monitor the canal water level. From the devices a pair of twisted shielded cable transmits an analog 4-20 mA signal back to the RTU.

1.2.1.2. Flow – One SonTek flow transmitter monitors the velocity of the canal water. From the device a pair of twisted shielded cable transmits an analog 4-20 mA signal back to the RTU.

1.2.2. River

1.2.2.1. Level - One Magnetrol ultrasonic level transmitter monitors the river water level. From the device a pair of twisted shield cable transmits an analog 4-20 mA signal back to the RTU.

1.3. Roller Motor

1.3.1. The motion of each roller is powered by a Westinghouse 220 Volt DC Motor. Power for these motors is supplied by a DC Generator located in the Main Control Room. On/Off is controlled manually by the operator with a blade style disconnect switch. Travel direction is controlled manually by the operator with a rotary drum.

1.4. SCADA Communications

1.4.1. Data is transmitted from the existing SCADAPack RTU to the existing SCADA System (ClearSCADA) via licensed band serial radio.

1.5. Operation

1.5.1. Currently, all operation of this facility is done manually. To raise or lower a roller gate the operator must first start the DC generator housed in the main control room. Once the DC buss is charged the operator then walks across the catwalk to the desired roller. The operator then energizes the motor circuit by manually closing a blade style disconnect switch. Travel direction is then controlled by rotating a drum style rotary switch clockwise or counterclockwise.

2. Upgrades and New Operation Methodology

2.1. Main Control Cabinet

2.1.1. A new main control cabinet will be designed and built to replace the existing cabinet. The cabinet will be a NEMA rated wall-mounted enclosure. This cabinet will include at a minimum the following:

2.1.1.1. Siemens S7-1500 Series PLC

2.1.1.2. Spare Programmed S7-1500 PLC with Modules

2.1.1.3. SIMATIC Comfort Series 12"Full-Color HMI

2.1.1.4. 120 VAC - 24 VDC Power Supply with Disconnect

2.1.1.5. LED Cabinet Light

2.1.1.6. Thermostat and Enclosure Heater

2.1.1.7. Labeled and Color-Coded Fuse Blocks, Terminal Blocks, and Relays

2.1.1.8. Labeled and Color-Coded Wiring

2.1.1.9. Panel Drawings, Instrument Loop Diagrams, I/O Schedule

2.1.1.10. Front of Door LED Indicator Lights to display VFD and Gate Selection

2.1.1.11. Ice Cube Style Relays for Manual Gate Selection

2.1.1.12. Front of Door Toggle Switch for Manual Mode Operation

2.1.1.13. 5 Port POE Switch

2.1.1.14. Sierra Wireless 4G LTE Cellular Gateway with Polyphaser and Coax

2.1.1.15. Grounding Bar

2.2. VFD Enclosure

2.2.1. A separate vented enclosure will be mounted next to the main PLC control cabinet to house the two VFDs. The cabinet will be a NEMA rated wall-mounted enclosure. This enclosure will at a minimum include the following:

- 2.2.1.1. Two ABB 10 HP DC Drives.
- 2.2.1.2. Thermostat and Cooling Fan
- 2.2.1.3. Filtered Venting
- 2.2.1.4. Main Power Disconnect and Fusing
- 2.2.1.5. Labeled and Color-Coded Wiring
- 2.2.1.6. Selectable Contactors for Each Roller
- 2.2.1.7. Front of Door Mounted Toggle Switch for Drive Selection
- 2.2.1.8. Front of Panel Remote ABB Display for Monitoring and Speed Input

2.3. Remote I/O Panel for Each Gate House

2.3.1. Two SIMATIC KTP700F 7" Mobile HMI with Communication Cable

2.3.2. NEMA Rated Enclosure Wall-mounted

- 2.3.2.1. Siemens SIMATIC Connection Box for Mobile Panels
- 2.3.2.2. 120 VAC - 24 VDC Power Supply with Disconnect
- 2.3.2.3. SIMATIC Wall Holder for Mobile HMI
- 2.3.2.4. SIMATIC ET 200SP Profinet Interface Card
- 2.3.2.5. SIMATIC ET 200SP Digital Input Module
- 2.3.2.6. SIMATIC ET 200SP Digital Output Module
- 2.3.2.7. SIMATIC ET 200SP Analog Input Module
- 2.3.2.8. SIMATIC ET 200SP Base Unit
- 2.3.2.9. Remote RJ-45 Connector for Inside Gate House
- 2.3.2.10. Remote RJ-45 Connector for Outside Gate House
- 2.3.2.11. 5 Port Ethernet Switch
- 2.3.2.12. Labeled and Color-Coded Fuse Blocks, Terminal Blocks, and Relays

2.4. New Instrumentation

2.4.1. River

- 2.4.1.1. Level – One additional Magnetrol ultrasonic level transmitter will be added in front of the headgate. A pair of twisted shielded cable will transmit the analog 4-20 mA signal back to the PLC.

2.4.2. Roller Position

2.4.2.1. The combination of a Hohner encoder and a Stromag rotary limit switch will be attached to each motor shaft to monitor roller gate position. This analog signal will be brought back to the Remote I/O enclosure via twisted shielded pair cable.

2.5. Roller Motor

2.5.1. Forward and reverse control will be performed by one of two ABB 10 HP DC Drives housed in the main control room. The operator shall preselect the drive to perform the duty by closing its corresponding set of contacts.

2.6. SCADA Communications

2.6.1. Existing serial radio communications will be kept in service to serve as a secondary means of communication.

2.6.2. A Sierra Wireless LTE gateway with coaxial cable, polyphaser, and 15dB omnidirectional antenna will be installed and serve as the primary data backhaul network.

2.7. Operation

2.7.1. The operator will walk out across the catwalk to the roller gate they wish to adjust. The operator will then plug the SIMATIC Mobile HMI into the RJ-45 connector for that gate. When the system senses the Mobile HMI has been plugged in it will close the main contactor for that gate. The operator will enter a travel speed setpoint into the Mobile HMI. The operator will then select one of two push buttons to initiate travel of the roller in either a "UP" or "Down" direction. When the roller gate has traveled to the desired setting the operator will unplug the Mobile HMI, and the main contactor will then open.

2.8. Headgate Control

2.8.1. Although not part of this project. This system will be designed to allow for future addition of a stand-alone head gate controller.

3. Project Execution

3.1. Design, Equipment Specification, and Documentation

3.1.1. Standard documentation will be generated to aid in the equipment specification, integration, and construction process. A complete set of documentation will be

submitted to the owner prior to construction for review. This documentation will include at a minimum:

3.1.1.1. I/O Diagrams

3.1.1.2. Panel Design Drawings

3.1.1.3. Instrument Loop Diagrams

3.1.1.4. Cause and Effect Matrix

3.1.1.5. Cable Schedules

3.1.1.6. HMI Screen Examples

3.1.1.7. Operators Manual

3.2. Panel Assembly

3.2.1. Panels will be assembled and shop-tested for Main PLC, Remote I/O, and VFDs.

3.3. Programming

3.3.1. PLC and HMI programming will be developed and tested for the PLC and HMI. Programming will include a required function from customer. Code will be properly commented to insure easy future troubleshooting.

3.4. Decommissioning

3.4.1. Old equipment that will no longer be in service will be decommissioned. This include at a minimum:

3.4.1.1. Roller Gate Motor Blade Style Disconnect Switch

3.4.1.2. Roller Gate Motor Rotary Drum Style Switches

3.4.1.3. Old Conduit and Wiring

3.4.1.4. DC Generator

3.5. Construction

3.5.1. Two Remote I/O enclosures will be wall-mounted in each gatehouse

3.5.2. Main PLC enclosure will be wall-mounted inside the main control room

3.5.3. VFD enclosure will be wall-mounted inside the main control room

3.5.4. Power to VFDs

3.5.5. Power to Main PLC Cabinet

3.5.6. Mount Omni Antenna to the exterior of Main Control Room

3.5.7. Mount and run cable conduit for New River Level Transmitter.

3.5.8. Run coax cable from Omni Antenna to Main PLC Cabinet

3.5.9. Run rigid conduit from Main Control Room to Each Gatehouse for low voltage cable and ethernet cable.

3.5.10. Run rigid conduit from Main Control Room to Each Gatehouse for 120 VAC power.

3.5.11. Terminate 120 VAC on each Remote I/O enclosure.

3.5.12. Mount Hohner motor shaft position sensor, chain, and pully.

3.5.13. Terminate Hohner position sensor cabling in Remote I/O enclosure.

3.6. SCADA System Integration

3.6.1. Services of a qualified integrator will be provided to assist with integrating site data into the customer's existing SCADA System.

3.7. Commissioning

3.7.1. Services of a qualified PLC Programmer and Electrician will be provided to perform and document any needed onsite changes during commissioning.

3.7.2. Program and hardware system functionality will be tested with the customer's representative.

3.7.3. Instrument loop diagrams and other testing documentation will be completed with customer's approval to serve as witness testing.

3.8. Closeout and Training

3.8.1. Services of a qualified PLC Programmer will be provided to train the customer on program functionality.

3.8.2. An Operators Manual will be provided as well as operator training.

3.8.3. Provide final as-built documentation package to the customer.

4. Invoicing & Payment

4.1. An invoice will be generated weekly against issued Purchase Order. Payment terms are 30 Days from date of invoice. Taxes will be applied as required by state and local governments. If your corporation is tax exempt, please submit the tax-exempt certificate with the purchase order.

Appendix A

SCADA Integration Partners, LLC

Standard Rate Sheet

General Scope of Work:

PLC Programming, HMI Programming, Loop Checks, SCADA Programming, DCS Programming, Cause, and Effect Matrix Generation, Troubleshooting, Device Integration, Control Panel Support, On-Site Startup Commissioning, Remote System Support, Customer Training

Rates:

Classification	Cost
Automation Engineer Rate	$100 per hr.
Traveling Rate	$70 per hr.
Mileage	$0.80/mi
Meal Expense	$50 Per Day
Hotel	Receipt + 6%

Travel Expenses:

Meal expenses are invoiced at the flat daily rate.

Hotels billed at cost + 6%. Hampton, Holiday Inn Express or similar hotels will be used when possible.

Materials:

Material Purchases are invoiced at cost plus 15%.

Hourly rates do not include consumable materials.

Tools & Equipment:

Special test equipment that may be required will be rented and billed at cost.

Invoicing & Payment

Invoices will be generated within seven days and are payable Net 30.