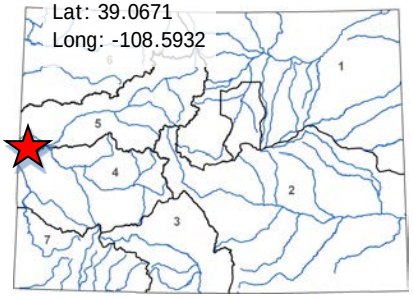
COLORADO
Colorado Water Conservation Board

Water Plan Grant

Pumpline Replacement
Redlands Water and Power Company
November 2019 Board Meeting



LOCATION	
County/Counties:	Mesa
Drainage Basin:	Gunnison

DETAILS	
Total Project Cost:	$450,279
Water Plan Grant Request:	$125,000
Recommended Amount:	$0
Other CWCB Funding:	$125,000 WSRF
Other Funding Amount:	$0
Applicant Match:	$200,279
Project Type(s): Construction	
Project Category(Categories): Storage & Supply	
Measurable Result: N/A	

Redlands Water and Power Company (Company) is an irrigation water and power provider located between Grand Junction and Fruita, Colorado in an area known as the Redlands, which is bordered to the south by the Colorado National Monument. The Company, established in 1905, diverts about 610,000 acre-feet of water from the Gunnison River annually to produce power and serve approximately 1,100 shareholders on roughly 2,000 acres of agricultural and residential land. The majority of the water diverted is used to produce power within the Company's hydroelectric facility. Non-consumptive power water is returned to the Colorado River. Approximately 60 cfs is utilized for irrigation purposes for use on residential lawns and gardens and agriculture.

The proposed project will replace sections of the existing pumpline with 100 feet of 48-inch steel pipe, and 900 feet of 48-inch high density polyethylene (HDPE) pipe. The project will also include a parallel 12-inch HDPE pipeline with turnouts for users that receive water directly from the pumpline. The modernized water delivery (pumpline) system that will provide long-term irrigation water delivery reliability and security for 8,685 residents/farmers living on the Redlands bench lands.

The Company received approval for a $125,000 WSRF grant (POGG1 2019-2040) at the March 2018 board meeting for this project.

Funding Recommendation: At this time, staff is not recommending funding for this request as the project did not meet the measurable results objectives of the Water Plan grant program. Staff is working with the Company on a scope of work that will better align with the goals of the program and will potentially bring a revised project to the Board at the May 2020 board meeting.

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Colorado Water Conservation Board

Water Plan Grant Application

Instructions

To receive funding for a Water Plan Grant, applicant must demonstrate how the project, activity, or process (collectively referred to as "project") funded by the CWCB will help meet the measurable objectives and critical actions in the Water Plan. Grant guidelines are available on the CWCB website.

If you have questions, please contact CWCB at (303) 866-3441 or email the following staff to assist you with applications in the following areas:

Water Storage and Supply Projects	Anna.Mauss@state.co.us
Conservation, Land Use Planning	Kevin.Reidy@state.co.us
Engagement & Innovation Activities	Ben.Wade@state.co.us
Agricultural Projects	Alexander.Funk@state.co.us
Environmental & Recreation Projects	Chris.Sturm@state.co.us

FINAL SUBMISSION: Submit all application materials in one email to *waterplan.grants@state.co.us* in the original file formats [Application (word); Statement of Work (word); Budget/Schedule (excel)]. Please do not combine documents. In the subject line, please include the funding category and name of the project.

Water Project Summary

Name of Applicant	Redlands Water and Power Company (RWPC)
Name of Water Project	RWPC Pumpline Replacement Project (The Project)

CWP Grant Request Amount	$125,000
Other Funding Sources – WSRF Basin Account	$75,000
Other Funding Sources – WSRF Statewide Account	$50,000
Applicant Funding Contribution	$200,279
Total Project Cost	$450,279

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Applicant & Grantee Information
Name of Grantee(s): Redlands Water and Power Company
Mailing Address: 2216 South Broadway Grand Junction, CO 81507
FEIN: 84-0301010
Organization Contact: Kevin Jones
Position/Title: Superintendent
Email: redlandswp@fastmail.com
Phone: (970) 243-2173
Grant Management Contact: Nick Emmendorfer
Position/Title: Project Engineer / Project Manager
Email: nemmendorfer@jub.com
Phone: (970) 208-8508
Name of Applicant (if different than grantee): Same as grantee
Mailing Address: N/A
Position/Title: N/A
Email: N/A
Phone: N/A

Description of Grantee/Applicant
Provide a brief description of the grantee's organization (100 words or less).
The Redlands Water and Power Company (RWPC) is a small irrigation and power provider located between Grand Junction and Fruita, Colorado in an area known as the Redlands, which is bordered to the south by the Colorado National Monument. RWPC, established in 1905, diverts about 610,000 ac-ft of water (flowrates between 750-850 cfs) from the Gunnison River each year to produce power and serve approximately 1,100 shareholders on roughly 1,966 acres of agricultural and residential land in the Redlands area. The majority of the water diverted is used to produce power within RWPC's hydroelectric facility; non-consumptive power water is returned to the Colorado River. Approximately 60 cfs is utilized for irrigation purposes for use on residential lawns and gardens and agriculture.

Type of Eligible Entity (check one)	
	Public (Government): Municipalities, enterprises, counties, and State of Colorado agencies. Federal agencies are encouraged to work with local entities. Federal agencies are eligible, but only if they can make a compelling case for why a local partner cannot be the grant recipient.
	Public (Districts): Authorities, Title 32/special districts (conservancy, conservation, and irrigation districts), and water activity enterprises.
X	**Private Incorporated:** Mutual ditch companies, homeowners associations, corporations.
	Private Individuals, Partnerships, and Sole Proprietors: Private parties may be eligible for funding.
	Non-governmental organizations (NGO): Organization that is not part of the government and is non-profit in nature.
	Covered Entity: As defined in Section 37-60-126 Colorado Revised Statutes.

Type of Water Project (check all that apply)	
	Study
X	Construction
	Identified Projects and Processes (IPP)
	Other

Category of Water Project (check the primary category that applies and include relevant tasks)		
X	Water Storage - Projects that facilitate the development of additional storage, artificial aquifer recharge, and dredging existing reservoirs to restore the reservoirs' full decreed capacity and Multi-beneficial projects and those projects identified in basin implementation plans to address the water supply and demand gap. *Applicable Exhibit A Task(s):* **Tasks 1, 2, and 3**	
	Conservation and Land Use Planning - Activities and projects that implement long-term strategies for conservation, land use, and drought planning. *Applicable Exhibit A Task(s):*	
	Engagement & Innovation - Activities and projects that support water education, outreach, and innovation efforts. Please fill out the Supplemental Application on the website. *Applicable Exhibit A Task(s):*	
	Agricultural - Projects that provide technical assistance and improve agricultural efficiency. *Applicable Exhibit A Task(s):*	
	Environmental & Recreation - Projects that promote watershed health, environmental health, and recreation. *Applicable Exhibit A Task(s):*	
	Other	Explain:

Location of Water Project

Please provide the general county and coordinates of the proposed project below in **decimal degrees**. The Applicant shall also provide, in Exhibit C, a site map if applicable.

County/Counties	Mesa County
Latitude	39.0671 N
Longitude	108.5932 W

Water Project Overview

Please provide a summary of the proposed water project (200 words or less). Include a description of the project and what the CWP Grant funding will be used for specifically (e.g., studies, permitting process, construction). Provide a description of the water supply source to be utilized or the water body affected by the project, where applicable. Include details such as acres under irrigation, types of crops irrigated, number of residential and commercial taps, length of ditch improvements, length of pipe installed, and area of habitat improvements, where applicable. If this project addresses multiple purposes or spans multiple basins, please explain.
The Applicant shall also provide, in Exhibit A, a detailed Statement of Work, Budget, Other Funding Sources/Amounts and Schedule.

In order to continue to pump irrigation water to the bench lands high above the Colorado and Gunnison Rivers, RWPC must replace their existing pumpline, which provides irrigation water for residential lawns and gardens, orchards, vineyards, alfalfa fields, and pasture grass. The Project is phase one of a much larger project that will modernize RWPC's entire Pump Station No. 1 (originally constructed in 1917). RWPC recently completed a feasibility study in June 2019, which identifies the proposed pumpline replacement as the highest priority phase of the Pump Station No. 1 rehabilitation. Originally installed in 1944, significant maintenance by RWPC has extended the life of the pumpline over the past 70 years. In 2007, approximately 525 feet of the upper end of the pumpline was replaced with new 48-inch steel pipe. After years of patching caused the pipe to become too thin to repair, RWPC completely replaced sections of the pumpline to avoid loss of irrigation water for the entire community, including churches, schools, parks, and a city-owned golf course. Sections under Highway 340 (Broadway) were also replaced in 2007. The pumpline continues to deteriorate due to age, corrosion, and rust, and RWPC has expended countless man hours and equipment patching up leaking sections of the pumpline in order to continue delivering water to shareholders.

Image 1 – RWPC Pump Station No. 1

The Project will replace the pre-2007 sections of the existing pumpline with 100 feet of new 48-inch steel pipe, and 900 feet of 48-inch HDPE pipe. The entire Project is within RWPC property with portions of the pumpline (a 900-foot section) to be installed beneath a dirt maintenance road owned by RWPC. The Project will also include a parallel 12-inch HDPE pipeline with turnouts for users that receive water directly from the pumpline. The parallel line will prevent the systemwide shutdowns that currently occur when unplanned/emergency maintenance is required on the pumpline turnouts. For a map outlining the project location, see *Attachment A*.

CWP Grant Funding: Engineering – $30,000; Project Construction – $80,000; Construction Management – $15,000.

RWPC diverts 750-850 cfs of water from the Gunnison Basin approximately 2.4 miles upstream of the confluence with the Colorado River. Approximately 60 to 70 cfs is used for irrigation water, a small percentage of which is used to irrigate lowland farms prior to Pump Station No. 1. Pump Station No. 1 pumps the remaining irrigation water to the bench lands of the Redlands area. The total system

provides water to 1,966 acres through approximately 550 turnouts. The remaining water (approximately 690 cfs), used for generating power, is returned to the Colorado River. RWPC Water rights are as follows:

Appropriation Dates	Net Absolute	Decreed Uses
7/31/1905	670	Irrigation, Commercial
6/26/1941	80	Irrigation, Commercial, Domestic, Stock
10/1/1994	100	Power Generation

Measurable Results

To catalog measurable results achieved with the CWP Grant funds, please provide any of the following values as applicable:

N/A	New Storage Created (acre-feet)	
N/A	New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Nonconsumptive	
N/A	Existing Storage Preserved or Enhanced (acre-feet)	
N/A	Length of Stream Restored or Protected (linear feet)	
N/A	Efficiency Savings (indicate acre-feet/year OR dollars/year)	
N/A	Area of Restored or Preserved Habitat (acres)	
N/A	Quantity of Water Shared through Alternative Transfer Mechanisms	
N/A	Number of Coloradans Impacted by Incorporating Water-Saving Actions into Land Use Planning	
8,685 (Redlands, CO)	Number of Coloradans Impacted by Engagement Activity	
Irrigation water reliability and security for the Redlands community.	Other	Explain: The number one measurable result achieved for the Project will be reliable and resilient irrigation water delivery infrastructure, serving the agricultural and residential acres on the bench lands for the Redlands community in Grand Junction, Colorado. A major failure of the pumpline system would result in immediate water loss for thousands of residents. Further, this pumpline project is phase 1 of a larger Pump Station No. 1 rehabilitation and is the beginning of a process to rehabilitate, improve, and modernize the RWPC infrastructure, which controls 670 cfs of a 1905 appropriation at the lower end of the Gunnison River basin. Loss of the infrastructure necessary to exercise this water right would have far-reaching negative consequences not only to the Gunnison River basin, but to the entire state of Colorado and the larger Colorado River basin.

Water Project Justification

Provide a description of how this water project supports the goals of Colorado's Water Plan, the most recent Statewide Water Supply Initiative, and the applicable Roundtable Basin Implementation Plan and Education Action Plan. The Applicant is required to reference specific needs, goals, themes, or Identified Projects and Processes (IPPs), including citations (e.g. document, chapters, sections, or page numbers).

The proposed water project shall be evaluated based upon how well the proposal conforms to Colorado's Water Plan Framework for State of Colorado Support for a Water Project (CWP, Section 9.4, pp. 9-43 to 9-44;)

Colorado's Water Plan

The Project supports the following Colorado's Water Plan goal (Section 10.3: Critical Goals and Actions) in the following ways:

A. Supply-Demand Gap

- *Meet Colorado's Water Gaps*
  - The Project helps to meet a Colorado water gap through improvement and rehabilitation of critical supply infrastructure. The proposed pumpline replacement will be the first of many phases that will restore RWPC Pump Station No.1 infrastructure that is critical to supplying irrigation water for the Redlands community of Grand Junction, Colorado. The pump station that serves this area was constructed in 1917. This aging infrastructure risks failure, and it is RWPC's top priority to modernize its pumping infrastructure to ensure the long-term reliability and security of their system. This pumpline project is a first step and part of much larger and overarching infrastructure rehabilitation project that the RWPC board and staff are actively engaged in exploring. The goal of the RWPC is to modernize and improve their infrastructure, and in doing so, seek opportunities to partner with other organizations and stakeholders on the Gunnison River to find areas of multiple benefit for the shareholders, environmental interests such as endangered fish concerns, recreational uses, and more importantly, the continued generation of clean, renewable hydro-electric power. Critical to compact compliance issues, this project is helping to provide resiliency to a large non-consumptive water right that calls significant water to the Grand Valley and subsequently to the state line of Colorado.

- *Protect and Develop Compact Entitlements and Manage Risks*
  - The Project is integrally tied to the non-consumptive (power) portion of the RWPC water right. Replacing the pumpline and completing future phases that will replace Pump Station No. 1 and other related infrastructure will secure this water right and create water reliability and security for Redlands, allowing greater amounts of water to be returned to the Colorado River. The non-consumptive use of water is important to avoiding a Colorado River Compact deficit. Additionally, the power right and the associated power plant owned and operated by RWPC could someday be an important part of a Gunnison basin plan to address a potential compact deficit. It is imperative to the state of Colorado that the irrigation right utilized and valued by the shareholders of RWPC continues to be delivered so that the value of maintaining the power right can continue alongside the irrigation right.

Gunnison Basin Implementation Plan

The proposed Redlands Pumpline Replacement Project is found on Page 8, Table 7, Item 25, of the Gunnison Basin Implementation Plan, called "Redlands Pump Modernization and Hydropower Optimization Project." This Project supports basin goals numbers 1, 3, 5, 7, and 8 (Page 28) in the following ways:

Goal 1 (Primary Basin Goal) – Protect existing water uses in the Gunnison Basin

- To maintain existing irrigation water uses, it is important that RWPC continues beneficial use of its historical water rights. The Project will help to fulfill this goal by replacing aging infrastructure. This Project is the first phase to modernize RWPC's Pump Station No. 1 and its related infrastructure. This includes installing SCADA technology and flow meters to turnouts to help monitor and document water use.

Image 2 – Pump Station No.1 in foreground and pumpline in background

Goal 3 – Improve agricultural water supplies to reduce shortages

- Replacing the RWPC pumpline will begin to reduce the risk of irrigation water shortages or water delivery failure.

Goal 5 – Quantify and protect environmental and recreational water uses

- RWPC owns a senior right on the Gunnison River and is the only major diversion downstream of Delta, Colorado. Since RWPC is near the lower end of the river, this water right is critical to maintaining flows in the Gunnison River, which is important for the recovery of the endangered fish of the Colorado River Basin. Replacing the existing pumpline is the first phase of a line of projects that will create water reliability and security for Redlands and protect RWPC's water rights.

Goal 7 – Describe and encourage the beneficial relationship between agricultural and environmental recreational water uses

- RWPC works cooperatively with the U.S. Fish and Wildlife Service to maintain a fish passage and fish screen for endangered fish. Improved water delivery infrastructure will protect existing water rights and continue to assist in this relationship.

Goal 8 – Restore, maintain, and modernize critical water infrastructure, including hydropower

- The Project will fulfill this goal by installing new, modernized pumpline infrastructure that is critical to serving the Redlands irrigation water users. Water is pumped using electricity generated by RWPC's hydroelectric facility.

Statewide Water Supply Initiative (SWSI)

The Project supports SWSI goals, found under Section 8 – Recommendations of the SWSI 2010, in the following ways:

- *Actively encourage projects to address multiple purposes, including agricultural, recreational, risk management, and compact compliance needs*
  - The Project addresses agricultural, recreational, and risk management needs, and potentially assists in long-term compact compliance. The water rights maintained by RWPC are important to supplying (pumping) irrigation water to the bench lands in the Redlands area. These water rights and the nonconsumptive (power) water rights used in the hydroelectric facility help maintain flows that support recreational water users, including hiking and white water rafting on the stretch of river between Delta and Grand Junction, as well as the Colorado River immediately downstream of Grand Junction. Further, the tailrace from the power plant runs through a recreational and wildlife area and provides aesthetic and habitat resources to the community. Due to the age and condition of the pumpline, risk of failure is high, requiring RWPC to develop projects that will provide water reliability and security.
  - It is difficult to qualify and/or quantify the importance of the RWPC water rights to Colorado River compact compliance. However, if the RWPC water rights did not exist, significant amounts of water would not be called to the lower reaches of the basin to be used for non-consumptive purposes.
  - RWPC water rights also ensure the recovery of the endangered fish of the Colorado River Basin through its non-consumptive water use. After power generation, more than 600 cfs is returned to the Colorado River.

- *Identify and utilize existing and new funding opportunities to assist in implementing projects and methods to meet Colorado's nonconsumptive water supply needs*
  - The Project will rely on both CWCB CWP Funds and WSRF Funds to complete the proposed pumpline replacement. Additionally, RWPC is currently exploring utilizing USDA (PL-566) funds for future infrastructure improvements. This funding source has not been recently utilized to any great extent within the state of Colorado and has the potential to be an impactful source of federal grant funds.

- *Develop and support risk management strategies so that Colorado can fully use its compact and decree entitlements to best balance Colorado's diverse water needs*
  - The Project addresses strategies to support Colorado's diverse water needs by protecting Gunnison River water rights that are necessary to avoiding a Colorado River compact deficit.

Additionally, the water rights owned by RWPC combine both consumptive and non-consumptive rights and hydro-electric generation.

RWPC Pump Station No. 1 Replacement Feasibility Study

The Project is identified as the highest priority in RWPC's Pump Station No. 1 Replacement Feasibility Study completed in June 2019, on Page 2 of the Executive Summary; and pumpline replacement details are found on Pages 5-7.

A cost estimate for the pumpline replacement can be found in *Attachment B*, including the applicable feasibility study pages mentioned above. RWPC's full Pump Station No. 1 Replacement Feasibility Study is available upon request.

Related Studies

Please provide a list of any related studies, including if the water project is complementary to or assists in the implementation of other CWCB programs.

RWPC recently completed their Pump Station No. 1 Replacement Feasibility Study in June 2019, which was done to investigate the feasibility of the replacement or rehabilitation of Pump Station No. 1. This feasibility study identifies the proposed Project as the highest priority, known as phase one of the overall Pump Station No. 1 Replacement. This study was funded by WSRF funds, as explained below under "Previous CWCB Grants, Loans or Other Funding."

The Project is also documented in RWPC's Water Management Plan.

Previous CWCB Grants, Loans or Other Funding

List all previous or current CWCB grants (including WSRF) awarded to both the Applicant and Grantee. Include: 1) Applicant name; 2) Water activity name; 3) Approving RT(s); 4) CWCB board meeting date; 5) Contract number or purchase order; 6) Percentage of other CWCB funding for your overall project.

RWPC received a grant from WSRF Basin and Statewide Accounts to complete their Pump Station No. 1 Replacement Feasibility Study.

Applicant: Redlands Water and Power Company (RWPC)

Water Activity Name: Pumping Plant Modernization Feasibility Study

Approving RT(s): Approved by Gunnison Basin Roundtable on December 4, 2017; Letter of Support to CWCB dated January 17, 2018

CWCB Board Meeting Date: March 21-22, 2018 CWCB Board Meeting, Agenda Item 25(a)7

Contract Number or Purchase Order: POGG1, PDAA, 201900002040

Percentage of Other CWCB Funding for your Overall Project: WSRF Basin and Statewide Funds combined - $63,000; Matching Funds (RWPC) - $12,000. Total Project Cost - $75,000.

Taxpayer Bill of Rights

The Taxpayer Bill of Rights (TABOR) may limit the amount of grant money an entity can receive. Please describe any relevant TABOR issues that may affect your application.

RWPC is a private company not subject to TABOR limitations.

Submittal Checklist	
✓	I acknowledge the Grantee will be able to contract with CWCB using the Standard Contract.
Exhibit A	
✓	Statement of Work(1)
✓	Budget & Schedule(1)
✓	Engineer's statement of probable cost (projects over $100,000) *(Attachment B – Cost Estimate_Feasibility)*
✓	Letters of Matching and/or Pending 3rd Party Commitments(1) *(Attachment E – Letter of Commitment)*
Exhibit C	
✓	Map (if applicable)(1) *(Attachment A – RWPC Pumpline Replacement Project Location Map)*
✓	Photos/Drawings/Reports *(Attachment C – Pumpline Preliminary Design Exhibit)*
✓	Letters of Support (Optional) *(Attachment D – Letter of Support)*
N/A	Certificate of Insurance (General, Auto, & Workers' Comp.) (2)
N/A	Certificate of Good Standing with Colorado Secretary of State(2)
N/A	W-9(2)
N/A	Independent Contractor Form(2) (If applicant is individual, not company/organization)
Engagement & Innovation Grant Applicants ONLY	
N/A	Engagement & Innovation Supplemental Application(1)

(1) Required with application.
(2) Required for contracting. While optional at the time of this application, submission can expedite contracting upon CWCB Board approval.

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Department of Natural Resources

Colorado Water Conservation Board
Water Plan Grant - Exhibit A

Statement of Work	
Date:	08/01/2019
Name of Grantee:	Redlands Water and Power Company (RWPC)
Name of Water Project:	RWPC Pumpline Replacement Project (The Project)
Funding Source:	CWP Grant Funds
Water Project Overview:	

Existing Conditions and Need:

RWPC has conscientiously maintained its pumpline since it was installed in 1944, and has replaced significant portions of the pumpline at its own expense. However, the remaining unreplaced section of the pumpline has far outlived its design life as it deteriorates due to age, corrosion, and rust. RWPC has expended countless man hours and equipment patching up leaking sections of the pumpline to maintain deliveries. In 2007, approximately 525 feet of the upper end of the pumpline was replaced with new 48-inch steel pipe (this includes a 44-inch sliplined pipe beneath Highway 340). Each year, RWPC installs meters – both v-notch weirs and cutthroat flumes - on a number of turnouts in an effort to modernize their system and ultimately enable the use of SCADA technology on their system.

Image 1 – Existing 48-inch steel pipe

Pumping is required in order to provide irrigation water to the bench lands in the Redlands area of Grand Junction and Mesa County. Water is pumped vertically approximately 128 feet, from Pump Station No. 1 to the First Lift Ditch through a pumpline that is a 48-inch diameter, 1550-foot long steel pipe installed in 1944. RWPC diverts 750-850cfs from the Gunnison River at a point approximately 2.4 miles upstream of the confluence with the Colorado River. Approximately 60 to 70 cfs is used for irrigation water, a small percentage of which is used to irrigate lowland farms prior to Pump Station No. 1. Pump Station No. 1 pumps the remaining irrigation water through to the bench lands of the Redlands area. The total system provides water to 1,966 acres through approximately 550 turnouts. The remaining water (approximately 690 cfs), used for generating power, is returned to the Colorado River. Water delivered to this area provides irrigation water for residential lawns and gardens, orchards, vineyards, alfalfa fields, and pasture grass. RWPC's operations staff are concerned that if a major failure were to occur within the pump station or pumpline, it would have devastating effects for thousands of residents and highly productive agriculture lands, greatly affecting the economy of the area. Residents and farmers draw water directly from the canals, so continuous water flow is important to avoiding an immediate loss of water supply that would affect many residents, including churches, schools, parks, and a city-owned golf course.

The Project is phase one of a much larger project that will modernize RWPC's entire Pump Station No. 1 (originally constructed in 1917) and related infrastructure. RWPC recently completed a feasibility study in June 2019, which identifies the proposed pumpline replacement as its highest priority; A cost estimate for the pumpline replacement can be found in *Attachment B*, including applicable pages from the feasibility study. RWPC's full Pump Station No. 1 Replacement Feasibility Study is available upon request.

Statement of Work:

The Project will replace pre-2007 sections of the existing pumpline with 100 feet of 48-inch steel pipe, and 900 feet of 48-inch HDPE pipe. The project will also include a parallel 12-inch HDPE pipeline with turnouts for users that receive water directly from the pumpline. The parallel line will prevent the systemwide shutdowns that currently occur when unplanned/emergency maintenance is required on the pumpline turnouts. The entire project is within RWPC property with portions of the pumpline (a 900-foot section) installed beneath RWPC's dirt maintenance road. See *Attachment A – RWPC Pumpline Replacement Project Location Map* and *Attachment C – Pumpline Preliminary Design Exhibit*.

Image 2 – Pumpline alignment under dirt maintenance road owned by RWPC

A letter of Support from the Gunnison Basin Roundtable for the Project is found in *Attachment D – Letter of Support*.

Purpose of CWP Grant Funds:

CWP Grant Funds will be used for Engineering – $30,000, a portion of Project Construction – $80,000, and Construction Management – $15,000, for a total of $125,000. RWPC plans to request an additional $125,000 from the Water Supply Reserve Fund (WSRF) Basin and Statewide Accounts to assist with Project Construction. RWPC will contribute $200,279 in the form of in-kind services and cash from its own funds. In-kind services will include items such as excavation, hauling of material, and other construction services. RWPC recently had a rate analysis done to consider reasonable rate increases that may be necessary to fund this and future projects.

A Letter of Commitment from RWPC stating the availability of matching funds is found in *Attachment E – Letter of Commitment*.

Project Objectives:

The Project offers the following objectives/benefits:

1. Modernized water delivery (pumpline) system that will provide long-term irrigation water delivery reliability and security for 8,685 residents/farmers living on the Redlands bench lands.

2. Reduce risk of a failing pumpline that continues to deteriorate due to age, corrosion and rust, and on which countless man hours have been expended to patch up compromised sections of the pipeline that leak and disrupt the flow of irrigation deliveries.

3. Reduce rising costs and frequency of repairs as outdated equipment is replaced with modernized equipment.

4. Protect existing RWPC water rights on the Gunnison River, including recreational water users who rely on flows maintained by RWPC in the section of river between Delta and Grand Junction.

Tasks

Task 1 – Engineering ($30,000)

Description of Task:

Task 1: Engineering – The 2019 Feasibility Study provided conceptual design. Task 1 will develop final design, preparation of all bid documents, and completion of any necessary bid related tasks. Task 1 will be entirely funded by CWP Grant funds.

Method/Procedure:

Pumpline modeling will be performed using standard engineering practices to ensure the design material and capacity is sufficient. Specifications will be written in accordance with modeled requirements and will be written in standard Engineers Joint Contract Documents Committee (EJCDC) format. Plan drawings will be developed in accordance with generally accepted industry standards and provide sufficient detail such that the pumpline can be constructed according to engineered design.

Deliverable:

A completed set of stamped drawings and specifications ready for advertised bid requests will be delivered. RWPC will utilize invitation to bid, to call for sealed bids. Deliverables will be shared with the Colorado Water Conservation Board.

Task 2 – Construction ($405,279)

Description of Task:

Task 2: Construction – estimated construction to begin in November 2020. RWPC is requesting $80,000 in CWP funds for construction.

Construction includes:

-Mobilization
-Pipe and pipe fitting installation
-Parallel feeder line and turnouts
-Replacement of the steel pipe over the power canal and concrete supports
-Imported bedding and foundation material
-Inline thrust blocks
-Removal and disposal of existing pipe

Method/Procedure:

The contractor will install the pumpline in accordance with the engineered plans and specifications. Construction activities will be performed to provide minimal disturbance to neighbors and other stakeholders (the width of the maintenance road over the pumpline makes disruption unlikely). Construction means and methods will be managed by a construction engineer (Task 3).

Deliverable:

The construction task will result in a fully operable and properly installed pumpline for Redlands Water and Power Company. Construction will include proper disposal of existing infrastructure and site restoration consistent with existing conditions.

Task 3 – Construction Management ($15,000)

Description of Task:
Task 3: Construction Management – construction engineer will oversee construction to ensure construction products, means, and methods are consistent with those specified in the design. Photo logs of construction progress, progress reports, and as-built drawings from the engineer will provide record of the Project. It is proposed that this portion of the Project will be entirely covered by CWP funds.
Method/Procedure:
The engineer will reference the plans and specifications and ensure that construction is consistent with the plans. Should unforeseen circumstances be encountered, the on-site construction manager will coordinate with the design engineer to ensure any design changes are safe and acceptable.
Deliverable:
Progress reports will be delivered to RWPC, and as required, to CWCB. Photos will accompany progress reports. As-built drawings will be provided.

Budget and Schedule

This Statement of Work shall be accompanied by a combined Budget and Schedule that reflects the Tasks identified in the Statement of Work and shall be submitted to CWCB in excel format.

Reporting Requirements

Progress Reports: The applicant shall provide the CWCB a progress report every 6 months, beginning from the date of issuance of a purchase order, or the execution of a contract. The progress report shall describe the status of the tasks identified in the statement of work, including a description of any major issues that have occurred and any corrective action taken to address these issues.

Final Report: At completion of the project, the applicant shall provide the CWCB a Final Report on the applicant's letterhead that:

- Summarizes the project and how the project was completed.
- Describes any obstacles encountered, and how these obstacles were overcome.
- Confirms that all matching commitments have been fulfilled.
- Includes photographs, summaries of meetings and engineering reports/designs.

The CWCB will pay out the last 10% of the budget when the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the purchase order or grant will be closed without any further payment.

Payment

Payment will be made based on actual expenditures and must include invoices for all work completed. The request for payment must include a description of the work accomplished by task, an estimate of the percent completion for individual tasks and the entire Project in relation to the percentage of budget spent, identification of any major issues, and proposed or implemented corrective actions.

Costs incurred prior to the effective date of this contract are not reimbursable. The last 10% of the entire grant will be paid out when the final deliverable has been received. All products, data and information developed as a result of this contract must be provided to CWCB in hard copy and electronic format as part of the project documentation.

Performance Measures

Performance measures for this contract shall include the following:
(a) Performance standards and evaluation: Grantee will produce detailed deliverables for each task as specified. Grantee shall maintain receipts for all project expenses and documentation of the minimum in-kind contributions (if applicable) per the budget in Exhibit B. Per Water Plan Grant Guidelines, the CWCB will pay out the last 10% of the budget when the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the purchase order or grant will be closed without any further payment.
(b) Accountability: Per Water Plan Grant Guidelines full documentation of project progress must be submitted with each invoice for reimbursement. Grantee must confirm that all grant conditions have been complied with on each invoice. In addition, per Water Plan Grant Guidelines, Progress Reports must be submitted at least once every 6 months. A Final Report must be submitted and approved before final project payment.
(c) Monitoring Requirements: Grantee is responsible for ongoing monitoring of project progress per Exhibit A. Progress shall be detailed in each invoice and in each Progress Report, as detailed above. Additional inspections or field consultations will be arranged as may be necessary.
(d) Noncompliance Resolution: Payment will be withheld if grantee is not current on all grant conditions. Flagrant disregard for grant conditions will result in a stop work order and cancellation of the Grant Agreement.

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Colorado Water Conservation Board

Water Plan Grant - Exhibit B
Budget and Schedule

Prepared Date: 07/17/2019

Name of Applicant: Redlands Water and Power Company (RWPC)

Name of Water Project: Pumpline Replacement Project

Project Start Date: 10/01/2019

Project End Date: 05/30/2021

Task No.	Task Description	Task Start Date	Task End Date	Grant Funding Request	Match Funding	Total
1	Engineering	10/1/2019	11/1/2020	$30,000	$0	$30,000
2	Constuction	11/1/2020	4/1/2021	$80,000	$325,279	$405,279
3	Construction Management	11/1/2020	5/30/2021	$15,000	$0	$15,000
			Total	$125,000	$325,279	$450,279

Attachment A - RWPC Pumpline Replacement Project Location Map

Redlands Water & Power Company Pumpline Replacement Project Location Map

Redlands, Colorado

J·U·B ENGINEERS, INC.

N

Redlands
Grand Junction
Colorado River
WEST AV
WEST ST
RIVERSIDE PKWY
RIVERSIDE PY
GRAND AV
ROOD AV
COLORADO AV
4TH ST
5TH ST
7TH ST
4TH AV
340
70
50
MONUMENT RD
Redlands Power Canal
UNAWEEP AV
Gunnison River
Diversion
0 1,000 2,000 Feet

Redlands Tailrace
POWER RD
Hydroelectric Facilty
Pump Station #1
Proposed Pumpline Replacement
Replaced in 2007
First Lift Ditch
HIGH POINTE CI
MAYFIELD CT
MAYFIELD DR
D.15 RD
COUNTRY CLUB PARK RD
S BROADWAY
0 300 600 Feet

Attachment B - Engineer's Statement of Probable Cost / Feasibility Study Pages

Name: Redlands Water and Power Company
Project: Pumpline Replacement Project
Date: 7/17/2019

Item	Description	Unit	Estimated Quantity	Unit Price	Amount
Indirect Costs					
1	Design Plans and Specifications	LS	1	$ 30,000.00	$ 30,000.00
2	Construction Management	LS	1	$ 15,000.00	$ 15,000.00
Indirect Costs Subtotal:					**$ 45,000.00**
Construction (Labor, Supplies, Materials, and Equipment)					
3	Mobilization	LS	1	$ 37,000.00	$ 37,000.00
4	Furnish and Install 48" DR 21 HDPE	LF	180	$ 224.37	$ 40,386.60
5	Furnish and Install 48" DR 32.5 HDPE	LF	160	$ 162.37	$ 25,979.33
6	Furnish and Install 48" DR 41 HDPE	LF	540	$ 138.28	$ 74,673.00
7	HDPE Mainline Pipe Fittings	LS	1	$ 28,000.00	$ 28,000.00
8	Furnish and Install 12" HDPE Feeder Line	LF	880	$ 32.50	$ 28,600.00
9	Furnish and Install Feeder Line Tap	EA	12	$ 1,000.00	$ 12,000.00
10	Steel Pipe	LF	100	$ 600.00	$ 60,000.00
11	Steel Pipe Concrete Supports	YD	16	$ 1,200.00	$ 19,200.00
12	Import Pipe Bedding/Foundation Material	TON	900	$ 41.60	$ 37,440.00
13	Inline Thrust Blocks	EA	2	$ 3,000.00	$ 6,000.00
14	Removal and Disposal of Existing Pipe	LF	900	$ 40.00	$ 36,000.00
Construction Subtotal:					**$405,279.00**
Total:					**$450,279.00**

1.0 EXECUTIVE SUMMARY

The Articles of Incorporation of the Redlands Water and Power Company (RWPC) state that, among other things, the purpose of the Company is, "…to furnish and distribute to the stockholders' water for irrigation and domestic purposes…" Most of the RWPC service area is located on benches high above the diversion on the Gunnison River such that a gravity conveyance system alone cannot provide water to much of the service area. The continued ability to pump water to serve irrigated acreage is the only mechanism RWPC has in order to fulfill its articles of incorporation.

The purpose of Pump Station No. 1 is to supply the First Lift Ditch and Stub Ditch with irrigation water. The entirety of the pumped water is intended for irrigation of the benched lands. Given the purpose of the company and the function of Pump Station No. 1, it is appropriate to classify Pump Station No. 1 as critical and necessary infrastructure within the RWPC system.

The Redlands Water and Power Company Pump Station No. 1 was constructed beginning in 1917. Except for some minor maintenance and modernization efforts over the last 100+ years, most of the original infrastructure is still in use today. The pump station is significantly outdated by today's standards; many aspects of the pump station do not comply with modern building and electrical codes. The rising cost and frequency of repairs coupled with the inefficiencies associated with the outdated equipment have highlighted the need for replacement of the existing facility.

RWPC hired J-U-B Engineers to investigate the feasibility of the replacement or rehabilitation of Pump Station No. 1. The investigation consisted of:

- An existing conditions assessment to identify deficiencies of the pump station and related infrastructure, and to identify limitations and opportunities of the site conditions for new infrastructure
- A collaborative effort with RWPC to weigh various alternatives for new pump station location and operation (Appendices 1-3 of this report)
- A conceptual design, based on the chosen alternative, with a level of detail sufficient to generate appropriate cost estimates
- Potential project phasing with cost estimates for each potential phase
- An investigation into potential revenue increases as a result of the efficiency improvements of the replacement

The existing conditions assessment and alternatives analysis led to a preferred design that provided the needed infrastructure to supply the irrigation water to the first lift ditch, met the site-specific needs of RWPC, and exploited some potential water saving opportunities (by withdrawing pumped water from the Redlands Tailrace). Initial efforts were focused on exploring this option, however, as the conceptual design was refined and costs were estimated, it became apparent that the preferred option was cost prohibitive. Project efforts were redirected to explore a more affordable alternative that withdraws water from the Power Canal rather than the Tailrace. This report acknowledges the original efforts but is focused upon the revised design concept.

The chosen design concept consists of a structure adjacent to the Redlands Tailrace but supplied through a 48" HDPE pipeline from the Redlands Power Canal. The structure houses five horizontal split-case pumps powered by a motor control center containing an Adjustable Speed Drive (ASD). The design allows for pumping up to 70 cfs with four pumps (the fifth pump adds system redundancy); the ASD allows for adjusting the flow rate by varying the speed of a single pump, enabling a user to specify a flow rate. Appurtenant to the proposed Pump Station is the replacement of the pumpline, and the replacement of the penstock and bypass gates. Long-term system functionality requires the replacement of these items.

Project phases were investigated to determine elements of the project that could be independently completed and independently funded to give RWPC maximum flexibility for project implementation. They also provide a general order based on both need and required construction sequencing (please note that exact order in all cases is not mandatory but is recommended). Table 1.0.1 provides phase ordering, description, construction time constraints and estimated cost. **The total for all phases is estimated at $4,037,000**. Potential project scheduling should consider grant and loan acquisition/administration, final design, and possible environmental compliance work in addition to the construction windows provided above.

Table 1.0.1. Project Phasing and Estimated Costs

Phase	Description	Construction Time Constraints	Estimated Cost
1	Pumpline Replacement*	November-March Construction Only	$ 406,000.00
2	Pump Station Structure Construction	None	$ 1,114,000.00
3	Intake Pipe Installation*	November-March Construction Only	$ 142,000.00
4	Pump Station Equipment Purchase and Installation**	None	$ 2,065,000.00
5	Penstock and Turbine Bypass Gate Replacement*	November-March Construction Only	$ 310,000.00
Estimated Project Total***			$ 4,037,000.00

*All or some of the construction requires power plant shutdown resulting in loss of revenue (not accounted for in cost)
**Phase includes purchase of all hydraulic piping and equipment excluding intake pipe and pumpline, includes mechanical/HVAC components, all electrical components
***Funding sources may require NEPA related work. If these sources are pursued, assume estimated cost of Environmental Work at $100,000

Given the high total project cost, funding will likely have to come through a combination of grants and low-interest loans. While this report does not suggest funding mechanisms, it does acknowledge that if a loan were pursued, an increase in power revenue could provide for a portion of debt service. The proposed project will result in less power consumption for an equivalent amount of pumping. The decrease in power consumption would allow for additional power to be sold, thereby increasing power revenue. Initial analysis indicates that an increase of over $24,000 of annual revenue may become available by replacing Pump Station #1.

hydroelectric plant. The 2300V electricity is transmitted to the MCC directly via a transformer outside of the hydroelectric building. The at-grade portion of the pumping plant houses the motor control centers responsible for powering the pumps, as can be seen in Figure 2.2.3. The RWPC Water Management Plan (2014-2015) states that the current facility needs extensive upgrade to comply with the National Electric Code (NEC).

Figure 2.2.3 Pump Station Control Room

RWPC's 1.6 MW hydroelectric plant generates approximately 1,000,000 kW-hrs per month. During the irrigation season, approximately 700,000 kW-hrs are consumed per month by the pump station. Given that pump rates peak at roughly 50 cfs during many months, analysis indicates that the system is highly inefficient. Section 6.0 explores this idea further and compares potential energy consumption to historic energy use.

At present, RWPC does not have an adjustable speed drive (ASD) for their pumps. Without an ASD, motors are started "across the line" (creating the potential for power surges on the system) and are only able to operate at a single speed. This results in frequent over pumping (RWPC frequently pumps more water than is required due to pump hydraulics). While this practice does not affect water use (the excess water is returned to the Power Canal), it requires significant additional energy at the pumps.

2.3 Pumpline

The current 1550 ft pumpline begins immediately outside of Pump Station No. 1 and is tied directly onto the below-grade pump discharge manifold. The line abruptly turns toward the south in the direction of the First Lift Ditch. Immediately after the turn to the south, the pumpline passes over the Power Canal in an overshot supported by concrete piers. This overshot runs parallel with the culinary waterline for the site. Figure 2.3.1 shows the Power Canal Overshot.

Figure 2.3.1. Power Canal Overshot

The pumpline is comprised of steel pipe of varying sizes, ages, and conditions. The bulk of the pumpline was installed in 1967 and was lined with concrete at a later date. In 2007, approximately 525 feet of the upper end of the pumpline were replaced with new 48-inch steel pipe. To avoid high costs associated with traffic control during construction, the section of pipe replaced under Broadway was sliplined with 44-inch steel pipe. The older sections of the pumpline are in poor condition and require frequent repair. Operations staff are concerned that a major failure may occur if the existing pipe is not replaced.

The pumpline alignment North of Broadway follows a dirt O&M road owned by RWPC. The extent of the pipe replacement that is proposed (highlighted in Exhibit 3) is entirely beneath this road and within RWPC property. Figure 2.3.2 shows a typical section of the pumpline alignment.

Figure 2.3.2. Typical Section of Pumpline Alignment

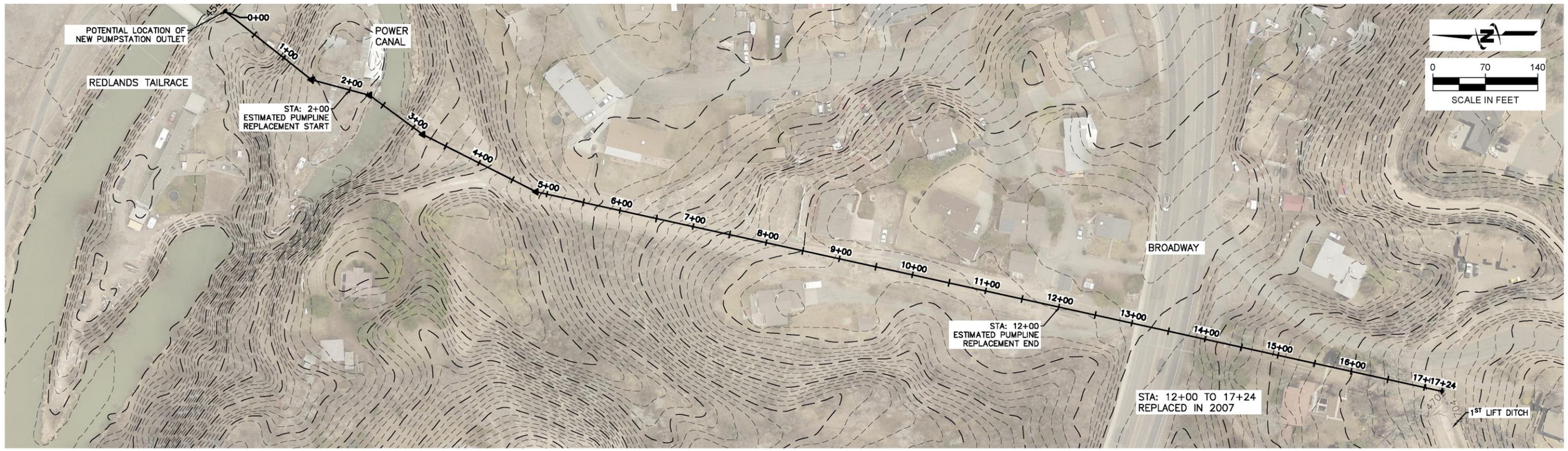
2.4 Appurtenant On-Site Infrastructure

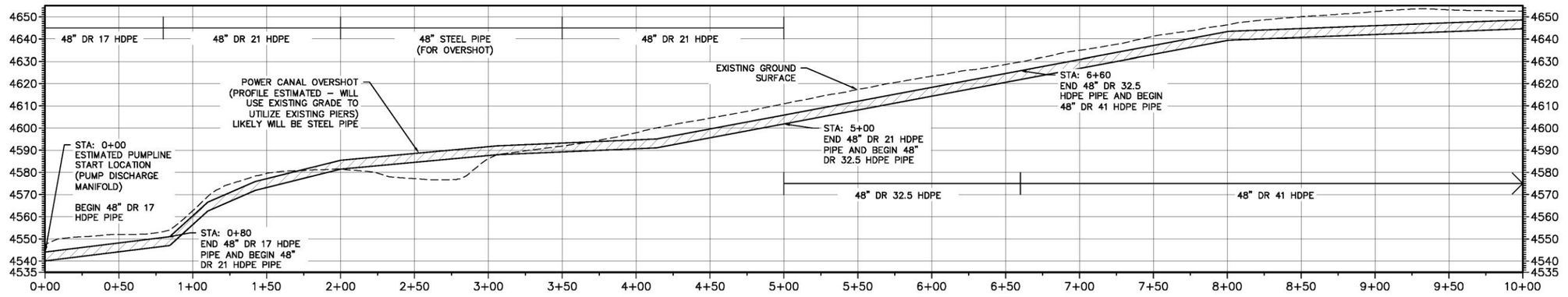
Site assessment indicates that additional infrastructure is in need of repair or replacement. Specifically, the bypass chute overshot gate and the penstock gates were identified as critical infrastructure in need of replacement. Despite being separate from the pump station, this infrastructure directly impacts pumping operations.

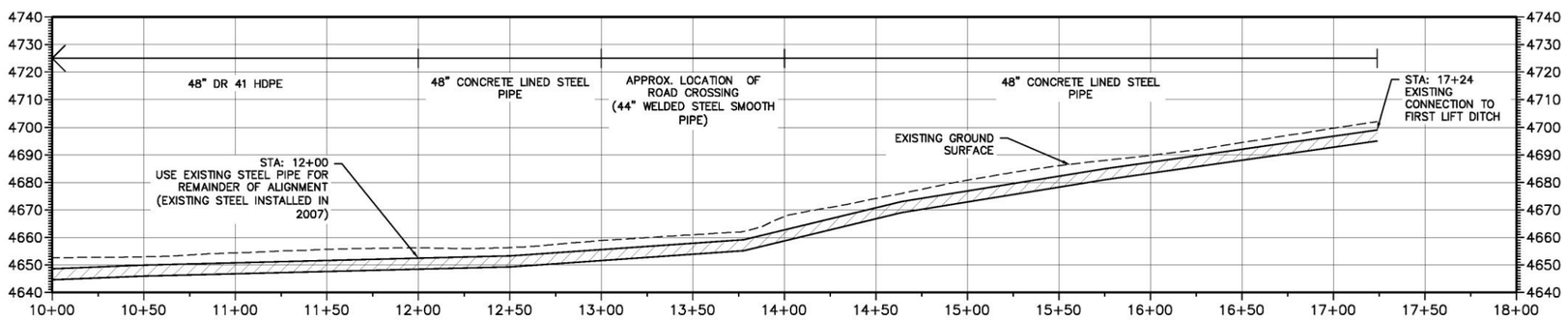
Water surface elevation within the Power Canal is maintained by both a spill gate at the western termination of the Power Canal, and an overshot gate at the mouth of the bypass chute adjacent to the Hydropower Facility. The spill gate at the end of the canal is in operable condition and does not warrant replacement. The overshot gate on the bypass chute, however, appears to be in poor condition and should be replaced. A failure of the overshot gate would drain the Power Canal and inhibit both power production and pumping capabilities. Figure 2.4.1, on the following page, shows the current condition of the overshot gate.

J-U-B ENGINEERS, INC.

Attachment C - Pumpline Preliminary Design Exhibit







Attachment D-Letter of Support

July 17, 2019

Ms. Anna Mauss
Colorado Water Conservation Board
1313 Sherman Street
Denver, CO 80203

Re: Redlands Water and Power Company Water Plan Grant Application
Letter of Support from the Gunnison Basin Roundtable

Dear Ms. Mauss,

This letter is to inform you of the Gunnison Basin Roundtable's support for the **Redlands Water and Power Company (*RWPC) Pumpline Replacement Project***, Colorado's Water Plan Grant Program application.

We reviewed the proposed project at our July 2019 meeting and believe that it aligns with:

1.) The Gunnison Basin Implementation Plan

As a part of a larger and more broad modernization project anticipated by the RWPC, the ***RWPC Pumpline Replacement Project*** will address a critical infrastructure need within the Tier 1 Basin Implementation Plan project identified as the *Redlands Pump Modernization and hydropower Optimization Project.* The GBRT has previously funded a *Pump Station No.1 Replacement Feasibility Study* utilizing basin and statewide funds, and the ***RWPC Pumpline Replacement Project****, Colorado's* Water Plan Grant request is a direct result of the conclusions from that study.

2.) Colorado's Water Plan

The project will directly support Colorado's water value of "efficient and effective water infrastructure" by improving a critical piece of water delivery infrastructure.

The project will further address the water plan's critical actions of "support and assist the basin roundtables in moving forward priority municipal, industrial, environmental, and agricultural projects and methods identified in their BIPs through technical, financial and facilitation support when requested by a project proponent and the pertinent BRT," see #1 above.

If you have any questions or need additional information, please let me know! Thank you for your consideration of this important project.

Sincerely,

Kathleen Curry

Kathleen Curry, Chair
Gunnison Basin Roundtable
54542 US Highway 50
Gunnison, CO 81230

MATCHING FUNDS COMMITMENT LETTER

July 31, 2019

Colorado Water Conservation Board
Attn: Anna Mauss
1313 Sherman St., Room 718
Denver, CO 80203
anna.mauss@state.co.us

Dear CWCB Board Member,

This letter represents a commitment by **Redlands Water and Power Company** to provide **$200,279 in cash and in-kind services** in matching support for a **CWP Grant** project entitled **RWPC Pumpline Replacement Project**. In-kind services will include excavation, hauling of material, and other construction services. The support is provided from **10/1/2019** to **5/30/2021**.

Sincerely,

Kevin E. Jones
Superintendent
970-243-2173
redlandswp@fastmail.com