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Colorado Water Conservation Board
Department of Natural Resources

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TO: Colorado Water Conservation Board Members

FROM: Jonathan Hernandez, P.E., Project Manager
Kirk Russell, P.E., Finance Section Chief

DATE: November 16-17, 2016 Board Meeting

AGENDA ITEM: 14b. Water Project Loans
Orchard Mesa Irrigation District – Grand Valley Power Plant Rehabilitation

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Introduction

The Orchard Mesa Irrigation District (District) is applying for a loan for the Grand Valley Power Plant Rehabilitation (Project). The District is working with the Grand Valley Water Users Association (Association) to complete this Project. The goal of the Project is to bring the Grand Valley Power Plant (GVPP) up to a sustainable operating condition and meet current electric and safety standards. Preliminary designs show the rehabilitation could increase the maximum power generation output from 2.75 MW to 4.1 MW. The District is requesting a loan from the CWCB for approximately 92% of its share of Project cost. The Association is concurrently seeking a CWCB loan to help cover its share of Project cost (see November 2016 Agenda Item 14c). Combined, these two CWCB loans would cover approximately 65% of the total Project cost. See attached Project Data Sheet for a location map and Project summary.

Staff Recommendation

Staff recommends the Board approve a loan not to exceed $1,717,000 ($1,700,000 for Project costs and $17,000 for the 1% service fee) to the Orchard Mesa Irrigation District, for costs related to the Grand Valley Power Plant Rehabilitation Project, from the Construction Fund. The loan terms shall be 30 years at the hydroelectric interest rate of 2.0% per annum. Security for the loan shall be in compliance with CWCB Financial Policy #5.

Background

The District is a small irrigation district serving 9,500 acres and provides irrigation water to farms, vineyards, orchards, and subdivisions in the Grand Valley of Mesa County. Its service area is on the south side of the Colorado River starting just east of the Town of Palisade down to the confluence of the Colorado and Gunnison Rivers near downtown Grand Junction. Major crops grown in the District include alfalfa, orchards, vineyards, corn and grain, pasture, grass lawns, and truck gardens. The District became a division of the Bureau of Reclamation's (Reclamation) Grand Valley Project in 1921. Its water is diverted at the Grand Valley Project Diversion Dam (Roller Dam), flows through the Canyon Canal, and is diverted into the District's Power Canal.

The GVPP was built in the early 1930s and was operated by Public Service Company of Colorado (Xcel Energy) in conjunction with the Cameo coal power plant until 2010. When the Cameo coal power plant was decommissioned, Xcel Energy decided to cease operations at the GVPP as well. As the continued operation of the GVPP is important for river flows in a stretch of the Colorado River known as the "15-Mile Reach," Reclamation encouraged the District and Association to operate and maintain the GVPP. At the end of 2010, a Lease of Power Privilege (LOPP) was entered into between Reclamation and the District and Association. Under this LOPP, the District and Association equally split GVPP operational and maintenance cost. Starting in 2011, the Association and District entered into a 10-year Power Purchase Agreement (PPA) with Xcel Energy, with revenues being equally split as well. The District operates the GVPP and invoices the Association for half its cost. Reclamation remains the owner of the GVPP and its hydropower water right.

Very little work has occurred on the GVPP since its construction in the 1930s with the exception of minimal maintenance. The turbines, generator, and electrical panels are more or less as they were originally constructed, and rely on 1930s technology. It is believed this may be the last remaining hydroelectric power plant that manually syncs to the power grid. Due to the worn and now outdated condition of the plant, most of the major plant components require replacement or upgrades if the plant is to operate for more than a few remaining years.

Loan Feasibility Study

The District and Association together prepared the Loan Feasibility Study titled, "Grand Valley Hydroelectric Power Plant Rehabilitation Project Loan Feasibility Study," dated October 1, 2016. This study relied on a 2015 Feasibility Study prepared by Sorenson Engineering, Inc. titled "Grand Valley Power Plant Feasibility Study." The feasibility study was prepared in accordance with CWCB guidelines and includes an analysis of alternatives, preliminary engineering design, and construction cost estimates.

Borrower – Orchard Mesa Irrigation District

The District was organized in 1904 under the Colorado Irrigation District Law of 1903, and later changed to be organized under the Irrigation District Law of 1921. The District was formed for the purpose of diverting, carrying, and delivering irrigation water within the District's boundaries. The District provides irrigation water to approximately 9,800 parcels in Mesa County. Revenues are primarily derived from assessments charged to its water users, with additional revenues coming from the sale of electricity generated by the GVPP. The District is not a public governmental entity exercising taxing authority and is therefore not subject to TABOR restrictions.

The District has a 5-member Board of Directors which carries out the normal business function of the District including levying assessments. As a 1921 Act irrigation district, the Mesa County treasurer collects assessments for Orchard Mesa with property taxes, and the treasurer can enforce penalties and

forfeitures for delinquent assessments. Additionally, that Act requires Landowner approval in order to enter into a loan agreement over $20,000.

Water Rights
The water right associated with the GVPP is shown in Table 1. The United States, through Reclamation, is the owner of the hydropower water right, as well as the other water rights associated with the Grand Valley Project.

TABLE 1: GVPP WATER RIGHT

Name	Amount	Appropriation Date	Adjudication Date	Water Court Case No.
Grand Valley Project (*Hydropower*)	400 CFS (*irr. season*) 800 CFS (*non-irr. season*)	2/27/1908	7/25/1941	CA5812

The GVPP water right is a part of the "Cameo Call" which is a call comprised of a series of water rights on the Colorado River owned by five entities: the District, the Association, the Grand Valley Irrigation Company, the Palisade Irrigation District, and the Mesa County Irrigation District. This call is important because it assists the state in complying with its obligations under the Colorado River Compact, and in maintaining acceptable lake levels in Lake Powell.

Project Description
The goal of the Project is to bring the GVPP up to a sustainable operating condition and meet current electric and safety standards. Under current operations, the "water-to-wire" efficiency is approximately 54% with a maximum generation output of 2.5 MW. Calculations show as much as 4.1 MW production should be feasible based on flow rate and available head. The District and Association received engineering proposals and feasibility studies for plant rehabilitation. Based on the received proposals, Sorenson Engineering was selected to be the design-build engineer.

Alternative 1 – No Action: This alternative was not selected because the GVPP is projected to be operable for only a few more years if not rehabilitated. In addition to being a revenue source for the District, the GVPP serves an important role in providing water to the "15-Mile Reach" which has been designated by the Upper Colorado River Endangered Fish Recovery Program as critical habitat where in-stream flows are crucial by being directly responsible for providing up to 400 cfs of water throughout the critical base flow period.

Alternative 2 – Rehabilitate without Upgraded Production: The PPA is for power production to 3.5 MW. Accordingly, the engineer presented an alternative to design upgrades and efficiencies to only provide to the current PPA limit. However, this alternative was not selected because the capital cost to generate up to 4.1 MW is very low and provides additional generation potential if the current PPA is amended, or when the PPA expires in 5 years. Additionally, any power produced above 3.5 MW can currently be sold at the avoided cost rate.

Alternative 3 – Rehabilitate with Upgraded Production: Project components of this alternative include: (1) recoat two 78" diameter penstocks, scroll case and draft tubes; (2) replace turbine components, disassemble and rewind generators; and (3) replace existing controls, switchgear, and substation with equipment that meets current NESC clearances and standards. This alternative will increase "water-to-wire" efficiency from 54% to 82.5% and the maximum generation output from 2.5 MW to 4.1 MW without requiring additional flows.

The cost associated with this alternative is $5,200,000 as shown in Table 2. The District and Association have a current PPA with Xcel Energy at a rate of $0.04 per kWh up to a production level of 3.5 MW. The PPA is set to expire on December 31, 2020 though it is hoped the PPA can be renegotiated and extended prior to expiration. The current avoided cost rate for Xcel is $0.03 per kWh and this lower value was conservatively used to analyze the economic feasibility for year 2021 onward, though at the higher 4.1 MW production level.

TABLE 2: PROJECT COST

Task	Cost
Phase 1 75% Engineering Design	$540,000
Phase 2 100% Engineering Design Equipment Order Rewind Generators Substation/Electrical Work	$2,075,000
Phase 3 Penstocks Equipment Install Equipment Startup	$1,980,000
Xcel Energy Review Cost	$50,000
Subtotal	$4,645,000
Contingency	$555,000
TOTAL	$5,200,000

Permitting: The GVPP is permitted through an existing Lease of Power Privilege (LOPP) between Reclamation and the District and Association. Reclamation owns the GVPP and the underlying land and will thus take the lead to ensure compliance with the National Environmental Policy Act (NEPA), National historic Preservation Act (NHPA), and Endangered Species Act (ESA). Compliance issues are not anticipated as this is a plant rebuild.

Schedule: Phase 1 is scheduled to be completed by January 2017, Phase 2 by January 2018, and Phase 3, with GVPP being fully operational, by July 2018.

Financial Analysis

The Project qualifies for the hydroelectric interest rate of 2.0% for a 30-year term. The District is requesting a loan to cover 92% of its share of Project cost that are not otherwise covered by alternate sources of funds. Currently, the District and Association have secured $1,500,000 in alternate funds composed of a grant commitment from the Upper Colorado River Recovery Program. The District and Association are seeking to secure a CWCB loan for the remaining construction cost to ensure the Project is fully funded, but will continue to seek additional sources of grant funds to reduce the final loan amount. Other sources of funds that will be explored include: a WSRF grant from the CWCB, a Species Conservation Trust Fund grant from CWCB ($400k currently approved but not yet contracted), a WaterSmart grant from Reclamation, and using LOPP Accumulated lease payments as a credit towards the Project. Additionally, the District and Association are each committed for $150,000 each out of its restricted repair and replace fund.

TABLE 3: FINANCIAL SUMMARY

Total Project Cost	$5,200,000
Alternate Funding Sources	$1,500,000
Association's Contribution (Pending $1.7M CWCB Loan)	$1,850,000
District Cash Contribution	$150,000
District CWCB Loan Amount	$1,700,000
CWCB Loan Amount (Including 1% Service Fee)	$1,717,000
CWCB Annual Loan Payment	$76,664
CWCB Annual Loan Obligation (1st Ten Years)	$84,330
Annual Loan Obligation per annual kilowatt hours (17 M kWh/year)	$0.005
Project Cost per Megawatt (4.1 MW Facility)	$1,268,293

Creditworthiness: The District has no existing long-term debt. CWCB loans were obtained in 1995 and 2006 for $1,000,000 and $545,000, respectively, but these were both paid in full ahead of schedule in 2012. The financial analysis in Table 4 looks at total revenues and expenses of the GVPP itself, and does not take into account non-GVPP business aspects of the District or Association. This analysis shows the GVPP is self sustaining during average years.

TABLE 4: GVPP FINANCIAL RATIOS

Financial Ratio	Past 3 Years	Future w/ Project
Operating Ratio (revenues/expenses) weak: <100% - average: 100% - 120% - strong: >120%	199% (strong) $545K/$274K	100% (average) $505K/$503K
Debt Service Coverage Ratio (revenues-expenses)/debt service weak: <100% - average: 100% - 120% - strong: >120%	NA	101% (strong) ($505K-$334K) $169K
Cash Reserves to Current Expenses weak: <50% - average: 50% - 100% - strong: >100%	111% (Strong) $304K /$274K	11% (weak)[1] $54K /$503K

[1]*Does not assume accumulations of the $50,000 per year reserve account for Repair/Replace*

Collateral: Security for this loan will be a pledge of the District's assessment revenues backed by an assessment covenant, and will provide annual financial reporting. This is in compliance with the CWCB Financial Policy #5 (Collateral).

cc: Max Schmidt, Manager, Orchard Mesa Irrigation District
Jennifer Mele /Derek Turner, Colorado Attorney General's Office

Attachment: Water Project Loan Program – Project Data Sheet

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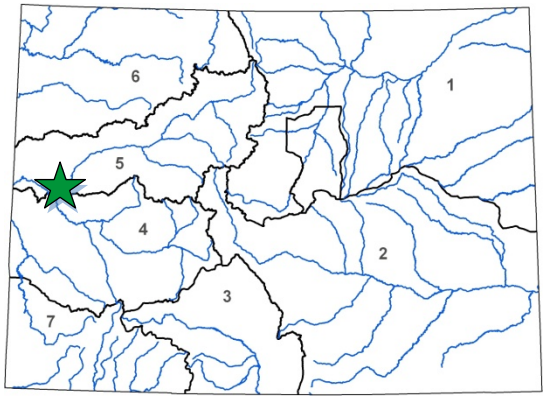
Grand Valley Power Plant Rehabilitation

Orchard Mesa Irrigation District

November 2016 Board Meeting

LOAN DETAILS	
Project Cost:	$5,200,000
CWCB Loan (with Service Fee):	$1,717,000
Loan Term and Interest Rate:	30 Years @ 2.0%
Funding Source:	Construction Fund
BORROWER TYPE	
Hydropower	
PROJECT DETAILS	
Project Type:	Hydroelectric
Average Annual Power Production:	17M kWh



LOCATION			
County:			Mesa
Water Source:			Colorado River
Drainage Basin:			Colorado
Division:	5	*District:*	72

The Orchard Mesa Irrigation District (District) and Grand Valley Water Users Association (Association) are each seeking a loan to cover its cost share for the Grand Valley Power Plant (GVPP) Rehabilitation Project. The GVPP is owned by the Bureau of Reclamation and originally operated by Public Service Company of Colorado (Xcel Engergy) in conjunction with the Cameo coal fired power plant. The District and Association took operational control of the plant when Xcel decided to cease its operations. The District and Association equally split costs and revenues from the GVPP under a Lease of Power Privilage with Reclamation and a Power Purchase Agreement with Xcel. In addition to being a revenue source, the GVPP serves an importnant role in providing water to the "15-Mile Reach" which has been designated by the Upper Colorado River Endangered Fish Recovery Program as critical habitat. The non-consumptive hydropower water right ensures continued flows for this important stretch of river.

The goal of the Project is to bring the GVPP up to a sustainable operating condition and meet current electric and safety standards. The GVPP was built in the early 1930s and has seen no major upgrades or modernization to date. Under current operations, the "water-to-wire" efficiency is approximately 54% with a maximum generation output of 2.5 MW. Calculations show as much as 4.1MW production should be feasible based on flow rate and available head.