COLORADO
Colorado Water Conservation Board
Department of Natural Resources

1313 Sherman Street
Denver, CO 80203

P (303) 866-3441
F (303) 866-4474

John Hickenlooper, Governor

Robert Randall, DNR Executive Director

James Eklund, CWCB Director

TO: Colorado Water Conservation Board Members

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

DATE: July 20-21, 2016 Board Meeting

AGENDA ITEM: 13a. Water Project Loans
Southeastern Colorado Water Conservancy District – Arkansas Valley Conduit Phase One, Pueblo Dam Hydroelectric Project

---

Introduction

The Southeastern Colorado Water Conservancy District (District), acting by and through its water activity enterprise, is applying for a loan for the Arkansas Valley Conduit Phase One, Pueblo Dam Hydroelectric Project (Project). The Arkansas Valley Conduit (AVC) is a planned pipeline extending from Pueblo Reservoir to the City of Lamar. The purpose of the AVC is to help the Lower Arkansas River Basin communities provide a safe and reliable water supply to replace their dependence on contaminated groundwater. Phase One of the AVC project is the development of hydropower on Pueblo Dam and is the focus of this loan request. The Project will provide a needed revenue source to help offset AVC cost through the construction of a 7.5 megawatt facility located on the Pueblo Dam River Outlet. The facility will provide an average of 28,000,000 kWh of clean renewable energy (enough to power approximately 3,300 homes). The total Project cost is estimated to be $19,060,000. The District is requesting a loan from CWCB for approximately 90% of the Project Cost. See attached Project Data Sheet for a location map and Project summary.

The District was approved for a $60,600,000 loan for the AVC project at the November 2006 CWCB Board Meeting. That loan was authorized in the 2007 Projects Bill (SB07-122) and its authorization was extended to July 1, 2021 in the 2009 Projects Bill (SB09-125). As Phase One of the AVC project, this Project will use those loan funds reserved for the AVC project, leaving $43,207,800 reserved for the remaining phases of AVC.

Staff Recommendation

Staff recommends the Board approve a loan not to exceed $17,392,200 ($17,220,000 for Project costs and $172,200 for the 1% service fee) to the Southeastern Colorado Water Conservancy District, acting by and through its water activity enterprise, for costs related to the Arkansas Valley Conduit Phase One, Pueblo Dam Hydroelectric Project from the Severance Tax Perpetual Base Fund. The loan terms shall be 30 years at the hydroelectric interest rate of 2.0% per annum. Security for the loan shall be a pledge of power revenues.

Staff further recommends that no funds be disbursed until the following contract conditions have been satisfied:

1) Execution of the Lease of Power Privilege
2) Execution of the Power Purchase Agreement

Background

The District's boundaries extend along the Arkansas River from Buena Vista to Lamar, and along Fountain Creek from Colorado Springs to Pueblo. The District was created to develop and administer the Fryingpan-Arkansas project (Fry-Ark), a multipurpose, transbasin water diversion and delivery project built between 1964 and the mid 1980s by the federal government. The purpose of Fry-Ark is to supply water for irrigation, municipal, domestic, and industrial uses; generate and transmit hydropower and energy; control floods; provide recreational opportunities; and maintain or improve fish and wildlife habitats. The Fry-Ark system includes Pueblo Reservoir, Twin Lakes Reservoir, Turquoise Reservoir, and a West Slope collection system. The AVC project, along with the Fountain Valley Authority Pipeline, was originally proposed as a part of Fry-Ark. The Fountain Valley Authority Pipeline was completed in 1985 and delivers water to Colorado Springs and its surrounding areas. However, AVC has not yet been built because the lower Arkansas River basin communities have been unable to afford the project cost. The existing $60,060,000 CWCB loan approval is a part of the local cost share for AVC. The District is diligently pursuing the permitting, design, and construction of AVC but it is currently anticipated that the earliest it could be completed is 2028.

Pueblo Reservoir is impounded by Pueblo Dam. The dam was constructed from 1970 to 1975 as a part of Fry-Ark. The reservoir is capable of storing 357,678 AF of water and is owned and operated by the US Bureau of Reclamation (Reclamation). A 2011 Hydropower Resource Assessment report prepared by Reclamation identified Pueblo Dam as the most favorable site for hydropower development out of all of Reclamation's facilities in Colorado. In 2011, Reclamation issued a Lease of Power Privilege (LOPP) solicitation for the development of hydropower on Pueblo Dam. Based on a proposal and evaluation process, a partnership consisting of the District, Board of Water Works of Pueblo, and the Colorado Springs Utility, was awarded a preliminary LOPP in 2012. The preliminary LOPP allowed for continued evaluation of the feasibility for hydropower on Pueblo Dam.

Hydropower profits will be directed into an AVC reserve fund within the District's enterprise and be restricted to be used only for the repayment of hydropower debt and to offset the annual expenses of the AVC project. The Project is not eligible for the Colorado Water Resources & Power Development Authority's Small Hydropower Loan Program as it will exceed 5 MW.

Loan Feasibility Study

Kevin Meador, P.E. of the Southeastern Colorado Water Conservancy District, prepared the Loan Feasibility Study, titled "Pueblo Dam Hydroelectric Project Loan Feasibility Study," dated June 1, 2016. Other studies used in the preparation of the Feasibility Study include the "Hydropower Feasibility Update, Pueblo Dam Hydroelectric Project," dated March 21, 2014 by CH2M, the "Draft Design Documentation Report Preliminary Design, Pueblo Dam Hydroelectric Project," dated June 2014 by CH2M, and the "Design Proposal, Pueblo Dam Hydroelectric Project," dated May 2, 2016 by Mountain States Hydro, LLC. The feasibility study was prepared in accordance with the CWCB guidelines and includes an analysis of alternative, preliminary engineering design, and construction cost estimates.

Borrower – Southeastern Colorado Water Conservancy District

The District is a quasi-municipal entity and a political subdivision of the state of Colorado organized under the Water Conservancy Act, C.R.S. 37-45-101 et seq. The District was created on April 29, 1958 by decree of the District Court of Pueblo. A 15-member Board of Directors manages the District. Revenues of the District's Government Fund are primarily generated through an ad valorem mill levy applied against property in the District and contract revenue from Fountain Valley Authority.

In 1995, the District created a water activity enterprise for the purpose of pursuing, establishing, and continuing water activities as a business, separate and distinct from the District's governmental

activities, and to administer the sale and management of water including the Fry-Ark return flows. The enterprise itself has no taxing authority. Its revenues primarily come from charges for services and water sales.

Water Rights

The District has rights to import water from the western slope through Fry-Ark. Over the past 25 years, average annual diversions have been approximately 48,000 AF per year. Of that diversion, 12% is reserved for domestic use in municipalities east of Pueblo. This has averaged 5,760 AF per year and is the water that is expected to be conveyed through the AVC.

Pursuant to the Reclamation Repayment Contract, the District, through the water activity enterprise, retains dominion and control over all Fry-Ark return flows. These flows can be exchanged back up to Pueblo Reservoir, providing up to an additional 1,600 AF of water per year.

Project Description

The proposed Project is the construction of a 7.5 MW hydroelectric facility that will utilize the existing outlet flows from Pueblo Dam to the Arkansas River and will act as a run-of-river plant so that operations will not change existing flows or dam releases. The powerhouse will be located approximately 500 feet downstream from the North Outlet Work's fixed cone valve facility and adjacent to a Reclamation water supply pipeline. The turbines will discharge into the Arkansas River below Pueblo Dam. The turnouts for the powerhouse are located on the Southern Delivery System (SDS) pipeline and were built during the SDS pipeline construction in anticipation of a future hydroelectric power plant at this location. CH2M, Mountain States Hydro, and the District performed alternative analysis for potential turbine sizing.

Alternative 1 – No Action: This alternative was considered undesirable. With Reclamation's solicitation for hydropower on Pueblo Dam, the District is in the unique position of developing a local revenue source for the AVC project, thereby assisting communities in the Lower Arkansas River Basin. No action by the District would result in Reclamation awarding the final LOPP to the other applicant who proposes to sell the electricity to a power provider located in Salt Lake City.

Alternative 2 – Equally Sized Turbines: Advantages of having equally sized turbines primarily include easier maintenance as the operator would not need different spare parts and tools for each turbine, as well as a possibility for a smaller powerhouse footprint. However, equally sized turbines are less able to capitalize on a variable hydrograph as compared to unequally sized units. The District determined the added energy production from unequally sized turbines more than offset benefits of equally sized turbines and therefore did not choose this alternative

Selected Alternative 3 – Unequal Sized Turbines: The District determined unequally sized turbines offer a higher energy benefit. Preliminary designs show the use of three turbines (4,000 KW Turbine 1 at 450 cfs, 2,600 KW Turbine 2 at 260 cfs, and 900 KW Turbine 3 at 100 cfs) would provide the most energy generation potential over the widest range of flows at an average of 28,000,000 kWh per year.

Project components will include: (1) connection to the existing North Outlet Works turnouts; (2) 125 ft of 73-inch diameter penstock; (3) three Francis turbines with associated generators and electrical gear; (4) A 75 ft by 100 ft powerhouse located along the bank of the Arkansas River; and (5) 6,100 LF of underground and overhead power lines and associated switchgear.

The cost associated with this alternative is $19,060,000 as shown in Table 1. The District is near finalizing a Power Purchase Agreement (PPA) with Colorado Springs Utilities at a rate of $0.052 cents per kWh and a 2.5% escalation per year for the term of the agreement. The PPA will be a 20-year

agreement that will be in conjunction with two consecutive 10-year General Service Agreements (2018-2028 and 2028-2038) between Colorado Springs Utilities and Fort Carson Army Base. In the event the PPA is not renewed at the end of 20 years, a revenue source would still exist because the Public Utilities Regulatory Policy Act would require Black Hills Energy to purchase the hydropower at its avoided cost rate. Currently that price is $0.02947 per kWh and would be sufficient to pay the annual loan payment.

TABLE 1: PROJECT COST

Task	Cost
Construction	$7,300,000
Construction Contingency (~25%)	$1,800,000
Equipment	$6,000,000
Interconnect	$1,000,000
District Support/Const Management	$460,000
Subtotal 1	$16,560,000
Owner's Contingency (~4%)	$660,000
Subtotal 2	$17,220,000
Previous Studies and Engineering (Actual Cost)	$1,840,000
TOTAL	$19,060,000

Permitting: The District was awarded a preliminary LOPP in 2012. The preliminary LOPP expires on August 27, 2016. Therefore the District will either renew the preliminary LOPP or, if the PPA and interconnection agreements have been executed by that time, apply for the final LOPP. Reclamation has completed an Environmental Assessment for the project. A Finding of No Significant Impact (FONSI) is expected to be signed in July 2016. A Pueblo County 1041 FONSI approval was obtained in December 2014 and a US Corps of Engineers 404 nationwide permit was granted for the work in the Arkansas River. Based on input from US Fish and Wildlife, there are no endangered species impacted by the Project.

Schedule: The District anticipates receiving the final LOPP in September 2016. Construction is planned to occur from October 2016 through January 2018 with commissioning of the power plant in May 2018.

Financial Analysis

The District was originally approved for a municipal low-income interest rate of 3.25% for a 30-year term for the AVC project. However, this individual phase qualifies for CWCB's hydroelectric interest rate of 2.0% for a 30-year term. Table 2 provides a summary of the Project's financial aspects. The District has already incurred $1,840,000 in cost associated with previous studies and engineering.

TABLE 2: FINANCIAL SUMMARY

Total Project Cost	$19,060,000
Borrowers Contribution (Actual Cost)	$1,840,000
CWCB Loan Amount (~90%)	$17,220,000
CWCB Loan Amount (Including 1% Service Fee)	$17,392,200
CWCB Annual Loan Payment	$776,560
CWCB Annual Loan Obligation (1st Ten Years)	$854,216
Annual Loan Obligation per annual kilowatt hours (28 M kWh/year)	$0.03
Project Cost per Megawatt (7.5 MW Facility)	$2,541,333

Creditworthiness: The District's water activity enterprise has no existing debt.

TABLE 3: FINANCIAL RATIOS

Financial Ratio	Past 2 Years	Future w/ Project
Operating Ratio (revenues/expenses) weak: <100% - average: 100% - 120% - strong: >120%	100% (Average) $2.17M/$2.17M	100% (Average) $3.63M/$3.62M
Debt Service Coverage Ratio (revenues-expenses)/debt service weak: <100% - average: 100% - 120% - strong: >120%	NA	101% (Average) ($3.63M-$2.77M) $0.85M
Cash Reserves to Current Expenses weak: <50% - average: 50% - 100% - strong: >100%	29% (Weak) $0.63M/$2.17M	17% (Weak) $0.63M/$3.62M

Collateral: As Security for this loan, the District, acting by and through its water activity enterprise, will pledge power revenues and will provide annual financial reporting. A rate covenant is not applicable as the PPA controls the purchase price of the power and it has been set at a price sufficient to cover expenses and debt service. However, because of the lack of a rate covenant, this will be a variance from the CWCB Financial Policy #5 (Collateral).

Original AVC Loan Conditions

In addition to the standard contracting provisions of the CWCB, the 2006 CWCB Loan approval contained 9 additional conditions. Table 4 provides a summary of these conditions and a status report specific to the hydropower development phase.

TABLE 4: LOAN CONDITIONS STATUS REPORT

Summary of Additional Loan Conditions	Status
1. Final Feasibility Study: A feasibility study is required to be approved prior to the execution of a State loan contract.	The June 1, 2016 "Pueblo Dam Hydroelectric Project Loan Feasibility Study" satisfies this condition for the hydropower development phase.
2. Participant Funding Agreements: All proposed Participant Funding Agreements shall be executed prior to the execution of a State loan contract.	This condition is not applicable to this phase of the AVC as there are no other participants providing funding for the hydropower development phase.
3. Conservation Plans: A CWCB approved Water Conservation Plan is required for all "covered entities" prior to the execution of a State loan contract	This plan was approved by the CWCB in February 2013.
4. Federal Authorization: No State loan contract shall be executed until Federal legislation to authorize the federal/local cost-share for the AVC has been approved.	In 2009, the 111th Congress approved a 65% federal/35% local cost share in Public Law 111-11 section 9115.

Summary of Additional Loan Conditions	Status
5. Federal Funding Appropriation: No state loan contract shall be executed until Federal legislation appropriating construction funds for the AVC has been approved.	This condition is not applicable as Federal funds will not be used for the hydropower development phase.
6. CWCB Loan Contract: a) Water activity enterprise must contract within 2 years of Board Approval. b) Contracts between water activity enterprise and other project participants shall include a "step-up" provision to pay CWCB loan. c) Enterprise shall supply to the CWCB, a TABOR compliance letter prior to entering into a State contract.	a) The 2009 Projects Bill provided an extension through July 1, 2021. b) This does not apply as there are no other project participants funding the hydropower development phase. c) This is required as part of CWCB's standard contracting procedures.
7. Federal Memorandum of Understanding (MOU): Required MOU's between Borrower and federal agency(ies) shall be in place prior to the execution of a state contract.	Federal MOU's are not required for the hydropower development phase.
8. Status Report on Conditions: Prior to executing a State loan contract, the CWCB staff shall provide a status report to the Board on the fulfillment of the above loan approval conditions.	This has been met through this Board Memo for the hydropower development phase. Additional phases of the AVC project will require an additional status report.
9. Loan Disbursements: Disbursements from the CWCB to the Borrower will be in the same percentage as disbursements made from the Federal government.	This condition is not applicable as Federal funds will not be used for the hydropower development phase.

cc: James Broderick, Executive Director, Southeastern Colorado Water Conservancy District
Susan Schneider/Jennifer Mele, Colorado Attorney General's Office

Attachment: Water Project Loan Program – Project Data Sheet

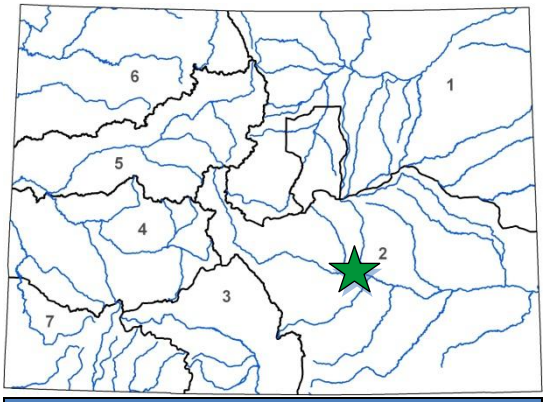
COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Arkansas Valley Conduit Phase One
Pueblo Dam Hydroelectric Project

Southeastern Colorado Water Conservancy District

July 2016 Board Meeting

LOAN DETAILS	
Project Cost:	$19,060,000
CWCB Loan (with Service Fee):	$17,392,200
Loan Term and Interest Rate:	30 Years @ 2.0%
Funding Source:	Severance Tax PBF
BORROWER TYPE	
Hydropower	
PROJECT DETAILS	
Project Type:	Hydroelectric
Average Annual Power Production:	28M KWh



LOCATION			
County:			Pueblo
Water Source:			Arkansas River
Drainage Basin:			Arkansas River
Division:	2	*District:*	10

Southeastern Colorado Water Conservancy District, acting by and through its water activity enterprise, is applying for a loan for the construction of the Pueblo Dam Hydroelectric Project. The Project is located at the existing Pueblo Dam and will utilize the existing releases to the Arkansas River without changing the flow regime. This Project is being constructed as Phase One of the overall Arkansas Valley Conduit project, authorized in the 2007 and 2009 Projects Bill (SB07-122, SB09-125). The purpose of the Project is to develop a revenue source to offset the operational and maintenance cost of the Arkansas Valley Conduit.

The proposed 7.5 megawatt facility will be located on the North Outlet of Pueblo Dam. A powerhouse would be located at the downstream end of the existing outlet works that supplies water to the Arkansas River and would allow the Dam's authorized releases to generate an annual average 28 million kWh (enough to power approximately 3,300 homes) and $1,500,000 in average revenue per year. The Project is being performed under the U.S. Bureau of Reclamation's Lease of Power Privilege (LOPP) process. Power generated will be purchased by Colorado Springs Utilities via transmission through the local Black Hills Energy power delivery system. Construction is planned to start in October 2016 for commissioning in May 2018.


Powerhouse Rendering

SOUTHEASTERN COLORADO
Water Conservancy District
"Your investment in water"

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

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION