COLORADO
Colorado Water Conservation Board
Department of Natural Resources

1313 Sherman Street
Denver, CO 80203

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

TO: Colorado Water Conservation Board Members

FROM: Rachel Pittinger, P.E., Project Manager
Kirk Russell, P.E., Finance Section Chief

DATE: January 22-23, 2018 Board Meeting

AGENDA ITEM: 9b. Water Project Loans
Bessemer Irrigating Ditch Company – Landslide Stabilization and Ditch Lining

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Introduction

The Bessemer Irrigating Ditch Company (Company) is applying for a loan for the Landslide Stabilization and Ditch Lining Project (Project). The purpose of the Project is to stabilize the ditch and maintenance road and line the ditch through the stabilized area. The Project is located two miles downstream of Pueblo Dam. The slide area has been a concern for several years; however, a recent slide in the summer of 2017 caused the Company to consider stabilization work. The estimated Project cost is $900,000. The Company is seeking a loan from the CWCB for 100% of Project costs. See attached Project Data Sheet for a location map and Project summary.

Staff Recommendation

Staff recommends the Board approve a loan not to exceed $909,000 ($900,000 for Project costs and $9,000 for the 1% service fee) to the Bessemer Irrigating Ditch Company for costs related to the Landslide Stabilization and Ditch Lining Project, from the Construction Fund. The loan terms shall be 20 years at a reduced blended interest rate of 1.65% per annum. Security for the loan shall be in compliance with CWCB Financial Policy #5.

Background

The Bessemer Ditch provides irrigation water to 20,000 acres of irrigated farm land east and south of Pueblo, Colorado. The Company's service area extends east and south of Pueblo and includes the communities of the St. Charles Mesa, Vineland, Avondale and Boone. The annual sale of irrigated production is approximately $25,000,000. The Pueblo Board of Water Works provides potable water to the City of Pueblo and additional areas and has 28% of the Bessemer Ditch shares of stock. The original headgate and upper four miles of the Bessemer Ditch is inundated by the water stored in Pueblo Reservoir. As a result of the construction of Pueblo Reservoir, the Bessemer Ditch now diverts at the base of the Bureau of Reclamation's Pueblo Dam (Dam).

There is an ancient slide zone approximately two miles downstream of the Dam. There have been some minor land movements in this area in the past, but it began to significantly move in July 2017 as much as three feet. In the 2017 irrigation season, water deliveries were reduced by 25 percent to lower the risk of ditch failure. The fields had already been planted, so the farmers could not adjust their cropping plan for the year so crop yields reduced.

Loan Feasibility Study

Rick Kidd, P.E., with Kidd Engineering, prepared the Loan Feasibility Study titled, "Emergency Landslide Stabilization Project Loan Feasibility Study," dated November 30, 2017. The feasibility study was prepared in accordance with CWCB guidelines and included an alternatives analysis, preliminary engineering, and estimated engineering costs. Audited financial statements were provided by the Company and prepared by McPherson, Breyfogle, Daveline and Goodrich, PC, Certified Public Accountants.

Borrower – The Bessemer Irrigating Ditch Company

The Company is a non-profit mutual ditch company and is in good standing with the Colorado Secretary of State. It was first incorporated in May 1888. The Company has 20,000 shares and 774 shareholders governed by a seven member board of directors. The Company receives income from annual assessments against each corporate share.

The board of directors has the authority to make and levy all assessments, and has the power to enforce collection of assessments by ceasing water deliveries to delinquent shareholders, issuing liens on the shares. It also has the power to make and enforce all rules and regulations concerning the distribution of water within the system. The board of directors has the authority to enter into debt without shareholder approval for maintenance and repair projects.

Water Rights

The water rights of the Company are shown in Table 1.

TABLE 1: WATER RIGHTS

Name	Amount (cfs)	Appropriation Date	Adjudication Date	Water Court Case No.
Bessemer Ditch	68.65	6/30/1866	3/23/1896	CA2535
Bessemer Ditch	322	5/1/1887	3/23/1896	CA2535

Average annual diversions of the Company are 71,600 AF.

Project Description

The objective of the Project is to stabilize the ditch and maintenance road and line approximately 1200 lineal feet of ditch through the stabilized area. There is no intent to change the geometry of the ditch. The Company owns sufficient land for the proposed construction activities.

The area of the slide zone is approximately 200 feet wide. CTL Thompson was contracted to perform soils borings and provide geotechnical design and consultation services. NorthStar Engineering and Surveying provided topographic surveys of the area. After evaluation of the borings and topography, CTL Thompson concluded that the ditch itself was on a relatively stable bench of the slide zone. However, the maintenance road and outlying slope area is extremely unstable and will continue to move without mechanical stabilization. Loss of this area would result in a narrow ditch wall which could fail due to saturation and hydraulic pressures.

Alternative 1 – No Action: The slope may temporarily stabilize, but the concern is that it will continue to move. If that should happen, then the water deliveries will again have to be decreased and agricultural production and farmer income will be lowered. This alternative was not selected because there is a continued risk of a catastrophic failure that could result in losing the ditch bank.

Alternative 2 – Place Earthen Fill and Flatten the Slope: This alternative includes earthwork that would fill the area and flatten the slopes that have moved due to landslides. The Bessemer Ditch does not own the adjacent property. The land is covered with vegetation and the potential fill area is confined by Colorado Highway 96. Due to land constraints, existing saturated soils, springs, and excessive vegetation the engineering assessment would be costly and time consuming.

Alternative 3 – Two Phases of Drilled Shaft Wall and As-Needed Tiebacks: This alternative would consist of a wall that would stabilize the area between the ditch and the service road. The tiebacks into the bluff could be installed on an as-needed basis determined during construction. This type of construction is specialized and there is concern if this alternative fails, the same contractor may not be available. Therefore increasing overall repair costs to the Company.

Selected Alternative 4 – Ditch Repair: This alternative includes drilled beams, reinforced face, tieback anchors and ditch lining. This is the most expensive of the quoted options, however, it would all be done at once.

- *Selected Alternative: Landslide Stabilization*

The Company selected this alternative because the contractor is expected to complete the work one time with reasonable confidence that this will take care of the problem and there will be no curtailment of water deliveries. This also may be the easier alternative for long term maintenance and site utilization. The estimated cost for engineering, design and construction activities is $482,000.

- *Selected Alternative: Ditch Lining*

CTL Thompson and contractors contacted by the Company recommend installing a synthetic liner in the ditch to reduce any seepage that may be occurring throughout this area. The design and installation of the recommended synthetic liner can be done during the Winter 2018/2019 if the construction during Winter 2017/2018 does not allow sufficient access and time for this work to be done. The length of the reach to be lined is approximately 1200 lineal feet. There will be approximately 480,000 square feet of synthetic liner material required for the job. Preliminary engineer's estimate is $300,000.

The total cost associated with the Project is $900,000 as shown in Table 2.

TABLE 2: ESTIMATED PROJECT COST

Tasks	Cost
Engineering and Design	$50,000
Landslide Stabilization	$482,000
Ditch Lining	$300,000
SUBTOTAL	**$832,000**
Contingency (8%)	$68,000
TOTAL	**$900,000**

Permitting: A stormwater management plan and discharge permit will be required from the Colorado Department of Public Health and Environment. There is a residential development on the bluff above the site of work. Since the work will be done during daylight hours it is not anticipated that the construction project will significantly affect the residents and no additional land will be disturbed.

Schedule: The ditch is not utilized from November 15, 2017 through March 15, 2018. The Company has bid this Project and construction is scheduled to begin February 2018. The contractor stated that they could complete this Project within the specified time period and they estimated a 36 work day construction period.

Financial Analysis

Table 3 provides a summary of the Project's financial aspects. The Company qualifies for a blended interest rate of 1.9% for a 30-year term (Ownership: 38% Low-Income Municipal, 62% Agriculture). Because the Company requested a 20-year term, a 0.25% interest rate reduction is applied per Policy #7, bringing the interest rate to 1.65%.

TABLE 3: FINANCIAL SUMMARY

Project Cost	$900,000
CWCB Loan Amount	$900,000
CWCB Loan Amount (Including 1% Service Fee)	$909,000
CWCB Annual Loan Payment	$53,732
CWCB Annual Loan Obligation (1st Ten Years)	$59,105
Number of Shares	20,000
Annual Loan Obligation per Share	$2.96
Current Assessment per Share	$50
Estimate Total Future Assessment per Share ($13 per share increase)	$63
Annual Obligation per AF delivered (71,600 AF)	$0.83/AF

Creditworthiness: The Company has no existing debt. Recent assessments have increased at a faster rate compared to previous years and since the 2002 drought. In 2008, assessments increased from $26/share to $30/share and in 2011, increased again to $40/share. Finally, in 2012 assessments increased to $50/share where they remain.

TABLE 4: FINANCIAL RATIOS

Financial Ratio	Past 3 Years	Future w/ Project
Operating Ratio (revenues/expenses) weak: <100% - average: 100% - 120% - strong: >120%	84% (weak) $894K/$1.06M	103% (average) $1.15M/$1.12M
Debt Service Coverage Ratio (revenues-expenses)/debt service weak: <100% - average: 100% - 120% - strong: >120%	N/A	153% (strong) ($1.15M-$1.06M) $59K
Cash Reserves to Current Expenses weak: <50% - average: 50% - 100% - strong: >100%	20% (weak) $207K/$1.06M	18% (weak) $207K/$1.12M
Annual Operating Cost per Acre-Foot (71,600AF) weak: >$20 - average: $10 - $20 - strong: <$10	$14.80 (average) $1.06M/71,600AF	$15.60 (average) $1.12M/71,600AF

Collateral: Security for this loan will be a pledge of assessment revenues back by a rate covenant and the Project itself (a section of Bessemer Ditch). This security is in compliance with the CWCB Financial Policy #5 (Collateral).

cc: Mr. Mike Hill, Secretary/Treasurer, Bessemer Irrigating Ditch Company
Jennifer Mele, Colorado Attorney General's Office

Attachment: Water Project Loan Program – Project Data Sheet

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Bessemer Irrigating Ditch Company

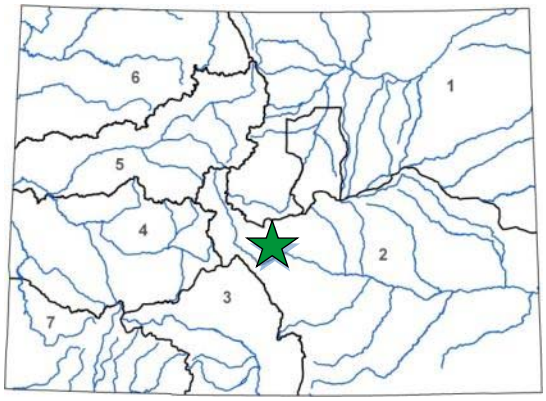
Landslide Stabilization and Ditch Lining Project

January 2018 Board Meeting

LOAN DETAILS	
Project Cost:	$900,000
CWCB Loan (with Service Fee):	$909,000
Loan Term and Interest Rate:	20 years @ 1.65%
Funding Source:	Construction Fund

BORROWER TYPE		
Agriculture	*Municipal*	*Commercial*
62%	38% Low - 0% Mid -0% High	0%

PROJECT DETAILS	
Project Type:	Ditch Rehabilitation
Average Annual Diversions:	71,600 AF



LOCATION			
County:			Pueblo
Water Source:			Arkansas River
Drainage Basin:			Arkansas
Division:	2	*District:*	14

The Bessemer Ditch Company was incorporated in 1888 and construction of the ditch began in 1889. It serves nearly 20,000 irrigated acres in Pueblo County and provides water for municipal use. In the summer of 2017, land along limestone bluffs, approximately 2 miles east of Pueblo Dam, started sliding away from the Bessemer Ditch canal. The landslide area is approximately 200 feet wide. Stabilization and corrective work will occur in two stages; mechanical stabilization and ditch lining. Mechanical stabilization of the slide area will protect the canal and provide width for access and maintenance. The second stage of work includes synthetic liner installation, extending upstream and downstream from the slide area 1200 lineal feet to control canal seepage. Construction is expected to begin in January 2018.