



COLORADO

**Colorado Water
Conservation Board**

Department of Natural Resources

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TO: Colorado Water Conservation Board Members

FROM: Derek Johnson, P.E., Project Manager
Kirk Russell, P.E., Finance Section Chief

DATE: July 15-16, 2015 Board Meeting

AGENDA ITEM: 11a. Water Project Loan
Oligarchy Irrigation Company – Dam Outlet Works Rehabilitation

Introduction

The Oligarchy Irrigation Company (Company) is applying for a loan for the construction of the Dam Outlet Works Rehabilitation (Project). The purpose of the Project is to rehabilitate the Oligarchy Reservoir No.1 dam outlet works by constructing a new outlet works gate vault, outlet works piping, intake structure, and discharge structure. The total Project cost is estimated at \$860,000. The Company is requesting a loan to cover 90% of the Project cost. See the attached Project Data Sheet for a location map and project summary.

Staff Recommendation

Staff recommends the Board approve a loan not to exceed \$781,740 (\$774,000 for Project costs and \$7,740 for the 1% Loan Service Fee) to the Oligarchy Irrigation Company for costs associated with design and construction of the Dam Outlet Works Rehabilitation Project from the Construction Fund. Loan terms shall be 30 years at a blended interest rate of 2.40% per annum. Security for the loan shall be in compliance with CWCB Financial Policy #5.



Background

The Company serves approximately 2,700 irrigated acres in Boulder and Weld Counties north of Longmont. The Oligarchy No. 1 Reservoir and Dam, also known as Burch Lake, is classified as a Significant Hazard Dam by the State Engineers Office (SEO). The reservoir is offstream, and is filled via the Palmerton Ditch, which diverts from St. Vrain Creek near Lyons, Colorado. The Oligarchy Reservoir No.1 releases its water into the Oligarchy ditch, which extends easterly approximately 15 miles. Oligarchy Ditch water is used by the Oligarchy Irrigation Company shareholders for agricultural uses and irrigation of municipal parks and schools.

The dam embankment is approximately 18 feet high with a crest width of approximately 12 feet and upstream and downstream slopes of approximately 2.5 to 1. The reservoir's outlet works system original construction dates back to 1910, having been adjudicated in 1890 for 1,080 acre-ft. Subsequent enlargements were made in 1907 and 1926. The reservoir currently stores approximately 1,737 acre-feet of water at the normal high, or operating, water line.

A dam maintenance and concurrent inspection performed by the SEO in August 20, 2012 by John Batka, P.E included a request regarding the outlet works system condition as follows: *"That given the undesirable condition of having a pressurized conduit through the embankment, difficult access for inspection and difficult operation of the valve, the condition of the outlet structure is rated poor. The company (Oligarchy Irrigation Company) is strongly encouraged to construct a new outlet structure that will allow upstream control of the conduit."* The Company seeks to update the entire outlet system with a reconstructed new outlet pipe and an upstream control gate.

Loan Feasibility Study

Glen Church, P.E. and Bryan Black, P.E. of Deere and Ault Consultants prepared the Loan Feasibility Study titled "Oligarchy Irrigation Company Oligarchy Reservoir No. 1 Dam Outlet Works Rehabilitation Feasibility Study", dated June 1, 2015, with assistance from Nelson Tipton, Company president. The study includes an analysis of alternatives, a preliminary engineering design, and cost estimates, in accordance with CWCB guidelines.

Borrower - Oligarchy Irrigation Company

The Company is a Colorado non-profit mutual ditch company that was incorporated in 1891. The Company's office is located in Longmont. It is in good standing with the Colorado Secretary of State. The Company has 90 shareholders and has issued 300 shares of stock. The Company's revenues are primarily derived from assessments charged on shares of stock owned by the stockholders, carriage agreements, and recreational leases.

The Company's by-laws authorize the Board of Directors to borrow money and to provide for the payment of the same by assessment of its members. The Board has the authority to take measures to enforce assessments, including the suspension of water deliveries and the eventual sale or forfeiture of shares for failure to pay assessments.

Water Rights

Oligarchy Reservoir No. 1 has the following decreed water rights:

TABLE 1: STORAGE WATER RIGHTS

Name	Amount (AF)	Appropriation Date	Adjudication Date
Original	1080	7/2/1889	3/22/1890
First Enlargement	357.4	3/31/1890	3/13/1907
Second Enlargement	386	11/14/1892	3/13/1907
Third Enlargement	306	11/1/1911	6/1/1926
Partial Refill	272	12/31/1929	7/23/1951
Refill	1858	12/31/1929	7/23/1951

According to State of Colorado Division of Water resources records, Oligarchy Reservoir No. 1 has provided an average of 795 acre-feet per year to the Oligarchy Ditch for irrigation use.

Project Description

Five alternatives were considered for this project:

Alternative No. 1 - No-action was considered unacceptable, as the SEO 2014 Engineer's Inspection Report requested that the outlet works pipe be unpressurized and provide access to inspect the entirety of the outlet works system. The dam is considered a significant hazard dam by the SEO. If the outlet works fails in the future, significant costs from damages to private and public buildings and infrastructure in the vicinity of the Town of Hygiene would likely result. A future storage restriction by the SEO would also be a possibility in the future.

Alternative No. 2 - Install new hydraulic gate system and reconstruct concrete intake structure

The new hydraulic gate would be hydraulically operated from a concrete vault on the dam crest. The advantage to this alternative is minimum disturbance to the existing dam; disadvantages include continued existence of a pressurized pipe under the dam, continued deterioration of the existing outlet works pipe through the dam, and the need to completely drain the reservoir for any inspection.
Cost: \$830k

Alternative No. 3 - Bridge, gate, and reconstruct concrete intake structure

A bridge, approximately 80 feet long, would be built out to a new concrete intake structure so that the operator could be mounted directly above on the bridge. The primary advantage of this alternative is the simplicity of a sluice gate system; disadvantages include susceptibility to ice loading damages, continued existence of a pressurized pipe under the dam, continued deterioration of the existing outlet works pipe through the dam, and the need to completely drain the reservoir for any inspection.
Cost: \$870k

Alternative No. 4 - Slope stem gate - this system would involve reconstruction and steepening of the upstream dam embankment slope to construct a new gate and stem supported by a new concrete structure. Partial removal of the outlet pipe would be required so that the concrete structure could be connected to existing outlet works system. Advantages of this alternative include elimination of the pressurized pipe, continued deterioration of the existing outlet works pipe through the dam, and the need to completely drain the reservoir for any inspection.
Cost: \$871k

Selected Alternative No. 5 - New outlet works gate vault, outlet works piping, intake, and discharge structures is the selected alternative because it remedies all of the SEO requests about the outlet works system. This alternative provides for replacing the whole outlet works system with new intake and discharge structures, and a gate vault located on the upstream side of the dam for a service spillway. Existing cast iron piping will be replaced with PVC joint-restrained pipe encased in concrete

within the dam embankment. A sand filter will be constructed to allow a path for water to drain from the dam embankment, which will be reconstructed with a 3:1 (horizontal to vertical) upstream slope and match existing downstream slope. This alternative solves both the SEO concerns with the outlet works, by having a gate in a structure upstream of the dam, and allows inspection of the outlet works pipe without draining the whole reservoir. It also provides new pipe to replace the 70+ year old outlet pipe of unknown condition. Costs for this alternative are shown in the following table.

TABLE 2: ESTIMATED PROJECT COST

Task	Cost
Design Engineering	\$105,000
Construction Engineering	\$75,000
Construction	\$522,000
Permitting	\$15,000
Subtotal	\$717,000
Contingency @ 20%	\$143,000
Total	\$860,000

Schedule: The design engineer is expected to complete plans, technical specifications and a design report for review by the SEO by spring of 2015. Construction will begin after the irrigation season in fall 2015 with completion targeted before the start of the 2016 irrigation season.

Financial Analysis

The Company shares are held by 25.4% agricultural use owners and 74.6% middle income municipal use owners. Blending this mix of users under the current interest rates, the Company qualifies for a 2.40% interest rate for a 30-year term.

TABLE 3: FINANCIAL SUMMARY

Total Project Cost	\$ 860,000
Borrower Match	\$ 86,000
CWCB Loan	\$ 774,000
CWCB Loan (Including 1% Service Fee)	\$ 781,740
CWCB Annual Loan Payment	\$ 36,853.48
CWCB Annual Loan Obligation (incl. 10% debt reserve funding)	\$ 40,539
Current Annual Assessment per Share	\$ 200
Annual Loan Obligation per share (300 Shares)	\$ 139
Cost of Project per AF of stored water (1,737 AF)	\$ 495

Creditworthiness:

The Company's maintenance costs are paid by the Union Reservoir Company and by the City of Longmont, and did not start shareholder assessments until 2010 to build up reserves for future maintenance projects. The Company's current assessments of \$200 per share are expected to be increased by \$75 per share to cover the debt service for the Project loan, and debt service for the prior emergency loan.

The Company's only existing debt is a CWCB Emergency Loan from December of 2013. The Company is not required to make payments on this loan until December of 2017.

TABLE 4: EXISTING DEBT

Loan	Maturity Date	Original Balance	Loan Balance	Annual Payment	Collateral
CWCB Loan No. C150372	2043	\$1,262,500	\$ 488,942	\$64,863	Assessment revenues backed by a rate covenant and the Project itself

TABLE 5: FINANCIAL RATIOS

Financial Ratio	Past Years	Future w/ Project ⁽¹⁾
Operating Ratio (revenues/expenses) weak: <100% - average: 100% - 120% - strong: >120%	152% (strong) \$134K / \$88K	102% (average) \$156K / \$154K
Debt Service Coverage Ratio (revenues-expenses)/debt service weak: <100% - average: 100% - 120% - strong: >120%	NA	104% (average) (\$156K-\$88K) / \$66K
Cash Reserves to Current Expenses weak: <50% - average: 50% - 100% - strong: >100%	273% (strong) \$241K / \$88K	158% (strong) \$243K / \$154K
Annual Operating Cost per Acre-Foot Diversions (7,966 AF) weak: >\$20 - average: \$10 - \$20 - strong: <\$10	\$11 (average) \$88K / 7,966	\$19 (average) @154K / 7,966

(1) "Future with project" metrics are calculated with the assumption that both this loan, and the prior Emergency Loan, when amended, are simultaneously in repayment.

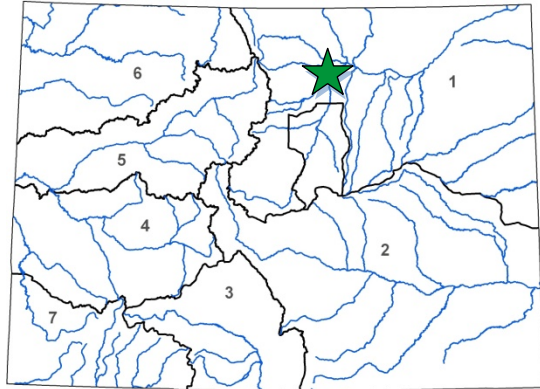
Collateral: As security for the loan, the Company will pledge its assessment revenues backed by an assessment covenant and the project itself. This is in compliance with the CWCB Financial Policy #5 (Collateral).

cc: Nelson Tipton, President, Oligarchy Irrigation Company
 Susan Schneider/Jennifer Mele, Colorado's Attorney General Office

Attachment: Water Project Loan Program - Project Data Sheet



LOAN DETAILS	
Project Cost:	\$860,000
CWCB Loan (with Service Fee):	\$781,740
Loan Term and Interest Rate:	30 Years @ 2.40%
Funding Source:	Construction Fund
BORROWER TYPE	
Agriculture	Municipal (TBD)
25.4%	0% Low - 74.6% Mid - 0% High
Commercial	0%
PROJECT DETAILS	
Project Type:	Dam Rehabilitation
Average Annual Delivery:	7,966 AF
Water Supply Storage Preserved:	1,737 AF



LOCATION	
County:	Boulder
Water Source:	St Vrain Creek
Drainage Basin:	South Platte
Division:	1
District:	5

The Oligarchy Irrigation Company owns and operates the Oligarchy #1 Dam and Reservoir, also known as Burch Lake. The reservoir stores 1,737 acre-feet of water and is classified as a significant hazard dam by the Office of the State Engineer (SEO). The purpose of the project is to rehabilitate the Oligarchy Reservoir No.1 dam outlet works to include a new unpressurized outlet pipe, an outlet works system. Construction is expected to occur

