



**COLORADO**  
**Colorado Water Conservation Board**  
Department of Natural Resources

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**TO:** Colorado Water Conservation Board Members

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

**DATE:** July 15-16, 2020 Board Meeting

**AGENDA ITEM:** 12c. Water Project Loans  
Amity Mutual Irrigation Company - Queen Reservoir Dam Rehabilitation

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**Staff Recommendation:**

Staff recommends the Board approve a loan not to exceed \$1,343,300 (\$1,330,000 for Project costs and \$13,300 for the 1% service fee) to the Amity Mutual Irrigation Company for costs related to the Queen Reservoir Dam Rehabilitation, from the Severance Perpetual Base Tax Fund. The loan term will be 30 years at a blended interest rate of 3.10% per annum with restricted reservoir rate reduction applied. Security for the loan shall be in compliance with CWCB Financial Policy #5.

Additionally staff recommends the following loan contract condition:

In the event Tri-State Generation and Transmission Association, Inc. pays in full their prorated shareholder ownership amount of the loan, the contract will be amended at Substantial Completion to a reduced loan amount at a 30-year interest rate of 0.80% per annum with a restricted reservoir rate reduction applied.

**Introduction:**

The Amity Mutual Irrigation Company (Company) is applying for a loan for the Queen Reservoir Dam Rehabilitation (Project). The 35,657 acre-foot (AF) reservoir has been under a storage restriction imposed by the Colorado Dam Safety Branch of the Office of the State Engineer (SEO) since July 2017. The restriction was issued due to safety concerns related to seepage in the dam's foundation and the deteriorated erosive condition of the outlet works. Excavation above the outlet works found a void measuring several feet. This reservoir rehabilitation project will remove the safety restriction and allow continued delivery water to shareholders for irrigation. The total Project cost is estimated to be \$1,330,000. See attached Project Data Sheet for a location map and Project summary.



**Borrower - Amity Mutual Irrigation Company:**

The Company is a Colorado mutual irrigation company formed on April 22, 1936 as a non-profit corporation. The reservoir was built by Arkansas Valley Sugar Beet and Irrigated Land Company in the late 1890's and purchased by the Company. The Company provides water to irrigate 34,682 acres of land from Prowers County to the Stateline. The Company is in good standing with the Colorado Secretary of State.

The Company has 115 shareholders and has issued 34,632.78 shares of stock. Revenues are primarily derived from assessments. Additional revenue comes from an agreement with the Colorado Parks and Wildlife for easement access to several of the Company's reservoirs. The Company is governed by a seven-member Board of Directors. They have certain powers, duties and responsibilities, which include the power to incur debt, liabilities and obligations, and to set and enforce the payment of all assessments for the function, repair, construction, reconstruction and system maintenance.

**Background:**

The Queen Reservoir (Neeskah Reservoir) and Dam is located in Kiowa County approximately 12 miles north of Lamar. The dam is categorized by Colorado Dam Safety as a significant-hazard dam. The Company owns and operates the Great Plain Reservoir system that includes Queen Reservoir and has a total decreed storage capacity of 265,552 AF. Queen Dam is important to the Company because it is one of the lower reservoirs that supplements water supplies of the Amity and Fort Lyon canals during low flows of the Arkansas River. The Company is able to use the majority of water placed in the reservoir for crop irrigation of alfalfa hay, corn milo and wheat. Queen Reservoir is the southeasternmost reservoir in the system and discharges to Pawnee Canal. The Company's average annual diversions are 44,474 AF.

This dam was originally constructed as an earthen embankment and is approximately 1,800 feet long with a maximum embankment height of 25 feet. The embankment impounds water within two natural depressions that make Queen Reservoir. At capacity, these two depressions fill and create one water body. These reservoirs are hydraulically connected by means of a channel. Seepage and erosion issues have been documented since 1985. The reservoir has been dry between 2001 and 2015. In 2016, the reservoir filled and water was observed exiting the wingwall of the Queen Reservoir outlet works. In 2017, excavation encountered a large void so the area was immediately backfilled and the reservoir drawn down and restricted by the SEO. Geotechnical data and field observations have determined internal erosion is occurring through the embankment section near the outlet works requiring repair.

**Loan Feasibility Study:**

Mr. Robert Huzjak, P.E., with RJH Consultants, Inc., prepared the Loan Feasibility Study titled, "Loan Feasibility and Evaluation Report," dated March 2020 and was received with the loan application on May 4, 2020. A topographic survey of the dam embankment and site features was performed by Wachob and Wachob under RJH Consultants, Inc. The feasibility study was prepared in accordance with CWCB guidelines and includes an analysis of alternatives and estimated costs. Audited financial statements were provided by Anderson and Company, P.C., Certified Public Accountants.

**Water Rights:**

The Company has several direct flow water and storage rights. Queen Reservoir is part of the Great Plains Reservoir system. The Company holds the decree for the Great Plains Reservoir system for a total of 265,552 AF. The Company owns the direct flow and storage rights related to the Project as shown in Table 1.

**TABLE 1: WATER RIGHTS**

Name	Amount	Appropriation Date	Adjudication Date	Water Court Case No.
Great Plains Reservoir System	1150 cfs 265,552 AF	8/1/1886	2/3/1927	Case No. February 3, 1927 <sup>1</sup>
Queen Reservoir (Neeskah Reservoir)	35,657 AF	8/1/1886	2/3/1927	Case No. February 3, 1927

<sup>1</sup> Findings and Decree: In the Matter of the Adjudication of Water in District 17, Bent County Colorado (February 3, 1927)

**Project Description:**

The purpose of the project is to rehabilitate Queen Reservoir Dam and remove the storage restriction and fill the reservoir to the storage capacity for water delivery to shareholders. The alternatives considered for the rehabilitation work included:

**Alternative 1 - No Action - No Reservoir Dam Rehabilitation:** If no rehabilitation occurs, the reservoir will remain unsuitable for water storage due to the amount of seepage and internal erosion and storage level restrictions will continue. This alternative would not allow the Company to store its decreed capacity to supply irrigation water. Without the Project, the Company’s ability to provide water to shareholders may be compromised.

**Alternative 2 - Replace Downstream Portion Outlet Works and Connect to Existing Upstream Components:** This alternative involves replacement of the downstream repair of the downstream portion of the dam’s outlet works and connecting to the upstream headwall and wingwalls. Due to the high risk for additional costs associated with unforeseen conditions of the upstream components, unknown remaining service life of the upstream components, final construction not meeting design standard or SEO design criteria, this alternative was not selected. The estimated cost for this alternative is approximately \$505,000.

**Selected Alternative 3- Full Removal and Replacement of Reservoir Dam Outlet Works:** This alternative includes removal of entire outlet works and replacement of the outlet works components of the dam. This alternative improves hydraulic capacity and controls by upgrading the gate components and piping as well as providing a longer service life and lower maintenance costs by replacing all components with current standards of practice components that follow current design standard criteria. This alternative includes replacing the headwall with an earthen embankment. The estimated cost for the reservoir dam rehabilitation engineering and construction is approximately \$1,330,000 and is shown in Table 2. This alternative was selected.

**TABLE 2: ESTIMATED PROJECT COST**

Tasks	Cost
Construction	
General Site	\$233,000
Earthwork	\$242,000
Piping and Gate Vault	\$225,000
Outlet Works	\$105,000
Intake Structure	\$295,000
Project Management/Engineering	\$230,000
<b>TOTAL</b>	<b>\$1,330,000</b>

**Permitting:**

The Company does not anticipate obtaining additional permits for this Project. The dam is under the jurisdiction of the State Engineer and will be rehabilitated in cooperation and approval by the State Engineer’s Office, Colorado Dam Safety Branch.

**Schedule:**

Preliminary design is complete and the Company anticipate final design of the Project in the Fall of 2020. The Company anticipates final construction completion in the Spring of 2022.

**Financial Analysis:**

Table 3 provides a summary of the Project’s financial aspects. The Company qualifies for a blended agricultural and commercial interest rate of 3.60% for a 30-year loan. (Share ownership is 50.5% agricultural and 49.5% commercial.) Because the reservoir is restricted, the interest rate is then reduced by 0.5%. This rate is reduced to 3.10% for a 30-year term. If the contract condition is excercised the Company will qualify for an agricultural interest rate of 1.30% for a 30-year loan. Because the reservoir is restricted, the interest rate is then reduced by 0.5%. The rate would then be reduced to 0.80% for a 30-year term. All interest rate evaluations are per CWCB Financial Policy #7 (Lending Rate Determination).

**TABLE 3: FINANCIAL SUMMARY**

Project Cost	\$1,330,000
CWCB Loan Amount	\$1,330,000
CWCB Loan Amount (Including 1% Service Fee)	\$1,343,300
CWCB Annual Loan Payment	\$69,423
CWCB Annual Loan Obligation (1 <sup>st</sup> Ten Years)	\$76,365
Number of Shareholders	115
Number of Shares	34,633
Annual Loan Obligation per Share	\$2.20
Current Assessment per Share	\$34.00
Future Assessment per Share	\$34.00
Cost per AF of total recovered storage (35,657 AF)	\$37/AF

**Creditworthiness:**

The Company has \$120,512 in existing debt. The Company has an existing CWCB loan for the Neenoshe Reservoir Dam Rehabilitation project as summarized in Table 4. It was substantially completed in 2004 and is in good standing. Over the last 30 years, shareholder assessments for the Company have increased gradually from \$12.00 per share in 1990 to \$34.00 per share in March of 2020, where they are at presently. All assessment increases were approved at the Company’s Annual Stockholder’s meetings. The most recent increases to the assessments occurred in March 2017 from \$23.00 to \$31.00 per share and in March 2020 from \$31.00 to \$34.00 per share.

**TABLE 4: EXISTING DEBT**

Lender	Original Balance	Current Balance	Annual Payment	Maturity Date	Collateral
CWCB 150099	\$360,000	\$120,512	\$17,778	2028	Pledge of Assessments and Neenoshe Dam
<b>Total</b>		\$120,512	\$17,778		

TABLE 5: FINANCIAL RATIOS

Financial Ratio	Past Years	Future w/ Project
Operating Ratio (revenues/expenses) weak: <100% - average: 100% - 120% - strong: >120%	105% (average) \$1.22M/\$1.17M	101% (average) \$1.26M/\$1.25M
Debt Service Coverage Ratio (revenues-expenses)/debt service weak: <100% - average: 100% - 120% - strong: >120%	400% (strong) (\$1.22M-\$1.15M) \$17.8K	112% (average) (\$1.26M-\$1.15M) \$94K
Cash Reserves to Current Expenses weak: <50% - average: 50% - 100% - strong: >100%	29% (weak) \$341K/\$1.17M	27% (weak) \$341K/\$1.25M
Annual Operating Cost per Acre-Foot (44,474 AF) weak: >\$20 - average: \$10 - \$20 - strong: <\$10	\$26.31 (weak) \$1.17M/44,474AF	\$28.11 (weak) \$1.25M/44,474AF

**Collateral:**

Security for this loan will be a pledge of assessment revenues backed by a rate covenant and the Project itself, (Queen Reservoir Dam and outlet works). This security is in compliance with the CWCB Financial Policy #5 (Collateral).

cc: Mr. Terry Howland, Superintendent, Amity Mutual Irrigation Company  
 Mr. Glenn Wilson, President, Amity Mutual Irrigation Company  
 Jennifer Mele, Colorado Attorney General's Office

Attachments: Water Project Loan Program - Project Data Sheet

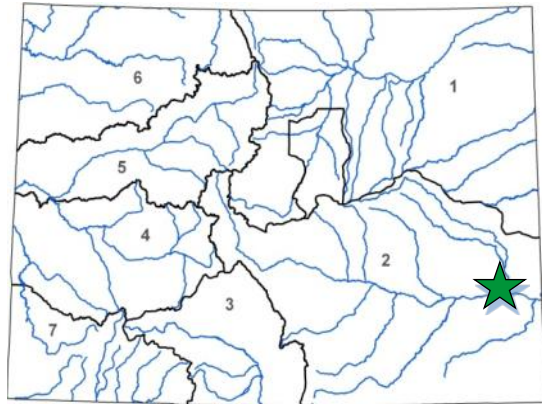


# Queen Reservoir Dam Rehabilitation

Amity Mutual Irrigation Company

July 2020 Board Meeting

L O A N   D E T A I L S	
Project Cost:	\$1,330,000
CWCB Loan (with 1% Service Fee):	\$1,343,300
Loan Term and Interest Rate:	30 Years @ 3.10% <sup>(1)</sup>
Funding Source:	Severance Tax Perpetual Base Fund
B O R R O W E R   T Y P E	
Agriculture	Municipal
50.5%	0% Low - 0% Mid - 0% High
	Commercial
	49.5%
P R O J E C T   D E T A I L S	
Project Type:	Reservoir Rehabilitation
Average Annual Diversions:	44,474 AF
Storage Preserved:	35,657 AF



L O C A T I O N	
County:	Kiowa
Water Source:	Arkansas River
Drainage Basin:	Arkansas
Division:	2
District:	67

(1) Rate may be lowered if loan contract conditions met.

The Amity Mutual Irrigation Company was formed in 1936 as a nonprofit corporation by the shareholders of the Arkansas Valley Sugar Beet and Irrigated Land Company who originally constructed the reservoir in the late 1890s. The Great Plain Reservoir system has a total storage decree for 265,552 AF. The Company owns and operates the Amity Great Plain Reservoir System, which includes the 35,657 AF Queen Reservoir. This system serves 115 shareholders and irrigates 34,682 acres of land in Prowers County between the Town of Wiley and the Kansas border. The primary crops grown include alfalfa hay, corn, milo and wheat. Irrigating these crops provides a vital economic resource to the shareholders.

The dam was originally constructed in the late 1890s with documented seepage and erosion concerns at the outlet works since 1985. In July 2017, Colorado Dam Safety issued a storage restriction after an excavation above the outlet works found a void measuring several feet. This project will mitigate dam safety concerns and restore full operation of the reservoir to the Company by removing and replacing the entire outlet works. The loan includes engineering and construction of the project. Construction is expected to begin in the summer of 2021 and finish by early 2022.



Downstream Outlet Works

