COLORADO
Colorado Water Conservation Board
Department of Natural Resources

1313 Sherman Street, Room 718
Denver, CO 80203

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

Jared Polis, Governor

Dan Gibbs, DNR Executive Director

Rebecca Mitchell, CWCB Director

TO: Colorado Water Conservation Board Members

FROM: Cole Bedford, P.E., Project Manager
Kirk Russell, P.E., Finance Section Chief

DATE: November 18-19, 2020 Board Meeting

AGENDA ITEM: 6b. Water Project Loans
City of Grand Junction – Carson Reservoir Dam Rehabilitation

Staff Recommendation:

Staff recommends the Board approve a loan not to exceed $3,030,000 ($3,000,000 for Project costs and $30,000 for the 1.0% service fee) to the City of Grand Junction acting by and through its water activity enterprise for costs related to the Carson Reservoir Dam Rehabilitation Project, from the Severance Tax Perpetual Base Fund. The loan terms shall be 10 years at a reduced low-income municipal interest rate of 1.00% per annum. Security for the loan shall be in compliance with CWCB Financial Policy #5.

Introduction:

The City of Grand Junction (City) is applying for a loan for the Carson Reservoir Dam Rehabilitation (Project). The Carson Reservoir Dam, also known as the Hogchute Reservoir Dam, is a high hazard dam located on Kannah Creek. It provides water storage for domestic water supply, irrigation use, and recreation. In 2017 the State Engineer's Office (SEO) completed a Comprehensive Dam Safety Evaluation and rated the dam as "Conditionally Satisfactory" but raised some concerns which will be addressed by improvements to the spillway, outlet works, drain seepage collection system, instrumentation, and installation of an early flood warning system. The total project cost is estimated at $3,350,000. See attached Project Data Sheet for a location map and Project summary.

Borrower – The City of Grand Junction
The City of Grand Junction is a Colorado Home Rule municipality which operates under its charter adopted September 14, 1909. The City's Utilities Department oversees the Water Services Division which is responsible for operation and maintenance of the water supply, treatment, and distribtuion system. This system serves a popluation of about 30,000 and is expected to increase to about 49,000 by 2069. Operations, expenses, and capital projects associated with the system are funded by the Water Enterprise Fund, the revenues for which include water service charges and tap fees. The City's average annual diversion is about 5,300 acre-feet.

Background:
The Carson Reservoir Dam is a 56-foot-high, 620-foot-long earthen dam constructed in 1947 which impounds a 520 acre-foot reservoir on Kannah Creek. When needed, water stored in the reservoir is passed downstream on Kannah Creek and then delivered via pipeline to the City's water treatment plant. Carson Reservoir Dam has a low-permeability clay core, is protected by riprap on both the upstream and downstream sides, and has an unlined emergency spillway near its right abutment. The dam's outlet works consist of two 20-inch welded steel pipes with hydraulic gates on the upstream side of the dam which join a single 30-inch pipe that discharges on the downstream side. The dam is classified as high-hazard due to downstream development.

The SEO's Comprehensive Dam Safety Evaluation issued raised several safety concerns about the Carson Reservoir Dam, and in response the City contracted with engineering consultants to evaluate the concerns and to design improvements that would alleviate them. To that end, preliminary design plans have been developed including the construction of an overflow weir, rehabilitation of the spillway chute, construction of a new intake structure, rehabilitation of the 30-inch outlet works pipe, construction of a seepage collection channel, and installation of a flood early warning system. The City intends for this work to take place during the summer of 2021.

Loan Feasibility Study
Staff of the City's Utilities Department Water Services Division prepared the Loan Feasibility Study titled "Loan Feasibility Study: Carson Dam Rehabilitation." The feasibility study was prepared under the direction of Randi Kim, P.E. and is in accordance with CWCB guidelines. It includes an analysis of alternatives, preliminary engineering design, construction cost estimates, and previous studies. Also submitted were recent years' Comprehensive Annual Financial Reports prepared under the direction of Jodi Romero, Director of the City's Finance Department.

Water Rights:
The City's primary water supply is the Kannah Creek watershed which covers 200 square miles on the top and west side of the Grand Mesa. The City has three major diversion rights and one storage right within the watershed including the most senior right on Kannah Creek. Water is conveyed from the City-owned Juniata Reservoir to the water treatment plant via the Purdy Mesa Flowline. The City's water utility also has agreements with two other water supply entities for treated water to supplement their regular supply under rare or emergency circumstances. These rights are detailed in Table 1.

TABLE 1: WATER RIGHTS

Source Name	Rate or Volume	Adjudication Date	Appropriation Date	Water Court Case No.
Direct Diversion Rights				
Kannah Creek (summer)	7.81 cfs	1/11/1911	12/30/1881	1818
Kannah Creek (winter)	3.908 cfs	7/25/1941	5/1/1929	5812
Gunnison River	18.6 cfs abs. 101.4 cfs con.	7/21/1959	1/22/1957	W130 8303
Colorado River	12.38 cfs abs. 6.19 cfs abs. 2.49 cfs abs. 78.94 cfs con.	7/21/1959	2/17/1947	94CW215 85CW22 85CW37 05CW160
Storage Rights				
Juniata Reservoir 1st Enlargement 2nd Enlargement	400.094 AF 2313 AF 4156.6 AF 919 AF	11/1/1911 6/7/1953 4/2/1967 12/31/1993	7/25/1941 7/21/1959 12/31/1970 12/15/2002	5812 8303 82CW280 93CW263
Carson Lake	637 AF	6/3/1946	7/21/1959	8303
Non-Decreed Treated Water Agreements				
Clifton Water District	4.5 mgd	-	-	-
Ute Water Conservancy	n/a – informal agreement	-	-	-

Project Description:
The Purpose of the Project is to ensure the City's continued use of the Carson Lake Dam to safely impound water. The following alternatives were analyzed:

Alternative 1 – No Action: This alternative would entail continuing to use the dam in its current condition. It was considered unacceptable because it does not address the concerns of the SEO's Evaluation and is likely to result in a storage restriction being placed on the dam in the future.

Alternative 2 – Implement Improvements to the Spillway Only: The main concerns raised by the SEO relate to the dam spillway and several improvements to only the spillway were considered. These improvements would cost up to $2,000,000 and while they would alleviate the spillway deficiencies, other dam improvement needs would be unaddressed. Leaving these other issues unaddressed in the near-term would mean a smaller immediate capital cost, but would likely result in the need for a re-mobilization of equipment to address them in the future. Because this alternative would not address all of the improvement needs of the dam and would likely result in a higher long-term improvement cost, it was not selected.

Selected Alternative 3 – Implement Improvements to Multiple Dam Components: This alternative was selected as the preferred alternative as it achieves the project purpose and does so while minimizing costs. This alternative would include the construction of an overflow weir, rehabilitation of the spillway chute, construction of a new intake structure, rehabilitation of the 30-inch outlet works pipe, construction of a seepage collection channel, and installation of a flood early warning system.

The cost estimate of this alternative is $3,350,000 as shown in Table 2.

TABLE 2: ESTIMATED PROJECT COST

Task	Total
Engineering	$350,000
Mobilization	$259,000
Concrete	$271,000
Earthwork	$1,279,000
Utilities	$104,000
Other (plumbing, electrical, etc.)	$412,000
Construction Contingency	$675,000
TOTAL	**$3,350,000**

Permitting: The City will need to submit an "Application for Transportation, Utility Systems, Telecommunications and Facilities on Federal Lands and Property" to the United State Forest Service (USFS) and is also entering into an agreement with USFS to improve an access road which will be utilized during the implementation of the project. The City will also submit a Pre-Construction Notification application to the United States Army Corps of Engineers for a 404 Permit.

Schedule: Engineering, permitting, and design efforts are currently underway and are expected to be completed in December 2020. Bidding for the project will take place in February 2021. Construction is expected to begin in June 2021 and finish in August 2021.

Financial Analysis:
Table 3 provides a summary of the Project's financial aspects and Table 4 details the City's current existing debt. The City qualifies for a low-income municipal interest rate of 1.60% for a 30-year term. The City is applying for a 10-year term; therefore, the interest rate is decreased by 0.60% for a final interest rate of 1.00% per CWCB Financial Policy #7 (Lending Rate Determination).

TABLE 3: FINANCIAL SUMMARY

Total Project Cost	$3,350,000
City Covered Engineering Costs	$350,000
CWCB Loan Amount	$3,000,000
CWCB Loan Amount (Including 1% Service Fee)	$3,030,000
CWCB Annual Loan Payment	$319,914
CWCB Annual Loan Obligation (1st Ten Years)	$351,905
Number of Taps	9,967
Monthly Loan Obligation per Tap (9,967)	$2.94

Creditworthiness: The City has five existing loans tied to its water fund revenue; three from the Colorado Water Resources and Power Development Authority and two with CWCB. CWCB Loan Contract CT2017-916 for the Hallenbeck Reservoir No. 1 Dam Rehabilitation was executed in July 2016 for $1,010,000 and went into repayment in March 2017. The City's payments on this loan are currently up-to-date. The City is contracting with CWCB for a loan for the Purdy Mesa Flowline Rehabilitation Project for $7,070,000, the annual debt service for which will be $452,977. The City's current average monthly water bill is $22.65 and rates have been steady in recent years, however the water utility intends to increase rates in order to fund this project and several other capital improvements over the next ten years.

TABLE 4: EXISTING DEBT

Lender	Original Balance	Current Balance	Annual Payment	Maturity Date	Collateral
2002 CWRPDA	$3,566,522	$721,924	$270,000	2022	Water revenues
2010 CWRPDA	$3,783,923	$2,247,881	$244,738	2030	Water revenues
2016 CWRPDA	$1,615,100	$1,310,493	$91,315	2036	Water revenues
2017 CWCB (CT2017-916)	$764,821	$673,759	$49,759	2037	Water revenues
TOTAL		$4,954,057	$655,812		

TABLE 5: FINANCIAL RATIOS

Financial Ratio	Prior Years	Future w/ Project[1]
Operating Ratio (revenues/expenses) weak: <100% - average: 100% - 120% - strong: >120%	144% (strong) $9.00M/$6.25M	133% (strong) $9.35M/7.05M
Debt Service Coverage Ratio (revenues-expenses)/debt service weak: <100% - average: 100% - 120% - strong: >120%	517% (strong) $9.00M-$5.59M $0.66M	287% (strong) $9.00M-$5.59M $1.19M
Cash Reserves to Current Expenses weak: <50% - average: 50% - 100% - strong: >100%	128% (strong) $8.00M/$6.25M	113% (strong) $8.00M/$7.05M
Debt per Tap (Based on 9,967 Taps) weak: >$5,000 - average: $2,500 - $5,000 - strong: <$2,500	$501 (strong) $4.99M/9,967	$1,514 (strong) $15.09M/9,967
Average Monthly Water Bill weak: >$60 - average: $30 - $60 - strong: <$30	$22.62 (strong)	$26.37 (strong)

1. Future with Project Ratios include debt associated with the Purdy Mesa Flowline Replacement Project loan which was approved by the board in September 2020. The loan amount for that project is $7,070,000 and the annual debt service is $452,977.

Collateral: Security for this loan will be a pledge of revenues backed by a rate covenant and annual financial reporting. This security is in compliance with the CWCB financial Policy #5 (Collateral).

cc: Randi Kim, Utilities Director, the City of Grand Junction Utilities Department
Jennifer Mele, Colorado Attorney General's Office

Attachment: Water Project Loan Program – Project Data Sheet

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Carson Reservoir Dam Rehabilitation

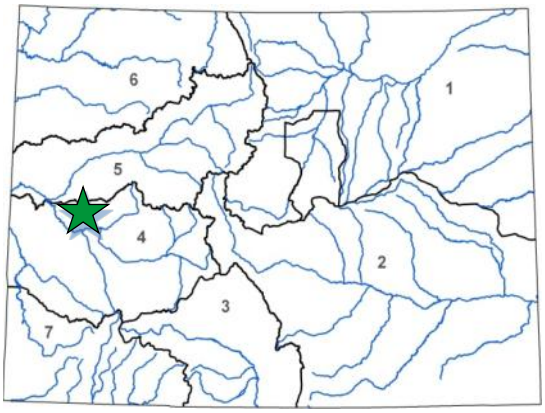
City of Grand Junction

November 2020 Board Meeting

LOAN DETAILS	
Project Cost:	$3,350,000
CWCB Loan (with 1% Service Fee):	$3,030,000
Loan Term and Interest Rate:	10 years @ 1.00%
Funding Source:	Severance Tax Perpetual Base Fund

BORROWER TYPE		
Agriculture	*Municipal*	*Commercial*
0%	100% Low - 0% Mid - 0% High	0%

PROJECT DETAILS	
Project Type:	Dam Rehabilitation
Average Annual Diversions:	5300 AF
Preserved Storage:	637 AF



LOCATION			
County:			Mesa
Water Source:			Kannah Creek
Drainage Basin:			Gunnison
Division:	4	*District:*	42

The City of Grand Junction, through its Water Activity Enterprise, has numerous water and storage rights on the Grand Mesa, as well as water rights in the Gunnison and Colorado Rivers. These rights can be used to provide for the municipal water supply needs of a portion of the City. Due to poor water quality, however, the water rights on the Gunnison and Colorado Rivers are largely unused. The City currently serves approximately 30,000 residents, however, this number is projected to grow to 49,000 by 2069.

The City of Grand Junction owns and operates Carson (a.k.a. Hogchute) Reservoir located in the Grand Mesa National Forest. The reservoir provides water storage for the City's domestic water supply, downstream irrigation use, and fishing recreation. The dam is classified as high hazard and is currently rated as "Conditionally Satisfactory" by the State Engineer's Office (SEO); however, SEO has provided guidance for needed dam Improvements to avoid a potential future storage restriction. The loan will be used to address these improvements including rehabilitating the existing spillway, outlet works, and toe drain seepage collection system in addition to installing an early warning system. Construction is expected to begin in the summer of 2021.