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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: November 18-19, 2015 Board Meeting

AGENDA ITEM: 7a. Water Project Loans
Lookout Mountain Water District – Upper Beaver Brook Dam Spillway

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Introduction

The Lookout Mountain Water District (District) is applying for a loan for the construction of the Upper Beaver Brook Dam Spillway (Project). The purpose of the Project is to increase storage by 134 acre-feet by improving the existing rock-cut spillway with a new labyrinth weir spillway. These improvements will allow the District to continue to provide for a reliable supply of drinking water to current tap holders, with increased reliability for future demand and during times of drought. Total Project cost is estimated at $3,410,000. The District is requesting a loan from CWCB for approximately 90% of the estimated Project Cost. Supplemental project funding includes a DOLA grant of $125,000 for project engineering costs. See attached Project Data Sheet for a location map and Project summary.

Staff Recommendation for CWCB Loan

Staff recommends the Board approve a loan not to exceed $3,099,690 ($3,069,000 for Project costs and $30,690 for the 1% Loan Service Fee) to the Lookout Mountain Water District, acting by and through its water activity enterprise, for the Upper Beaver Brook Dam Spillway project from the Construction Fund. The loan terms shall be 30 years at the high-income municipal rate of 3.25% per annum. Security for the loan shall be in compliance with CWCB Financial Policy #5.

Staff additionally recommends the following loan approval condition prior to executing a contract:
The Dam Safety Branch of the State Engineers Office shall provide confirmation that deficiencies identified during the 2014 inspection of the Lower Beaver Brook Dam and spillway have been addressed before CWCB enters into a loan contract for the Upper Beaver Brook Dam Spillway Project.

Background
The District is located within Clear Creek and Jefferson Counties and provides water service to 1,600 residents in the mountain communities of unincorporated areas near Evergreen and Golden.

The District owns and operates two storage reservoirs on Beaver Brook, a tributary to Clear Creek: the Upper Beaver Brook Reservoir also identified as the John Roscoe Reservoir or Beaver Brook Reservoir 3A in State records, and the Lower Beaver Brook Reservoir, known as Beaver Brook Reservoir 3 in State records. The main supply of water comes from the Upper Beaver Brook Reservoir, constructed in 1924, which is the District's largest reservoir with a current capacity of approximately 257.2 acre-feet. The capacity of the Lower Beaver Brook Reservoir is approximately 30.8 acre-feet. The District also owns Lookout Mountain Reservoir (capacity of approximately 101.1 acre-feet), which was formerly the pre-supply reservoir for the City of Golden, but presently, as it is at the end of the District's system, is used solely for augmentation.

The District rehabilitated the Upper Beaver Brook Dam and purchased additional water rights for augmentation in the early 1990s; after several multi-year droughts it became apparent that the water rights were still not sufficient to serve the existing customer base. The District made good progress in reducing water losses throughout their treated water delivery infrastructure, and has moved on to a raw water solution to their deficits. For over ten years the District's Board of Directors researched alternatives to reduce the risk of multi-year drought impacts. With this project, the District seeks to provide for the continued delivery of drinking water to current tap holders, with an increased reliability for future demand.

Loan Feasibility Study
Chad M. Masching, P.E. of GEI Consultants, Inc. prepared the Loan Feasibility Study, titled "Feasibility of Upper Beaver Brook Dam Spillway Improvement Project" dated September 2015. The study includes an analysis of alternatives and a construction cost estimate. The feasibility study was prepared in accordance with the CWCB guidelines.

Borrower – Lookout Mountain Water District
The District was established in 1988, assuming responsibility for a service area, three reservoirs, a distribution system, and water rights previously operated by the City of Golden. Golden's history of providing raw water within the District's current service area dates back to the early 1900s when the City acquired water rights to the headwaters of Beaver Brook and constructed the current District's three reservoirs. In order to obtain right of way for a water line from Lower Beaver Brook Reservoir to their reservoir on Lookout Mountain, the City offered to sell raw water to the ranchers, farmers, and homeowners who lived along the proposed route. Over the years, development along the water line route brought about increasing changes from ranching to residences, and continuing to provide untreated water to residences was already unacceptable to County and State health departments. Enactment of the Federal Safe Drinking Water Act in late 1974 would have required Golden to construct a new water treatment plant for the raw water being supplied to Lookout Mountain residents. Instead, the City of Golden developed alternate sources of water for the City, and sought a solution to release their obligations in the current District service area. An election was held in 1984 and the new Lookout Mountain Water District was approved by the voters. In 1988, the District's electors authorized the issuance of general obligation bonds for construction and acquisition of the water system. The District constructed a water treatment plant, a new storage facility at El Rancho, replacement of thousands of feet of leaky mainline pipe, and upgrades to the dam and spillway at the Upper Beaver Brook reservoir. Most of this work was completed in the early 1990's. By 1989, homes with tap connections within the District were receiving safe and potable water treated by the new facility.

The District is a Colorado special district, a division of the government of the State of Colorado formed pursuant to the Special District Act, Title 32, Colorado Revised Statutes, by decree of the District Court in Jefferson County, Colorado, in Civil Action 88CV0265, March, 1988.

The District serves approximately 565 taps, of which 502 are active and the remaining are inactive. Of the inactive taps, approximately 35 are presently assigned to property and 30 are unassigned, all of which the District has a future obligation to serve upon activation. The District's active tap service composition is comprised of 95% residential, 2.5% tax-exempt or government, and 2.5% commercial users.

Water Rights

The District owns six shares of the Farmers High Line Canal, which diverts water from Clear Creek with priorities ranging from 1862 through 1895. This water is exchanged up to the District's service area pursuant to an exchange decree, in Case No. 87CW303, at rates of up to 4.0 cfs. Water that is stored in Lookout Mountain Reservoir can be released to Clear Creek and exchanged up Beaver Brook at a maximum rate of 2.0 cfs, per a decree in Case No. 94CW291.

The following table shows a summary of the District's water rights:

TABLE 1: STORAGE RIGHTS

Name	Amount	Appropriation Date	Adjudication Date	Water Court Case No.
Lower Beaver Brook Reservoir	24.16 acre-feet (original, absolute)	12/31/1903	10/9/1914	CA 41340
Lower Beaver Brook Reservoir	6.64 acre-feet (enlargement, absolute)	7/29/1917	5/13/1936	CA 60054
Lookout Mountain Reservoir	18.92 acre-feet (original, absolute)	7/29/1917	5/13/1936	CA 60054
Lookout Mountain Reservoir	82.17 acre-feet (enlargement, absolute)	7/29/1917	5/13/1936	CA 60054
Upper Beaver Brook Reservoir	257.22 acre-feet(original, absolute)	8/27/1924	5/13/1936	CA 60052
Upper Beaver Brook Reservoir	102.0 acre-feet (1st enlargement, cond.) 38.3 acre-feet (refill, conditional)	12/29/2011	12/31/2011	11CW287
Upper Beaver Brook Reservoir	38.0 acre-feet (2nd enlargement, cond.) 5.8 acre-feet (refill, conditional)	12/31/2013	12/31/2013	13CW3179

Project Description

The purpose of the project is to provide for additional reservoir storage volume to provide a reliable water supply for the District, especially during periods of drought.

The following alternatives were considered:

Alternative 1 – Do Nothing: This alternative was considered undesirable because it would not provide the District with needed storage to provide reliable service to tap owners during periods of shortage.

Selected Alternative 2 – Add storage within Upper Beaver Brook Reservoir by constructing a labyrinth weir spillway: This alternative would provide additional storage volume in the Upper Beaver Brook Reservoir by constructing a new, higher labyrinth weir spillway within the limits of the existing spillway rock-cut channel, thereby raising the maximum water surface of the dam. With the existing dam height and accommodating terrain surrounding the existing reservoir, the proposed new spillway will add 134.2 acre-feet to the existing 257.2 acre-feet for a total storage of 391.4 acre-feet. At an

estimated project cost of $3,410,000 for engineering and construction, this option was chosen as the most cost-effective approach.

Alternative 3 – Add storage by dredging within Upper Beaver Brook Reservoir with construction of a labyrinth weir spillway: This alternate was not selected due to higher costs, loss of use of reservoir storage during construction, and potential impacts to adjacent wetlands. Estimated project cost: $4,709,000.

Alternative 4 – Add storage at alternative dam sites downstream of Upper Beaver Brook Dam: Two sites for new roller compacted concrete dams were considered, with costs upwards of $8,000,000. This alternate was ruled out due to the high cost and potential difficulty in permitting new dam sites.

Each alternative was evaluated with respect to costs, impacts to operations, practicality, and permitting. The selected alternative involves construction of a new labyrinth weir spillway to accommodate increased reservoir storage, rehabilitation of the outlet works, construction of a downstream toe berm, addition of a toe drain, and enlargement of a section of the spillway chute wall. The existing dam access road at the reservoir will be raised and relocated approximately 10 feet above and outside of the increased reservoir storage footprint

TABLE 2: ESTIMATED PROJECT COST

Task	Cost
Engineering Design & Permitting	$390,000
Construction	$3,020,000
Total	**$3,410,000**

Permitting: A wetlands survey was conducted for the selected alternative, and a 404 permit will not be required since all construction will occur above the existing Ordinary High Water Mark. A Standard Form 299 Application was submitted in March of 2014 to the USDA/USFS for project impacts pertaining to temporary construction staging and water levels.

Schedule: Final design documents were submitted to the State Engineers Office in October of 2015. Assuming a review process of four to six months, construction is anticipated beginning in spring of 2016, completing by fall of 2017.

Financial Analysis
The District qualifies for the current high-income municipal rate of 3.25% for a 30-year term.

In 2012 and 2013, the District applied to the Department of Local Affairs (DOLA) for the Energy and Mineral Impact Assistance Program, Tiers I and II. In 2013, the District was awarded a grant of $125,000 for matching funding up to $345,000 in actual engineering costs for the project.

TABLE 4: FINANCIAL SUMMARY

Total Project Cost	$3,410,000
Borrowers Contribution (6%)	$216,000
DOLA Funding (4%)	$125,000
CWCB Loan Amount (90% of Project cost)	$3,069,000
CWCB Loan Amount (Including 1% Service Fee)	$3,099,690
CWCB Annual Loan Payment	$163,297
CWCB Annual Loan Obligation (including reserve account)	$179,627
Monthly loan obligation per tap (502 active taps)	$29.82
Project cost per acre-foot of storage added (134.2 acre-feet)	$25,410 /acre-foot

The District commissioned a rate study to analyze necessary rate increases to accommodate a new loan and plans to increase rates to cover the additional debt service. The District plans to increase water rates 9.75% annually for the next three years, raising rates so as to operate in accordance with debt service coverage requirements, maintain adequate reserves, and fund operating and capital costs.

Creditworthiness:
The District has four existing loans as shown in Table 5. The District is in good standing on its loans and has re-financed its general obligation bonds twice to reduce total costs and maturity date.

The District is in repayment and in good standing on CWCB Loan C153598, which partially funded improvements to Upper Beaver Brook Dam in 1992, including land, water rights, the rock-cut spillway, a 26-foot raised embankment, and other associated improvements.

TABLE 5: EXISTING DEBT

Loan	Maturity Date	Original Balance	Loan Balance(1)	Annual Payment	Collateral
C153598 Improvements to Upper Beaver Brook Dam	2022	$600,000	$225,847	$39,031	Enterprise Revenues
DOLA Sub-district A (water main extensions)	2024	$400,000	$225,288	$31,696	Enterprise Revenues
Wells Fargo (membrane filtration improvements)	2019	$1,213,500	$476,621	$132,700	General Funds
Chase Bank (service meter upgrades)	2018	$200,000	$119,726	$42,624	General Funds
Totals			**$1,047,482**	**$246,051**	

(1) Loan balances are end of year 2015 projected balances

TABLE 6: FINANCIAL RATIOS

Financial Ratio	Past Years	Future w/ Project
Operating Ratio (revenues/expenses)[1] weak: <100% - average: 100% - 120% - strong: >120%	170% (strong) $690K / $406K	157% (strong) $920K / $585K
Debt Service Coverage Ratio[2] (revenues-expenses)/debt service weak: <100% - average: 100% - 120% - strong: >120%	502% (strong) ($690K-$335K) / $71K	234% (strong) ($920K-$335K) / $250K
Cash Reserves to Current Expenses weak: <50% - average: 50% - 100% - strong: >100%	78% (average) $316K / $406K	111% (strong) $651K / $585K
Debt per Tap (502 active taps)[2] weak: >$5,000 - average: $2,500-$5,000 - strong: <$2,500	$2,092 (strong) $1.05M/502	$8,266 (weak) $4.15M/502
Average Monthly Water Bill weak: >$60 - average: $30 - $60 - strong: <$30	$40 (average)	$71 (weak)

(1) Future w/ Project revenues include an average of the first three years of increased revenue due from 9.75% rate increases recommended by the District's Rate study.

(2) Only debt service tied to the District's water activity enterprise is included in this metric.

Collateral: As security for the loan, the District will pledge its water activity enterprise revenues backed by a rate covenant. This is in compliance with the CWCB Financial Policy #5 (Collateral).

cc: Christina Shea, District Administrator
Susan Schneider/Jennifer Mele, Colorado Attorney General's Office

Attachment: Water Project Loan Program – Project Data Sheet

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Upper Beaver Brook Dam Spillway

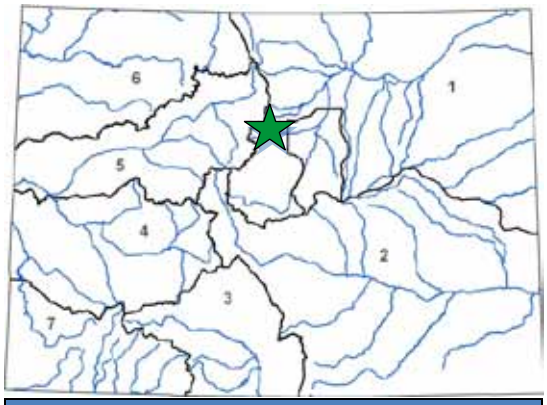
Lookout Mountain Water District

November 2015 Board Meeting

LOAN DETAILS	
Project Cost:	$3,410,000
CWCB Loan:	$3,099,690
Loan Term and Interest Rate:	30 years @ 3.25%
Funding Source:	Construction Fund

BORROWER TYPE		
Agriculture	*Municipal*	*Commercial*
0%	High-income 100%	0%

PROJECT DETAILS	
Project Type:	Reservoir Enlargement
Average Annual Diversion:	107 acre-feet
Added Reservoir Storage:	134 acre-feet



LOCATION			
County:	Clear Creek		
Water Source:	South Fork Beaver Creek		
Drainage Basin:	South Platte River		
Division:	1	*District:*	7

The Lookout Mountain Water District, a drinking water provider with 565 taps in Jefferson County, seeks to increase the storage capacity of the Upper Beaver Brook Dam. By designing and constructing a new labyrinth spillway structure in the location of the existing spillway, a raise in the normal reservoir pool elevation will provide approximately 140 acre-feet of additional storage.