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: March 11-12, 2020 Board Meeting

AGENDA ITEM: 6a. Water Project Loans
Deuel and Snyder Improvement Company – Diversion Structure Replacement

---

Staff Recommendation:

Staff recommends the Board approve a loan not to exceed $649,430 ($643,000 for Project costs and $6,430 for the 1% service fee) to the Deuel and Snyder Improvement Company for costs related to the Diversion Structure Replacement Project, from the Construction Fund. The loan terms shall be 40 years at an agricultural interest rate of 1.60% per annum. Security for the loan shall be in compliance with CWCB Financial Policy #5.

Introduction:

The Deuel and Snyder Improvement Company (DSIC) is applying for a loan for the Diversion Structure Replacement (Project). The existing diversion structure is approximately 1,400 feet long and spans the South Platte River. It diverts flows to the north for DSIC's use and to the south for use by the Upper Platte and Beaver Canal Company (UPBCC). The structure is deteriorating, has substantial structural deficiencies, and is believed to be close to failure. The purpose of the Project is to ensure continued diversions by replacing the diversion structure. Improvements to the structure will include features to mitigate flood impacts and improve sediment transport. The current total Project cost is estimated to be $4,392,000 which will be shared by both companies. UPBCC secured a CWCB loan in May 2019 to cover its contribution to the project and DSIC is now requesting a loan to cover its contribution of approximately 14.6% of Project cost. See attached Project Data Sheet for a location map and Project summary.

Background:
DSIC is located in Morgan County and operates an agricultural ditch system for the benefit of 15 shareholders by providing direct flow irrigation water. Its diversion structure is located on the South Platte River northwest of Fort Morgan at Log Lane Village. The service area is comprised of approximately 1,500 acres of irrigated lands north of the river. Water diverted from the river is typically used to irrigate corn, alfalfa, beans, and sugar beets.

DSIC shares its diversion structure with the UPBCC. DSIC diverts from its headgates on the north bank and UPBCC diverts from a separate headgate on the south bank. The river was historically braided at this location and a large center island connected two independent diversion structures. However, the flood of 1965 washed away the center island necessitating the construction of a long diagonal wall connecting the two structures. This has allowed the two companies to continue to make water diversions to their respective systems since.

The current diversion structure is approximately 9 feet tall and 1,400 feet long. An engineering investigation in 2015, and follow up feasibility study in 2016 (funded through a $93,750 WSRF grant) identified several significant deficiencies in the existing structure. The chief concern is the erosion of the underlying shale bedrock due to seepage underneath and scour from overtopping flows. Fatigue cracking, spalling, surface deterioration, and exposure of reinforcement is common throughout each section of the structure. These problems, if left unaddressed, will likely result in the failure of the diversion structure.

Previously, the UPBCC intended to take full financial responsibility for the project and made arrangements with DSIC for payment of its contribution to them directly. Accordingly, in May 2019, the Board approved a loan for the entire estimated cost of the Project to the UPBCC. After further discussions between the companies, however, it was decided that DSIC would cover its obligation to the project with the loan proposed herein instead.

Loan Feasibility Study:
Matt Harris, P.E., with Harris Engineering Consultants, prepared the Loan Feasibility Study titled, "Feasibility Report – Deuel and Snyder Improvement Company Diversion Structure Replacement Project," dated January 31, 2020. The feasibility study was prepared in accordance with CWCB guidelines and includes an analysis of alternatives, preliminary engineering design, and construction cost estimates.

Borrower – Deuel and Snyder Improvement Company:
DSIC was incorporated in 1884 as a Mutual Ditch Company. It operates as a nonprofit corporation and is in good standing with the Colorado Secretary of State. A five-member Board of Directors has full control of the management of DSIC. DSIC is comprised of fifteen shareholders who receive an average of 5,333 AF annually. The majority of DSIC's revenues are from shareholder assessments, though in the last three years augmentation water recharge credit has been a significant source of revenue as well.

Water Rights:
Water rights dependent on the diversion structure are shown in Table 1. DSIC owns four irrigation rights, totaling 84 cfs and a junior recharge water right for 68 cfs. Two of the irrigation rights are conventional; allowing for a combined diversion of 63 cfs any time water is available and no senior calls are being made on the river. They also hold two "Meadow Rights" which allow for an additional 21 cfs of diversion between the April 10 and July 10 only. These rights are divided among 161 separate

shares. Moreover, UPBCC owns four senior irrigation rights totaling 234.17 cfs and two junior recharge rights each totaling 234.17 cfs.

TABLE 1: PROJECT DEPENDENT WATER RIGHTS

Name	Amount (cfs)	Appropriation Date	Adjudication Date	Water Court Case No.
Deuel Snyder Canal	13.00	4/2/1871	11/21/1895	CA0433
Deuel Snyder Canal	8.00	7/1/1874	11/21/1895	CA7747
Deuel Snyder Canal	32.00	4/7/1884	11/21/1895	CA0433
Deuel Snyder Canal	31.00	11/1/1888	11/21/1895	CA7747
Deuel Snyder Canal	68.00	4/23/2003	4/23/2003	03CW222
Upper Platte Beaver Canal	15.00	4/20/1868	11/21/1895	CA11195
Upper Platte Beaver Canal	5.17	5/15/1869	4/28/1883	CA11195
Upper Platte Beaver Canal	50.00	6/20/1882	11/21/1895	CA0433
Upper Platte Beaver Canal	164.00	4/15/1888	11/21/1895	CA0433
Upper Platte Beaver Canal	234.17	6/12/1972	6/12/1972	W-2968
Upper Platte Beaver Canal	234.17	12/14/2010	12/14/2010	10CW298

Project Description:
The objective of the Project is to rehabilitate the diversion structure in order to provide the shareholders of the DSIC and UPBCC with a reliable means of diverting to their respective systems. The following alternatives were analyzed:

Alternative 1 – No Action: This alternative was considered unacceptable because the substantial structural deficiencies are more than normal maintenance can address and they will lead to a failure of the diversion. Between the two ditch companies, an average of 37,656 AF per year is diverted to irrigate approximately 11,500 acres. Therefore, the risk of a substantial crop loss due to inability to divert water is too high.

Alternative 2 – Repair the structure: This alternative was found to be unacceptable because the integrity of much of the concrete slab base, walls, and buttresses was found to be questionable. Regardless of condition of the existing structure, many new elements would have to be added including an upstream and downstream cut-off wall and a downstream scour pad to reduce bed scour. Additionally, this alternative would be unable to address concerns with mitigating flood impacts and improving sediment transport.

Selected Alternative 3 – New Diversion: This alternative will consist of the removal and replacement of the existing structure. The new diversion will be constructed of reinforced concrete arranged in a traditional slab and buttress configuration. The UPBCC's headgate structure will be moved approximately 700 ft upstream of the existing headgate to be in line with DSIC's diversion, negating the need for a diagonal section. DSIC's headgate was recently reconstructed and will remain in place.

Improvements from the original structure will include two inflatable Obermeyer crest gate spillways that will mitigate flood impacts, improve sediment transport, and improve overall channel stability.

The cost estimate of this alternative is $4,392,000 as shown in Table 2.

TABLE 2: ESTIMATED PROJECT COST

Task	DSIC (14.6%)	UPBCC (85.4%)	Total
Construction			
Diversion Structure	$522,000	$3,055,000	$3,577,000
Headgate Specific Components	$62,000	$361,000	$423,000
Misc (Dewatering, Materials Testing etc)	$35,000	$207,000	$242,000
Subtotal	$619,000	$3,623,000	4,242,000
Design and Construction Engineering	$24,000	$126,000	$150,000
TOTAL	**$643,000**	**$3,749,000**	**$4,392,000**

Permitting: The Project is located on UPBCC property and no new easements or rights-of-way will be required. The DSIC expects construction to be exempt from 404 permitting by statutory exemption for the repair of an existing diversion structure.

Schedule: Final engineering and design is complete. Long lead-time items (Obermeyer gates) will be ordered in April followed by execution of the construction contract in May and construction beginning in August. It is expected that construction will be complete by April of 2021.

Financial Analysis:
Table 3 provides a summary of the Project's financial aspects. DSIC qualifies for an agricultural interest rate of 1.35% for a 30-year term. DSIC is applying for a 40-year term; therefore, the interest rate is increased by 0.25% for a final interest rate of 1.60% per CWCB Financial Policy #7 (Lending Rate Determination).

TABLE 3: FINANCIAL SUMMARY

Total Project Cost	$4,392,000
CWCB Loan Amount	$643,000
CWCB Loan Amount (Including 1% Service Fee)	$649,430
CWCB Annual Loan Payment	$22,107
CWCB Annual Loan Obligation (1st Ten Years)	$24,318
Number of Borrower Shares	161
Annual Loan Obligation per Share	$151
Current Assessment per Share	$191
Cost of Project per AF Delivered (5,333 AF)	$122

Creditworthiness: DSIC has one existing loan with the CWCB currently in repayment. CWCB Loan Contract C150288 was executed in March 2009 for $109,053 for the replacement of DSIC's headgate structure and went into repayment in June 2012.

TABLE 4: EXISTING LONG-TERM DEBT

Debt Type	Original Balance	Current Balance	Annual Payment	Maturity Date	Collateral
CWCB Loan (C150288)	$109,052.73	$90,305.38	$5,210.30	2042	Pledge of Assessment Revenues

TABLE 5: FINANCIAL RATIOS

Financial Ratio	Prior Years	Future w/ Project
Operating Ratio (revenues/expenses) weak: <100% - average: 100% - 120% - strong: >120%	175% (strong) $70K/$40K	109% (average) $70K/$64K
Debt Service Coverage Ratio (revenues-expenses)/debt service weak: <100% - average: 100% - 120% - strong: >120%	673% (strong) ($70K-$35K) $5.2K	117% (strong) ($70K-$35K) $30K
Cash Reserves to Current Expenses weak: <50% - average: 50% - 100% - strong: >100%	270% (strong) $108K/$40K	169% (strong) $108K/$64K
Annual Operating Cost per Acre-Foot (5,333 AF) weak: >$20 - average: $10 - $20 - strong: <$10	$7.50 (strong) $40K/5.3K AF	$12.00 (average) $64K/5.3K AF

Collateral: Security for this loan will be a pledge of assessment revenues backed by an assessment covenant and the Project itself (the diversion structure). This security is in compliance with the CWCB Financial Policy #5 (Collateral).

cc: Joe Baumberger, Vice-President, Deuel and Snyder Improvement Company
Jennifer Mele, Colorado Attorney General's Office

Attachment: Water Project Loan Program – Project Data Sheet