



**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:** January 25-26, 2021 Board Meeting

**AGENDA ITEM:** 6a. Water Project Loans  
North Sterling Irrigation District - Outlet Canal Automation Phase II Project

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**Staff Recommendation:**

Staff recommends the Board approve a loan not to exceed \$395,920 (\$392,000 for Project costs and \$3,920 for the 1.0% service fee) to the North Sterling Irrigation District for costs related to the Outlet Canal Automation Phase II Project, from the Construction Fund. The loan terms shall be 20 years at a reduced blended interest rate of 0.90% per annum. Security for the loan shall be in compliance with CWCB Financial Policy #5.

**Introduction:**

The North Sterling Irrigation District (District) is applying for a loan for the Outlet Canal Automation Phase II (Project). The District encompasses more than 40,000 acres stretching from the North Sterling Reservoir northwest of Sterling to the end of its Outlet Canal northeast of Crook. Water is delivered to landowners via the Outlet Canal and controlled by manually operated headgates on each lateral. The flow into each lateral is also measured manually. The District is currently funding Phase I, which tested and installed equipment to make both the headgate operation and flow measurement processes automated for some laterals. Phase II will complete this work. The automation equipment—including solar power, controllers, actuators to operate the headgates, radar sensors at each measuring flume, and telemetry for data access and remote control—will allow ditch riders to respond to landowner requests more promptly and accurately, thereby increasing overall efficiency of the canal delivery system. The total project cost is estimated at \$392,000. See attached Project Data Sheet for a location map and Project summary.



### **Borrower - North Sterling Irrigation District**

The North Sterling Irrigation District is an irrigation district, formed under C.R.S. Title 37, on the north side of the South Platte River near Sterling, Colorado. It's major components are the River Diversion, Inlet Canal, North Sterling Reservoir, and Outlet Canal. The District encompasses more than 40,000 acres, 35,000 of which are irrigated, and services 122 landowners. More than 99% of the total acreage is used for agriculture including corn, alfalfa, sugar beets, pinto beans, small grain, and feed crop production.

The District's Board of Directors is comprised of three members each representing one of three Divisions and are elected by a popular vote of the landowners in each Division. The District certifies a levy each year which is collected by the Logan County Treasurer with property taxes. Non-payment by landowners can lead to a land tax sale or limited water use until payment is received. Because this loan contract is between \$250,000 and \$400,000, the District may authorize the debt by collecting signatures from 1/3 of District voters. This was completed in November 2020.

### **Background:**

The District's 122 landowners are serviced with water at 67 headgates on the Outlet Canal which have historically required daily manual adjustments by ditch riders. The adjustment process requires the ditch rider to adjust the gate, check a nearby flume for the flow measurement, and then readjust as needed. To simplify this process, the District experimented with one automated gate and flume measuring device in 2018. The success of that experiment led to the Automation Phase I Project which is currently installing automation equipment on 25 headgates. The remaining headgates will be automated as part of the Phase II Project. The completion of the work will result in significant water savings and allow ditch rider efforts to be spent more effectively as well.

### **Loan Feasibility Study**

The Loan Feasibility Study titled "Feasibility of Construction of the North Sterling Irrigation District Automation Project Phase II" dated November 2020 was prepared under the direction of James T. Yahn, P.E., Manager of North Sterling Irrigation District. It is in accordance with CWCB guidelines and includes an analysis of alternatives, preliminary engineering design, and a construction cost estimate. Also submitted were recent years' Annual Financial Reports audited by Lauer, Szabo & Associates, Certified Public Accountants.

### **Water Rights:**

The District utilizes several different water rights for its operations. Its oldest water right under Decree 2142 allows for diversion off the South Platte River and other tributaries for irrigation water storage. Other, more recent rights, allow for diversion and storage of water for recreation, wildlife, augmentation, municipal, and commercial purposes. Over the past 20 years the average annual delivery has been 1.66 acre-feet per District acre for a total average delivery of 67,922 acre-feet. The District's rights are detailed in Table 1.

**TABLE 1: WATER RIGHTS**

Source Name	Rate or Volume	Adjudication Date	Appropriation Date	Water Court Case No.
S. Platte R., Springdale Cr., Pawnee Cr., Cedar Cr.	300 cfs 69,446 AF	Jan 1, 1922	Jun 15, 1908	2142
Cedar Cr.	2,000 AF	Jan 1, 1922	Jun 15, 1908	2142
Pawnee Cr.	540 cfs 5,000 AF	Jan 1, 1922	Jun 15, 1908	2142
S. Platte R.	411 cfs 11,954 AF	Jan 1, 1922	Aug 1, 1915	2142
S. Platte R.	460 cfs	Jan 13, 1936	May 27, 1914	8492
S. Platte R.	69,446 AF 11,954 AF	Jun 29, 1989	Dec 1988	88CW0234
S. Platte R.	294 cfs (abs) 306 cfs (cond) 7,800 AF	Jul 21, 2006	May 8, 1996	96CW1034
S. Platte R.	510 cfs (abs) 90 cfs (cond) 24,000 AF	Jul 21, 2006	Dec 31, 2002	96CW1034
S. Platte R.	15,000 AF	Jul 21, 2006	Dec 31, 2000	96CW1034

**Project Description:**

The Purpose of the Project is to automate 42 of the District’s headgates to provide a more efficient water delivery at a lower cost. The following alternatives were analyzed:

**Alternative 1 - No Action:** This alternative would entail continuing to use the remaining manual headgates in their current condition. It is not desirable, because it would continue the time consuming and inefficient use for irrigators and District staff.

**Alternative 2 - Automation spread over a 3-5 year period:** This alternative would install the same automation equipment as Alternative 3, however, the installation would take place over a longer period of time and allow for a smaller cost per year to be absorbed by the District. Over the course of the implementation period though, prices would likely increase and result in an overall higher project cost. It would also be difficult to prioritize headgates for automation, as certain landowners would have to operate with old equipment while others operated with new during the implementation period. Because this alternative would not capitalize on current low costs and would be difficult to implement fairly, it was not selected.

**Selected Alternative 3 - Automation prior to next irrigation season** 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 installation of the automation equipment immediately upon completion of the Phase I work and be completed before the 2021 irrigation season.

The equipment consists of actuators installed on all 42 headgates allowing them to be operated remotely. Venture Manufacturing 800 series screw actuators will be installed on the smaller headgates and Water Technology smart gate actuators on the larger headgates. Both types are solar powered with the ability to operate manually if needed. Additionally, radar sensors will be installed on the lateral

ditches’ measuring flumes which will report the flow rate in the ditches. This will allow ditch riders to adjust the headgates in real time to ensure proper flow.

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

**TABLE 2: ESTIMATED PROJECT COST**

Task	Total
Venture Manufacturing Actuators	\$190,000
Watch Technology Actuators	\$48,000
Radar Sensors	\$50,400
Telemetry	\$52,500
Contingency (15%)	\$51,100
<b>TOTAL</b>	<b>\$392,000</b>

**Permitting:** All construction will be done on land within the District’s Outlet Canal easement, therefore no other easements or rights-of-way will be needed.

**Schedule:** Construction is expected to begin in the Spring of 2021 and be completed before water deliveries are made for the 2021 irrigation season.

**Financial Analysis:**

Table 3 provides a summary of the Project’s financial aspects and Table 4 details the District’s current existing debt. The District operates a single General Fund to which the loan will be applied. The District qualifies for a blended interest rate of 1.15% (Landownership: 99.5% agricultural, 0.5% middle-income municipal) for a 30-year term. The District is applying for a 20-year term; therefore, the interest rate is decreased by 0.25% for a final interest rate of 0.90% per CWCB Financial Policy #7 (Lending Rate Determination).

**TABLE 3: FINANCIAL SUMMARY**

Total Project Cost	\$392,000
CWCB Loan Amount	\$392,000
CWCB Loan Amount (Including 1% Service Fee)	\$395,920
CWCB Annual Loan Payment	\$21,720
CWCB Annual Loan Obligation (1 <sup>st</sup> Ten Years)	\$23,892
Number of Acres in the District	40,917
Current Assessment per Acre	\$17
Annual Loan Obligation per Acre	\$0.58
Future Assessment per Acre	\$22 <sup>1</sup>

1. The future assessment per acre is more than the minimum required to cover the loan obligation, because two additional projects are expected in the near future. The increase will cover this obligation and the new projects.

**Creditworthiness:** The District has one existing loan which is with the CWCB as shown in Table 4. The District is in good standing.

TABLE 4: EXISTING DEBT

Lender	Original Balance	Current Balance	Annual Payment	Maturity Date	Collateral
CWCB (C150293)	\$1,094,840	\$661,765.48	\$68,583.04	2031	Pledge of Assessments

TABLE 5: FINANCIAL RATIOS

Financial Ratio	Prior Years	Future w/ Project <sup>1</sup>
Operating Ratio (revenues/expenses) weak: <100% - average: 100% - 120% - strong: >120%	111% (average) \$1,000K/\$900K	130% (strong) \$1,205K/924K
Debt Service Coverage Ratio (revenues-expenses)/debt service weak: <100% - average: 100% - 120% - strong: >120%	245% (strong) \$1,000K-\$831K \$69K	402% (strong) \$1,205K-\$831K \$93K
Cash Reserves to Current Expenses weak: <50% - average: 50% - 100% - strong: >100%	22% (weak) \$200K/\$900K	22% (weak) \$200K/\$924K
Annual Operating Cost per Acre-Foot (67,922 AF) weak: >\$20 - average: \$10 - \$20 - strong: <\$10	\$13.25 (average)	\$13.60 (average)

1. Future w/ Project ratios do not include expenses associated with other planned projects.

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

cc: Jim Yahn, Manager, North Sterling Irrigation District  
 Jennifer Mele, Colorado Attorney General's Office

Attachment: Water Project Loan Program - Project Data Sheet

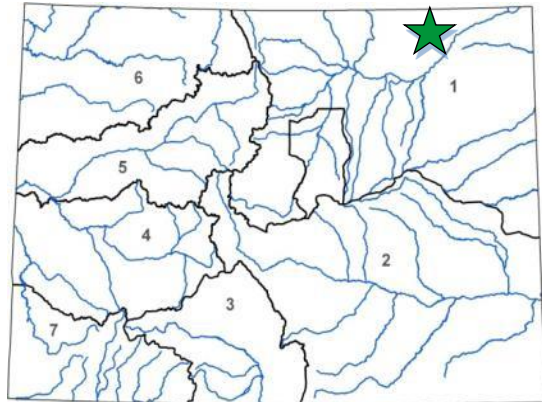


# Outlet Canal Automation Phase II Project

North Sterling Irrigation District

January 2021 Board Meeting

L O A N   D E T A I L S	
Project Cost:	\$392,000
CWCB Loan (with 1% Service Fee):	\$395,920
Loan Term and Interest Rate:	20 Yrs @ 0.90%
Funding Source:	Construction Fund
B O R R O W E R   T Y P E	
Agriculture	Municipal      Commercial
99.5%	0% Low - 0.5% Mid - 0% High      0%
P R O J E C T   D E T A I L S	
Project Type:	Ditch Systems Improvements
Average Annual Diversions:	67,922 AF



The North Sterling Irrigation District (District) was created in 1907 by the Board of County Commissioners and currently serves 122 landowners with more than 40,000 acres east of the North Sterling Reservoir. Irrigated land in the District’s service area produces corn, alfalfa, sugar beets, pinto beans, small grains and feed crops.

L O C A T I O N	
County:	Logan
Water Source:	South Platte River
Drainage Basin:	South Platte
Division: 1	District: 64

The project will automate 42 of the District’s on-farm headgates, following up on a successful Phase I which installed 25 of these systems. Automation will include solar power, a controller, an actuator to operate the headgate, a radar sensor at each Parshall flume, and telemetry for data access and remote control. This will provide benefits to the District and landowners by saving time, labor, and water, and by potentially reducing the size of a future regulating reservoir. Construction is expected to begin in the Spring of 2021 and last approximately 45 days.

