



**COLORADO**

**Colorado Water  
Conservation Board**

Department of Natural Resources

1313 Sherman Street  
Denver, CO 80203

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

John Hickenlooper, Governor

Robert Randall, Interim DNR  
Executive Director

James Eklund, CWCB Director

**TO:** Colorado Water Conservation Board Members

**FROM:** Derek Johnson, P.E., Project Manager  
Kirk Russell, P.E., Finance Section Chief

**DATE:** May 18-19, 2016 Board Meeting

**AGENDA ITEM:** 21c. Water Project Loans  
Julesburg Irrigation District  
Reconstruction of the Harmony No.1 Measurement Structure

---

### Introduction

The Julesburg Irrigation District (District) is applying for a loan for the Reconstruction of the Harmony No.1 Measurement Structure (Project). The purpose of the Project is to reconstruct an existing structurally damaged 20-foot Parshall flume to avoid future failure. The District plans to remove the existing structure, and to construct the new replacement structure upstream, prior to the 2017 reservoir fill season. The estimated cost of the Project is \$224,000. The District is requesting a loan from the CWCB to cover 90% of Project Costs; remaining costs are to be covered by District funds. See attached Project Data Sheet for the location map and Project Summary.

### Staff Recommendation

Staff recommends the Board approve a loan not to exceed \$203,616 (\$201,600 for Project costs and \$2,016 for the 1% Loan Service Fee) to the Julesburg Irrigation District for the Reconstruction of the Harmony No.1 Measurement Structure Project from the Severance Tax Perpetual Base Fund. The loan terms shall be 30 years at the agricultural rate of 1.70% per annum. Security for the loan shall be in compliance with CWCB Financial Policy #5.



### Background

The Julesburg Irrigation District, located in Logan and Sedgwick Counties of Colorado, is operator and part owner of the Harmony No. 1 Canal, which delivers both direct flow and storage water rights to the Julesburg Reservoir. The canal diverts water from the South Platte River approximately three miles southwest of the town of Crook. Canal deliveries provide direct flow irrigation water, storage water, and augmentation water to approximately 17,000 acres of land controlled by the Harmony Ditch Company and the Julesburg Irrigation District. The canal can also be used to deliver irrigation water to an additional 6,000 acres through Julesburg Reservoir rights, administered to the Petersen Canal, as a supplemental source if supplies at the Petersen head gate are not adequate. The District's existing 20-foot Parshall Flume structure at the main river diversion has incurred structural damage over time that will cause failure at some future point if not addressed. The District wishes to replace the existing structure with a new structure located immediately upstream.

### Loan Feasibility Study

The District, with support from Erich Draht, P.E. of Draht Consulting LLC., prepared the Loan Feasibility Study titled "Feasibility of Reconstruction of the Harmony No. 1 Measurement Structure" dated March 2016. The feasibility study was prepared in accordance with the CWC guidelines and includes an analysis of alternatives, preliminary engineering design, and construction cost estimates.

### Borrower - Julesburg Irrigation District

The Julesburg Irrigation District was formed in 1904, and serves 19,129 bonded acres within the District, owned by 110 landowners. The District uses the terms shares and acres interchangeably, as one share is equivalent to one acre of land ownership. The District has a three-member board of directors elected by the shareholders at large. The current assessment is \$23.50 per District acre. The District operates under the Colorado Revised Statutes Title 37 Article 41, the Irrigation District Law of 1905. The District has the power to condemn property as necessary for the use of the District, and the power to levy assessments for the operation of the District and debt service.

### Water Rights

The District owns water rights, as well as shares in the Peterson, Settlers, and Harmony ditches. Water rights owned by the District consist of the following:

TABLE 1: WATER RIGHTS

| Name   | Amount    | Appropriation Date | Adjudication Date | Water Court Case No. |
|--|-----------|--------------------|-------------------|----------------------|
| Peterson Ditch (80% owner)                       | 164 CFS   | 3/1/1895           | 10/26/1907        | CA0944               |
| Settlers Ditch (100% owner)                      | 89 CFS    | 12/13/1897         | 10/26/1907        | CA0944               |
| Julesburg Reservoir (refill)                     | 8079 AF   | 9/30/1985          | 12/31/1996        | 96CW1033             |
| Harmony Ditch 1 (100 shares)                     | 252 CFS   | 4/28/1895          | 7/20/1896         | CA0304               |
| Harmony Ditch 1                                  | 450 CFS   | 2/12/1904          | 12/8/1908         | CA0944               |
| Julesburg Reservoir                              | 28,178 AF | 12/12/1904         | 12/8/1908         | CA0944               |
| Julesburg Irrigation District (Aquifer Recharge) | 12,500 AF | 12/30/1995         | 12/28/1995        | 95CW283<br>03CW450   |

Average annual deliveries for the District are approximately 54,423 AF.

### Project Description

The purpose of the Project is to provide a reliable measurement structure for accurately measuring flow in the Harmony No. 1 Canal during the diversion of water for the various water rights being used by the Julesburg Irrigation District. Three alternatives for this Project were considered:

**Alternative 1 - Take no action:** This was considered unacceptable because the failure of the existing structure would make it not possible to measure water delivered, as required by the State Engineers Office.

**Alternative 2 - Rehabilitate the existing structure:** This alternative was ruled out because of the deteriorated and undermined condition of the concrete and sheet piling of the old structure. To rehabilitate the existing structure in-place would drive expenses up to a point of near-total replacement cost for a new structure, but would not address the issue of failed subgrade underlying the structure.

**Selected Alternative 3 - Construct a new structure:** This alternative was chosen to ensure continued operation of a crucial element of the system. This alternative involves the bypass of residual flows, de-watering the Project site, excavating the area upstream of the existing structure, constructing a new weir, placing riprap on the upstream and downstream abutments, and removal of the old structure.

The estimated cost of the Project originally was quoted as \$216, 729 by Yost Construction and \$219,810 by Concrete Specialties. The bids were determined by the District to be too high, but in further conversations with Concrete Specialties, it was suggested to build the structure under a time-and-materials contract with contingencies, with an expected base cost of \$160,000. The District has previously hired Concrete Specialties for its Outlet Works project, Inlet Works project, as well as the Lodgepole Creek Structure; all of which were financed with CWCB loans.

TABLE 2: ESTIMATED PROJECT COSTS

| Task                  | Cost      |
|-----------------------|-----------|
| Design and Permitting | \$4,000   |
| Construction          | \$160,000 |
| Contingency           | \$60,000  |
| Total                 | \$224,000 |

**Permitting:** The District has existing easements for the canal, and is exempt from 404 permitting, as Project construction is for an irrigation diversion and related structure.

**Schedule:** The structure is planned be built in late September through late October of 2016 to allow for filling the Julesburg Reservoir in water year 2017, which begins November 2016.

### Financial Analysis

The District qualifies for the agricultural interest rate of 1.70% for a 30-year term. Table 3 provides a summary of the Project's financial aspects:

**TABLE 3: FINANCIAL SUMMARY**

|   |           |
|---|-----------|
| Total Project Cost  | \$224,000 |
| Borrowers Contribution (10%)                                  | \$22,400  |
| CWCB Loan Amount (90%)  | \$201,600 |
| CWCB Loan Amount (Including 1% Service Fee)                   | \$203,616 |
| CWCB Annual Loan Payment                                      | \$8,721   |
| CWCB Annual Loan Obligation (including reserve requirement)   | \$9,593   |
| Annual Loan Obligation per share (19,129 Shares/Bonded Acres) | \$0.50    |
| Current Assessment per share / acre                           | \$23.50   |

**Creditworthiness:** The District has three existing loans with the CWCB, all in good standing:

**TABLE 4: EXISTING DEBT**

| Lender        | Project                      | Original Balance | Current Balance | Annual Payment | Maturity Date | Collateral                     |
|---------------|------------------------------|------------------|-----------------|----------------|---------------|--------------------------------|
| CWCB C153827  | Outlet Reconstruction        | \$510,469        | \$307,486       | \$28,631       | 2031          | Assessment Covenant / Property |
| CWCB C150060A | Inlet Reconstruction         | \$100,000        | \$65,757        | \$5,437        | 2032          | Assessment Covenant / Property |
| CWCB C153604  | Lodgepole Petersen Structure | \$372,951        | \$230,012       | \$20,278       | 2031          | Assessment Covenant / Property |
| Totals        |                              | \$983,420        | \$603,255       | \$54,346       |               |                                |

**TABLE 5: FINANCIAL RATIOS**

| Financial Ratio   | Past Years                                   | Future w/ Project                            |
|---|--|--|
| Operating Ratio (revenues/expenses)<br>weak: <100% - average: 100% - 120% - strong: >120%                             | 104%<br>(average)<br>\$618K/\$596K           | 102%<br>(average)<br>\$618K/\$605K           |
| Debt Service Coverage Ratio<br>(revenues-expenses)/debt service<br>weak: <100% - average: 100% - 120% - strong: >120% | 142%<br>(strong)<br>\$618K-\$541K<br>\$54.3K | 121%<br>(strong)<br>\$618K-\$541K<br>\$63.9K |
| Cash Reserves to Current Expenses<br>weak: <50% - average: 50% - 100% - strong: >100%                                 | 42%<br>(weak)<br>\$253K/\$596K               | 44%<br>(weak)<br>\$266K/\$605K               |
| Annual Operating Cost per Acre-Foot Diversions (54,423 AF)<br>weak: >\$20 - average: \$10 - \$20 - strong: <\$10      | \$10.94<br>(average)<br>\$596K/54,423AF      | \$11.12<br>(average)<br>\$605K/54,423AF      |

**Collateral:** Security for this loan will be a pledge of the District's assessment revenue backed by an assessment covenant and the new Harmony No.1 Measurement Structure. This is in compliance with the CWCB Financial Policy #5 (Collateral).

cc: Larry Frame, Superintendent, Julesburg Irrigation District  
Susan Schneider/Jennifer Mele, Colorado Attorney General's Office

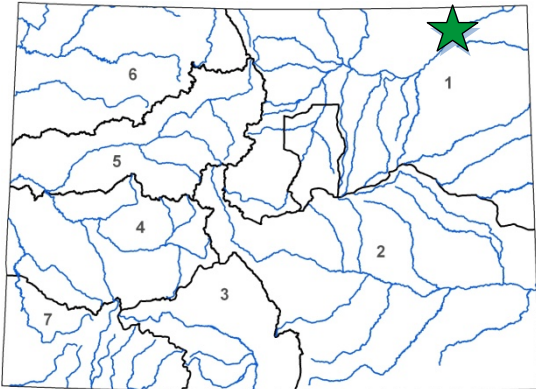
Attachment: Project Data Sheet



# Reconstruction of the Harmony No. 1 Measurement Structure

Julesburg Irrigation District  
May 2016 Board Meeting

| L O A N   D E T A I L S       |                                   |
|-------------------------------|-----------------------------------|
| Project Cost:                 | \$224,000                         |
| CWCB Loan (with Service Fee): | \$203,616                         |
| Loan Term and Interest Rate:  | 30 years @ 1.70%                  |
| Funding Source:               | Severance Tax Perpetual Base Fund |
| B O R R O W E R   T Y P E     |                                   |
| Agriculture                   | Municipal      Commercial         |
| 100%                          | 0% Low - 0% Mid - 0% High      0% |
| P R O J E C T   D E T A I L S |                                   |
| Project Type:                 | Ditch Rehabilitation              |
| Average Annual Delivery:      | 54,423 AF                         |



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

The Julesburg Irrigation District (District), part owner and the operator of the Harmony No. 1 Canal, delivers both Direct Flow rights and Storage water rights to the Julesburg Reservoir. The Canal diverts water from the South Platte River approximately three miles southwest of the town of Crook, Colorado. The Canal delivers direct flow irrigation water, storage water and augmentation water to approximately 17, 000 acres of land controlled by the Harmony Ditch Company and Julesburg Irrigation District. The Canal can also be used to deliver irrigation water to an additional 6,000 acres thru the Julesburg Reservoir rights administered to the Petersen Canal as a supplemental source if supplies at the Petersen head gate are not adequate. The existing 20 foot Parshall Flume has structural damage that will cause failure. The District wishes to replace the existing structure with a new structure located just upstream, prior to the 2017 reservoir fill season beginning in November 2016. The purpose of this project is to provide a reliable measurement structure to accurately measure the flow of the Harmony No. 1 Canal during the diversion of water for the various water rights being used by the Julesburg Irrigation District.

