

YAKIMA RIVER BASIN

Columbia Irrigation District Lateral 2 Canal 2.1 Mile Liner

Application

Columbia Irrigation District Staff

4/23/2019

Columbia Irrigation District Lateral 2 Canal 2.06 Mile Liner Project proposal and related information for Grant application pursuant to: Funding Opportunity Announcement No. BOR-DO-18-F009.

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I. Technical Proposal

A. Executive Summary

23 April 2019

Columbia Irrigation District

Kennewick, Benton County, Washington

Columbia Irrigation District (CID) is proposing to line approximately 850 linear feet of its Lateral 2 canal. The lining would reduce seepage and protect the surrounding area from possible canal failures. The proposal would remove an old concrete liner that covers one-third of the canal prism (the downslope bank of the canal). Then the canal will be excavated to subgrade. The excavation will provide space for fiber reinforced concrete lining to be installed over a membrane liner.

The District anticipates that the balance remaining after the USBR funding will be provided as in-kind contributions from CID through labor, equipment and fuel. If costs exceed this assumption CID will provide the funds out of current annual budget or cash reserves held by CID.

This project is located on CID facilities and could be finished within the calendar year the funds are awarded. The project work will be conducted during the four months water is off. Giving a completion date on or around 10 March 2020 if started in the beginning of November.

B. Background Data

The CID was organized under Title 87 of the Revised Code of Washington as a quasi-municipal corporation. It currently operates under that title to supply irrigation water to over 9,500 acres within its 11,170 assessed acres. CID is an “on-demand” canal system, meaning there is no water ordering protocol for deliveries to patrons. It also has limited water usage metering due to its senior water right status, and lack of need throughout its history because of ample water supply most years.

CID was organized on 3 October 1917 for purpose of supplying and distributing irrigation water. However, the history of the infrastructure that it operates dates to 1888 when its predecessor, Yakima Irrigation & Improvement Company (YI&I) was formed in Yakima County of the then Territory of Washington. With money invested from stockholders, mostly from Niagara Falls, New York, the company was formed for these purposes:

1. To buy and sell lands in Washington Territory, and, to buy and sell all kinds of property; real, personal, and mixed;

2. To dig, construct, and operate ditches and canals for general irrigating, milling, and mining purposes;
3. To carry on a general farming, stock raising, and agricultural business; and
4. To build, construct, and operate mills of all kinds and manufacturing establishments for general milling and manufacturing purposes.

In 1889, the YI&I began constructions of its diversion structure (Horn Rapids Dam, currently named Wanawish Dam) and the westerly portion of the current canal system. In 1891 the YI&I filed the original water right claim to divert 300Cfs from the Yakima River and staked its claim at the point on the south side of the river where the headgates are still located. In 1893, the Northern Pacific Railroad transferred ownership of 19,742 acres to the YI&I. Most of the acreage was within the present CID boundaries; however, a portion of the acreage was within the present Kennewick Irrigation District. Construction of the canal system proved to be costly and the YI&I frequently overran budgeted amounts which lead to continuous borrowing of moneys for the project. As lenders and stockholders grew more and more anxious about their investments the Cataract Bank in Niagara Falls called in the note on the company's debt. Driven by the fear of foreclosure the YI&I conveyed the deeds for the canals and all appurtenances to the newly formed Dell Haven Irrigation District. The pressures from investors continued to mount even after the transfer and in response to these pressures the leadership offered the investors bonds in the newly formed irrigation district in exchange for their YI&I stocks. The investors and lenders did not agree to the exchange and the Cataract Bank began legal action when payment of the note wasn't remitted. As a result, YI&I went into receivership in 1894, and since the Dell Haven Irrigation District didn't receive any money to operate in the plan it dissolved. Then, after the assets of YI&I were sold, several times, the deed to the canal system was transferred to Northwestern Improvement Company by the court. In 1904 Northern Pacific Irrigation Company, a branch of Northern Pacific Railroad, acquired the assets.

After dissatisfaction of the landowners due to the failure of completing the irrigation delivery system, and to ensure a timelier delivery of water to their land the CID was formed in 1917. The assets were transferred from Northern Pacific Irrigation Company to CID in 1918 and the remainder if the delivery system was completed in the following years.

The USBR operates the Yakima River based upon target flows for key points on the river and this has historically been satisfactory in making available CID's full instantaneous flows. However, the water availability down river in the system is ever decreasing due, in part, to water conservation upstream. CID operates as one of the most senior water rights on the Yakima River System and as such hasn't historically viewed modernization as a pressing need. Some of the decreasing inflows have been realized between the CID headworks and the nearest target flow location have begun making the diversion of the full entitlement to CID patrons a difficult endeavor. Considering all this the CID Board of Directors now view

A conservative estimate for water savings based upon the CID 1997 conservation plan for this 850' of lining is 13 AF/year. This reach of canal was left out of most of the seepage loss estimates from 1997 because it has an existing liner. However, the liner is only a 1/3 of the canal liner that lines the downslope canal bank of the canal prism only not the bottom or the upslope bank of the prism. The liner was installed with an average concrete thickness of 3" and is now extremely cracked and leaves many places for water seepage.

We arrived at the estimated seepage loss by taking the average of the estimates for the reaches immediately upstream and downstream of the project area. Which is .023 AF per linear foot. We multiplied by 850' linear feet of the project area for 19.55 AF. We then multiplied it by 0.67 to account for the reduced seepage of the existing liner as if it is a zero seepage 1/3 of the canal. This leaves a conservative estimate of 13 AF per year in water savings. Which is 0.03% of CID's total annual water allotment.

Beyond the estimated water savings, the project will provide added stability to the water supply because it protects an elevated reach of canal against catastrophic failure. If lateral 2 were to fail in this reach of canal it would disrupt service to approximately 2,500 irrigated acres.

The project will also add protection against property damage that a canal failure would cause to the downslope properties, including the CID shop and state highway 397. The private property owners have a combined assessed value of \$3,800,000. This figure does not provide an estimate for the value of crops, vehicles, livestock or the state highway.

The project is only expected to have a geographic benefit to CID and the neighboring properties. The project is not expected to increase collaboration or the local sector economies in any way unrelated to the increased water availability for CID patrons. CID is unaware of any NCRS projects in the area that this lining would directly benefit.

E.1.2 Evaluation Criterion B –Planning Efforts Supporting the Project

The CID is aggressively pursuing capital improvements and conservation efforts. CID is currently developing a capital improvement plan as part of a renewed enthusiasm for facility improvements. This project is consistent with the philosophy of the capital improvements planning which is geared toward solutions for high risk areas and water conservation.

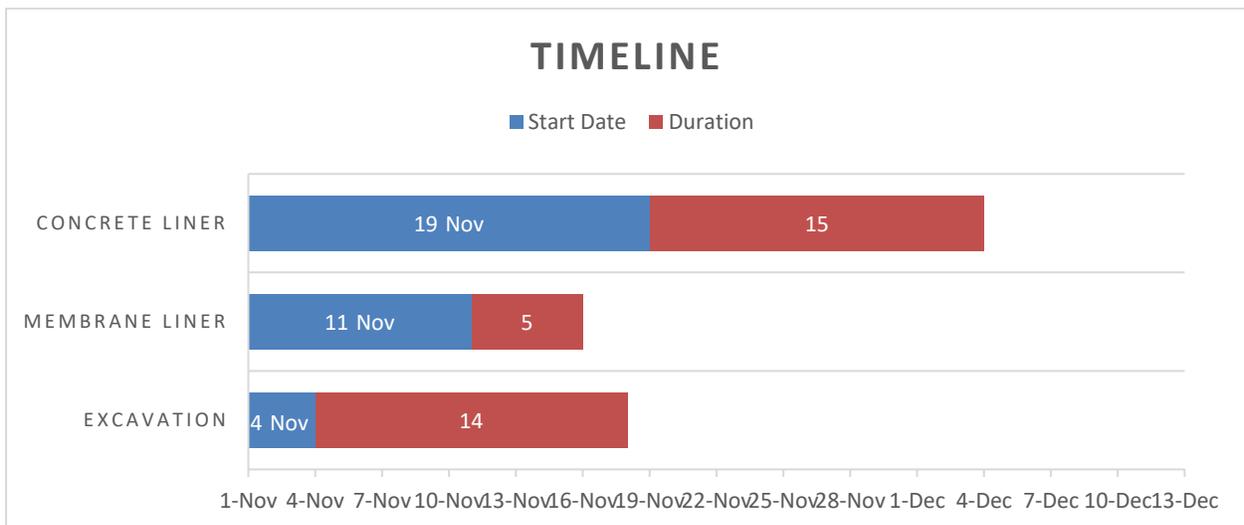
The CID 1997 water conservation plan addressed the need for canal lining projects to reduce seepage and provide adequate supply to CID patrons. Membrane materials overlaid with concrete liners are an ideal way to achieve this goal and have an extremely long service life when compared to other lining materials. The concrete overlay will ensure easy cleaning, especially compared to other materials, without damaging the integrity of the liner. Although this section of canal was not specified as preferred location in the CID conservation plan it has become a high priority due

to the deteriorated condition of the existing liner. The project location is in a reach of canal that is elevated above the surrounding area and is high risk for failure due to the condition of the liner.

E.1.3 Evaluation Criterion C – Project Implementation

Implementation of this project will be done in one phase with three steps. The first step will be to excavate the canal prism to a subgrade of 4.5” below final grade and simultaneously bring the canal prism back to design specifications for side slope and grade. When the excavation is finished the membrane liner will be installed. Then the concrete overlay will be installed and construction damage to the canal access roads will be repaired including replacing gravel on the road surface.

The implementation timeline with milestones and task is listed below:



E.1.4 Evaluation Criterion D – Nexus to Reclamation

CID is not directly connected to the USBR by a repayment contract. The District does have ties to USBR through the Yakima River Basin in several ways:

1. The CID is in the same river basin Kennewick Irrigation District (KID), Kittitas Reclamation District (KRD), Sunnyside Valley Irrigation District, (SVID), Yakima-Tieton Irrigation District (YTID), Wapato Irrigation Project (WIP), as well as several non-USBR irrigation districts.
2. CID carries 6CFS in its canal system for Kennewick Irrigation District (KID).
3. The USBR operates and maintains the fish screen at CID headworks.

E.1.5 Evaluation Criterion E Department of the Interior Priorities

1. *Creating a conservation stewardship legacy second only to Teddy Roosevelt*

- a) A membrane with concrete overlay lined canal in the project area would be a good step towards modernizing the water delivery system. It utilizes the best available lining option and latest science to produce a durable liner for the next 50+ years.

2. *Utilizing our natural resources*

- a) Through adoption of best practices, the District can adapt to future changes in the environment that will, without modernization, jeopardize the District's ability to deliver water judiciously to all patrons. This project will save water and thereby utilize this precious natural resource to full potential. The water savings has the potential to aid CID in reducing some of its pumping needs, minor as they may be, because the water saved can be used for irrigation within the CID boundaries.

3. *Restoring trust with local communities*

- a) The project will improve the safety of the surrounding area by lining an elevated canal and save water for the use of CID patrons. These project benefits will make CID a better neighbor to its water users and the surrounding communities.

4. *Striking a regulatory balance*

- a) The lining of the canal system will reduce the potential administrative burden to CID patrons (i.e. the public) that a canal failure would impose. If canal failure were to happen the patrons and public would suffer property losses and experience water outage during the repairs. The water outages would result in crop losses, livestock and other valuable property losses that require irrigation water.

5. *Modernizing our infrastructure*

- a) The installation of membrane with concrete overlay liner will fit into CID's modernization of its infrastructure. As CID lines sections of its canal system yearly the District will in time have a modern liner over all the critical areas. Then the District can continue the lining and piping of the entire canal system. This will allow the District to conserve water and protect against canal failures that would deeply impact the patrons and surrounding areas. The saved water can be used on-farm or when not needed for irrigation be left in the river to benefit in-stream purposes.

II. Budget

A. Budget Plan

Funding Source	Amount
Non-Federal Entities	
* In-Kind	\$47,416.18
Reserves	\$26,022.02
Total Non-Federal Funding	\$73,438.20
Other Federal Entities	
Other Federal Total	\$0
Requested Reclamation Funding	\$74,438.20
Total Funding	\$146,876.40

B. Budget Proposal

2.1 lateral #2 Canal Lining					
Personnel/Equipment/Materials/contractors	Hrs	Liner Ft/yds	Cost per unit	Subtotal in-kind	Subtotal BOR
Personnel					
Project Manager	30		\$42.56	\$1,276.80	
Supervisors	75		\$30.86	\$2,314.50	
CID Operator	125		\$28.05	\$3,506.25	
CID Crew	205		\$25.83	\$7,360.26	
Benefits 39%				\$20,096.35	
Enviro. compliance					
Contractors					
Shotcrete crew	275			\$18,250.00	\$0.00
Equipment					
318 excavator	65		\$62.68	\$4,074.20	
Mini Excavator	30		\$19.83	\$594.90	
3/4-ton truck	40		\$27.29	\$1,091.60	
1-ton truck	32		\$27.86	\$891.52	
1/2-ton truck	35		\$27.47	\$961.45	
Truck Chassis & Dump	81		\$57.17	\$4,630.77	
Dresser Grader	4		\$81.45	\$325.80	
Truck chassis & lowboy	6		\$48.63	\$291.78	
Materials					
Lining Material		23,500	\$0.60		\$14,100.00
road gravel		200	\$1.28		\$256.00
Misc.			\$450.00		\$450.00
concrete		472	\$124.00		\$58,528.00
Tax	8.6		\$7,876.22	\$7,772.02	\$104.20
Contribution Sub-Totals				\$73,438.20	\$73,438.20
Project Total					\$146,876.40

C. Budget Narrative

The Project Manager will be Clancy Flynn and the Supervisors will be Bob Ingraham and Curt Strifert. The current rates of pay for these individuals and for the crew are the rates listed in the budget proposal. These salaries are contractually set to increase 3% effective January 2019. The compliance hours for reporting are estimated at 30 and they are included in the total hours for the project manager.

The fringe benefits are the District's cost for health insurance, retirement and deferred compensation that the District offers as part of its compensation. These rates are used only for the purposes of the application.

III. Environmental Compliance

Will the project impact the surrounding environment?

No.

Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area?

The District is not aware of any such species in the project area.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?"

The District is not aware of any such wetlands.

When was the water delivery system constructed?

Canals were originally constructed by 1917.

Will the project result in any modification of or effects, to individual features of an irrigation system?

Yes, we will be lining a section with a full liner that in the past only had one bank of the canal lined.

Are there buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?

The District does not have any currently listed, however, due to the age of certain features we may have some that would be eligible.

Are there any known archeological sites in the proposed project area?

The District is not aware of any such sites.

Will the project have disproportionately high and adverse effects on the low income or minority populations?

No.

Will the project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

No.

Will the project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known in the area?

No.

IV. Required Permits

There are no required permits because the work will all be done with current District facilities and Rights-of-Way.

V. Appendices

i. Official Resolution

**COLUMBIA IRRIGATION DISTRICT
2.1 Mile Lateral 2 Liner
Resolution 2019-3**

WHEREAS, the Columbia Irrigation District has identified the 2.1-mile mark of Lateral 2 a high-risk area of canal due to its elevation above the surrounding properties; and

WHEREAS, the concrete liner in this section only covers the downslope bank; and

WHEREAS, said concrete liner is also in poor condition due to its age; and

WHEREAS, the District can protect the integrity of the canal and conserve water by lining this section; and

WHEREAS, the Bureau of Reclamation has available WaterSmart grants to help with financing water and efficiency projects;

NOW THEREFORE, BE IT RESOLVED that the Columbia Irrigation District authorizes a project to line this portion of Lateral 2 beginning at the escalator and heading approximately 850 linear feet upstream.

BE IT FURTHER RESOLVED that the Columbia Irrigation District authorizes the pursuit of Reclamation WaterSmart, Water and Energy Efficiency monies to help cover the cost of said project.

Dated this 19th day of April 2019.

COLUMBIA IRRIGATION DISTRICT

A handwritten signature in black ink, appearing to read "Vincent Shawver", is written over a solid horizontal line.

Vincent Shawver, President

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