

WATERSMART FY2018:
SMALL-SCALE
WATER EFFICIENCY
PROJECT

MAYBELL CANAL
WATER CONSERVATION PROJECT

FOAN: BOR-DO-18-F009

CFDA: 15.507

FEDERAL FUNDING REQUESTED: \$75,000

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Technical Proposal

Executive Summary

The Maybell Irrigation District's proposed project area includes land near the town of Maybell, Colorado in Moffat County. This application, submitted on July 31, 2018, is requesting funds to line 1,300 feet of an existing earthen irrigation canal. The proposed project location was selected due to its large seepage rate resulting in inefficient water delivery, water quality impairments to the Yampa River, and the threat of a canal breach. By lining the existing canal in the proposed segments, it is estimated that approximately 150 acre feet per year could be left in the Yampa River that would have otherwise been diverted into the canal, just to be lost through seepage and not put to a beneficial use. Project implementation and construction is expected to take approximately 6 weeks and will occur in the spring before irrigation commences. The proposed project is not located on a federal facility but does support and share many of the goals of Reclamation including preserving agriculture, and protecting and enhancing the environment.

Background Data

The Yampa River basin is one of the last largely unregulated major river systems in the Colorado River Basin, a basin which faces a growing water scarcity crisis. Ongoing drought and increased competition for water supplies threaten water security for all who depend on the Colorado River - and heighten the urgency of increasing water efficiencies in agricultural infrastructure. Current low season flows on the Yampa River near Maybell drop below the streamflow target of 93 cubic feet per second (cfs) identified by a local working group and the Upper Colorado River Endangered Fish Recovery Program (Recovery Program). For example, during the drought in 2012 the flow dropped below 93 cfs for 67 days and the average flow from August 1 through October 15 was only about 100 cfs.

The Maybell Canal was built in northwest Colorado in 1896 and diverts water from the Yampa River. In 1922, the Maybell Irrigation District (MID) was formed for the purpose of operating the canal. The canal headgate is structure number 694 in Water District 44 of the Colorado Department of Water Resources. The Maybell Canal water right was appropriated on October 2, 1899 and decreed on December 8, 1923. It has a decreed capacity of 129 cfs.

Typical operation runs from late April through the end of October in any given year. The diversion is closed, and the canal dewatered during the winter. Average annual diversions through the canal are approximately 20,000 acre-feet per year (AFY) with an irrigation water requirement (IWR) of 1,800 acre-feet (AF). The canal provides water for approximately 1,100 acres of high-elevation hay fields, the predominant irrigated crop in the region. This IWR and acreage is not expected to decrease in the future as it is a goal of stakeholders in the region to maintain irrigated agricultural. It is possible that IWR could increase if temperatures trend

upwards in the future. The Maybell Canal is approximately 12 miles long with 78 laterals serving 18 users. Currently, only 400 feet of the canal is lined with the remainder being an unlined, earthen open-channel.

As the largest and oldest water diverter on the lower Yampa, the Maybell Irrigation District is a critical partner for bolstering flows in the watershed. Due to its age, the canal is in dire need of modernization improvements to increase water efficiency. The canal headgate is downstream of Elkhead Reservoir which releases water as part of the Recovery Program. Given the canal’s location, any decrease in diversion would enhance critical endangered fish habitat in the Maybell reach and allow increased streamflow to remain in the Yampa River as it flows through Dinosaur National Monument toward the Utah state line.

A general location overview of the Maybell Canal is provided in **Figure 1**. The proposed project is located approximately 3.6 miles southeast of the Maybell, Colorado. The proposed project latitude is 40° 29' 38.4" N and longitude is 108° 1' 26.4" W.

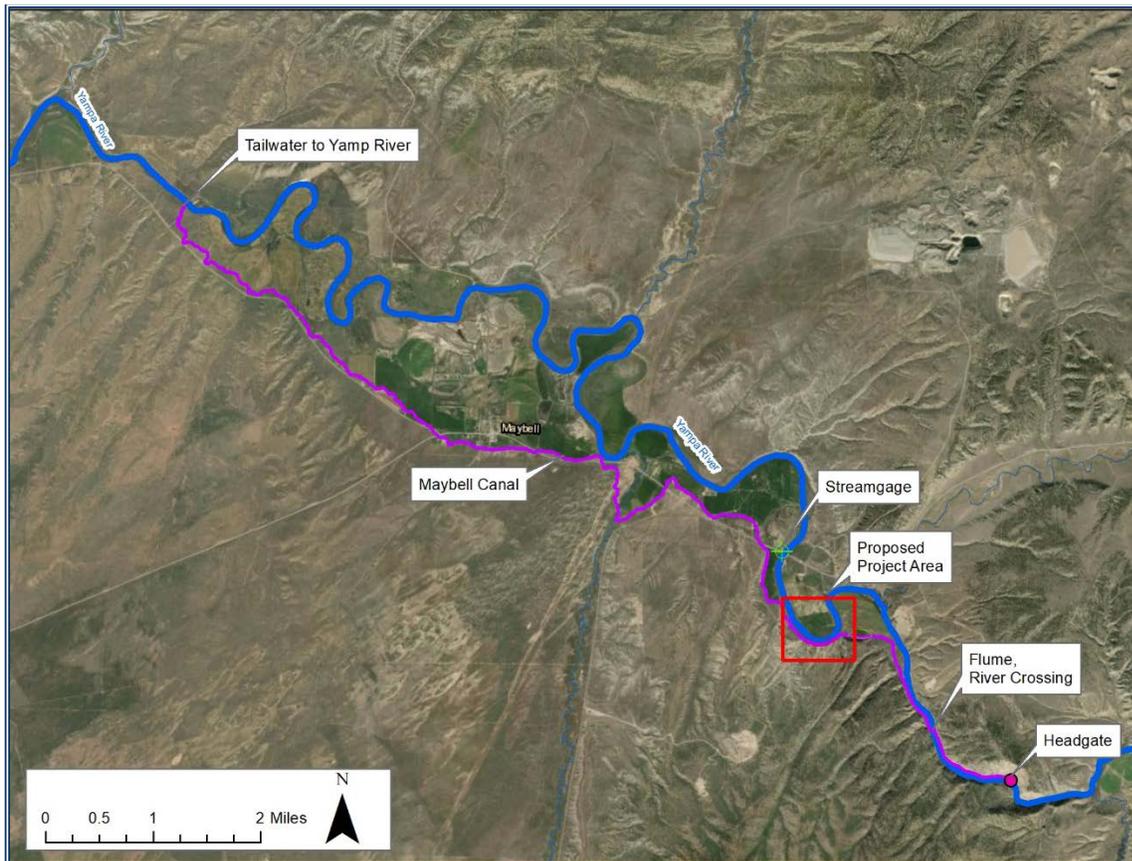


Figure 1 – General Overview of Maybell Canal

Project Description

In 2016, the Maybell Irrigation District identified several priority projects to improve the operational efficiency of the canal, which included additional canal lining, a headgate flow measuring device, automated waste gate, and new check structures. Combined, these improvements will allow the Maybell Canal to operate more efficiently, diverting less water and increasing streamflow immediately downstream of the headgate. MID has successfully completed a portion of the canal lining and installed the automated waste gate. While all the remaining improvements are a priority, this grant application is specifically seeking matching funds for additional canal lining. **Figure 2** shows a typical cross-section of the canal and **Figure 3** highlights the recently completed canal lining on approximately 400 feet of the canal. The proposed project will utilize a similar liner material (Firestone GeoGard EPDM).

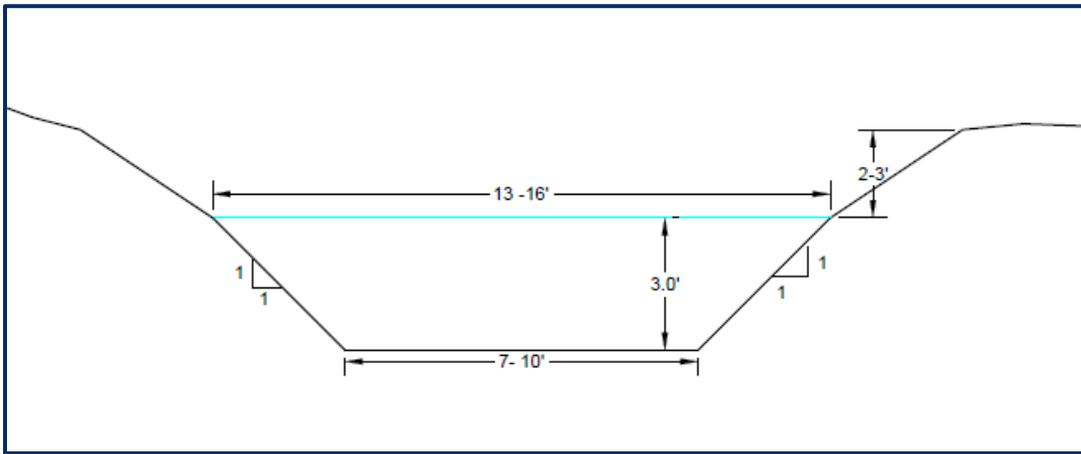


Figure 2 – Typical Cross-section of Maybell Canal



Figure 3 – Recently Completed Canal Lining on the Maybell Canal

Based on the recent field investigations and an engineering analysis utilizing Reclamation’s Design Standard No. 3 for Canals and Related Structures, it is estimated that total conveyance losses along the canal range from 30 to 50 percent, primarily due to seepage. The canal’s soil substrate is variable along its length ranging from silty sand to a loose conglomerate of sand and gravel with occasional cobbles and small boulders. The proposed project area was selected in part because it was identified as having the highest seepage rate along the canal’s length.

MID has identified 1,300 feet of the Maybell Canal as most critical for lining. Shown on **Figure 4**, seepage from these segments has resulted in significant sloughing of the adjacent hillside, resulting in large losses of water and a heightened risk of a canal breach event. In addition, the excessive seepage has resulted in increased sediment loading to the Yampa River. Proposed canal lining segments are as follows: Segment 1 is 1,000 feet and Segment 2 is 300 feet. Future Segment 3 is shown on the figure but is not part of the requested funds. Lining of the proposed segments will significantly reduce water loss. **Figure 5** depicts the underlying soil substrate of the proposed project area.

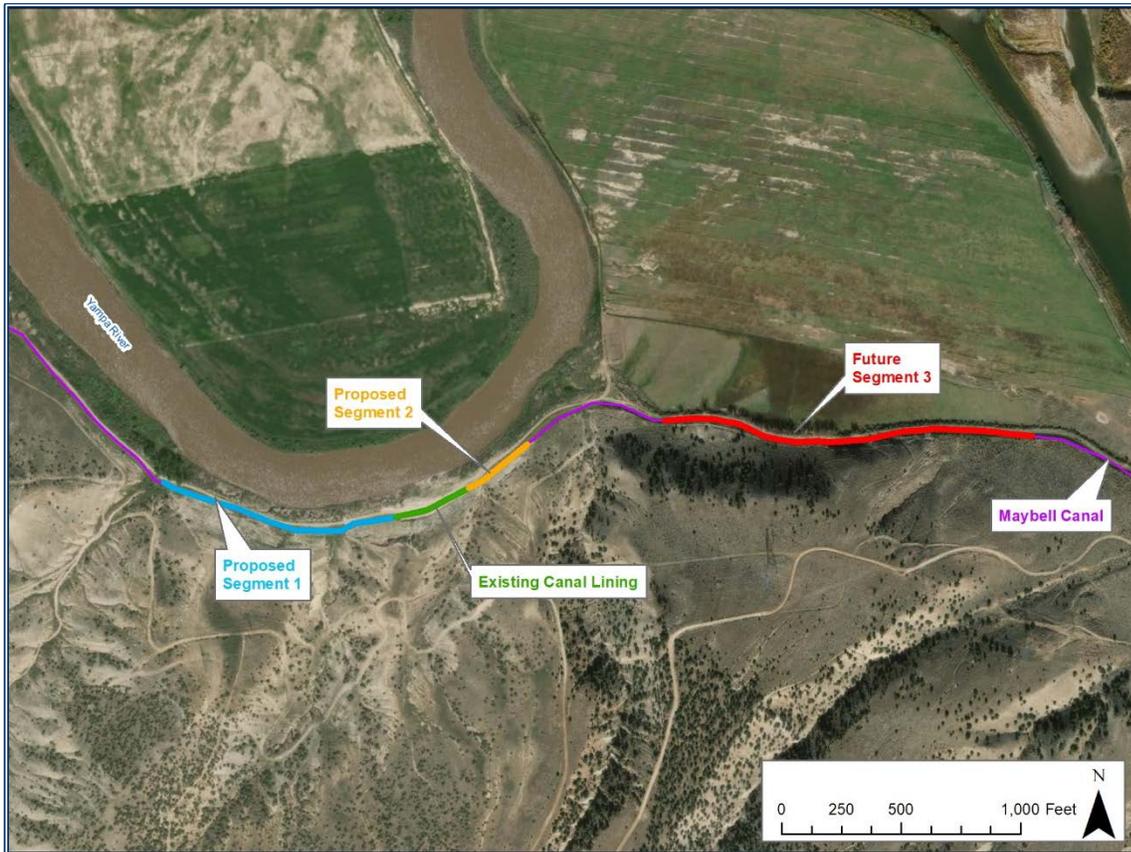


Figure 4 – Proposed Canal Lining Project Overview



Figure 5 – Underlying Soil Substrate of the Proposed Project Segments

Evaluation Criteria

Evaluation Criterion A - Project Benefits

Describe the expected benefits and outcomes of implementing the proposed project.

What are the benefits to the applicant's water supply delivery system?

MID has worked diligently to fix the sloughing every year since 2012. If the slough continues to fall into the river, the Maybell Canal will be completely lost into the Yampa River. Lining the canal will significantly reduce or eliminate sloughing along its most critical stretch. Additionally, reducing seepage will increase the delivery efficiency of water to the canal's irrigators.

Extent to which the proposed project improves overall water supply reliability?

Increasing the efficiency of water delivery through the Maybell Canal will increase the reliability of the supply in the event of decreases in future streamflow. Less water will need to be diverted to achieve the same agriculture benefit. In addition, the threat of a canal breach (described above) is a significant water supply reliability threat. As discussed above, lining the canal will eliminate this threat at its most critical point.

The expected geographic scope benefits from the proposed project (e.g. local, sub-basin, basin)

The proposed project will have benefits at multiple scales. Locally, it will improve streamflow immediately downstream of the Maybell Canal headgate. At the sub-basin and basin scale, the Colorado's Division of Water Resources is extremely concerned about diversions. Reducing seepage through the Maybell Canal resulting from lining will improve operations and administration of the Yampa Basin as a whole.

The extent to which the proposed project will increase collaboration and information sharing among water managers in the region.

The proposed project will benefit the Recovery Program. This collaborative program consists of many partners, including the State of Colorado, Reclamation, National Park Service, U.S. Fish and Wildlife, and The Nature Conservancy. Completion of the proposed project will illustrate to project partners that successful collaboration can benefit multiple water users.

Any anticipated positive impacts/benefits to local sectors and economies (e.g., agriculture, environment, recreation, tourism).

Agriculture

The proposed project will support the agriculture economy by modernizing the conveyance infrastructure of the largest irrigation canal in Water District 44. This will help maintain production of irrigated hay as a viable sector of the economy.

Environment – Endangered Species

Recent field investigations and analysis estimate that between 400 AF and 700 AF of water could be left in the river each irrigation season for every mile of the earthen canal that is lined. These savings will be realized as increased streamflow immediately downstream of the Maybell Canal headgate. During a future, critically dry year like 2002, this could amount to an increase in streamflow by as much as 3 percent during the lower flow months in late summer if the full 1,300 feet of the proposed project were lined. Increased flows in this stretch of the Yampa River will benefit endangered fish such as the humpback chub, boneytail chub, Colorado pikeminnow, and razorback sucker.

Environment – Water Quality

The high seepage rate from the Maybell Canal and hillside sloughing has resulted in increased sediment loading in the Yampa River. Lining the canal will eliminate sediment loading from the proposed project segments.

Extent to which the project will complement work done in coordination with NRCS in the area (e.g., with a direct connection to the district's water supply). Describe any on-farm efficiency work that is currently being completed or is anticipated to be completed in the future using NRCS assistance through EQIP or other programs.

Maybell Canal water users have been recipients of EQIP assistance in recent years. Projects have focused on on-farm efficiency improvements such as conversion of flood irrigation to gated pipe or sprinklers. Additional projects of this type are expected in the future and support the proposed projects conveyance efficiency goals and stewarding of Yampa River supplies. Additionally, canal users have also participated in NRCS's Conservation

Stewardship Program. The Maybell Canal users are committed to modernizing their infrastructure and stewarding their lands for multiple beneficial uses (i.e. irrigation, wildlife, soil health, etc.).

Evaluation Criterion B - Planning Efforts Supporting the Project

Describe how your project is supported by an existing planning effort.

Does the proposed project implement a goal or address a need or problem identified in the existing planning effort?

The Yampa/White/Green (YWG) Basin Roundtable recently completed a Basin Implementation Plan (BIP). As part of this process specific goals for the Yampa River were developed, including:

- Protect the YWG Basin from compact curtailment of existing decreed water uses and some increment of future uses.
- Protect and encourage agriculture uses of water in the YWG Basin within the context of private property rights
- Quantify and protect environmental and recreational water uses at locations identified in the nonconsumptive needs study of the YWG BRT
- Maintain and consider the existing natural range of water quality that is necessary for current and anticipated water uses
- Restore, maintain, and modernize water storage and distribution infrastructure
- Develop an integrated system of water use, storage, administration and delivery to reduce water shortages and meet environmental and recreational needs.

Lining the Maybell Canal will significantly contribute to these goals by increasing streamflow, protecting agriculture uses of water, protecting environmental uses of water, improving water quality, modernizing distribution infrastructure, and assisting in the management of flows for multiple beneficial uses, including agricultural and environmental.

Explain how the proposed project has been determined as a priority in the existing planning effort as opposed to other potential project/measures.

A recent study completed by The Nature Conservancy (TNC) identified the Maybell Canal as a “High Opportunity” for efficiency improvements. This study was initiated based as an outgrowth from the BIP in which TNC was a significant stakeholder. The “High Opportunity” designation was driven by two primary factors; it was the largest ditch in the study’s area of interest and was determined to have the lowest annual efficiency values. Lining the Maybell Canal would significantly improve its efficiency for the proposed project area.

Evaluation Criterion C - Project Implementation

Describe a detailed plan (e.g., estimated project schedule that shows the stages and duration of the proposed work).

Describe the implementation plan for the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.

MID will schedule canal lining beginning in March before irrigation starts and while the canal is dewatered. Installation of the liner is a relatively simple process and has an expected duration of 6 weeks, barring any unforeseen circumstances or inclement weather.

The project should commence as follows:

Week	Description
1	Mobilization: Stage equipment and material Clear and prepare canal segments for lining
2-5	Lay Segment 1 (1,000 feet) and 2 (300 feet)
6	Testing, Demobilize, and Site Cleanup

Describe any permits that will be required, along with the process for obtaining such permits.

The proposed project will take place on private land owned by a Maybell Canal shareholder or within the boundary of a Bureau of Land Management easement, recorded in the official records of the Little Snake River Field Office (Serial Number COGS—0 022987). MID will notify BLM prior to commencing work. No permits are expected based on experience with recent, similar canal lining work.

Identify and describe any engineering or design work performed specifically in support of the proposed project.

A site visit and preliminary engineering design work has been performed to support the proposed project. Specific activities include cross-section survey (see Figure 2), soil sampling, seepage loss analysis, liner material selection, and project planning. Additional engineering design work is expected to be minimal due to recent experience in lining the canal. Any required design work will occur prior to installation of the Firestone GeoGard EPDM liner.

Describe any new policies or administrative actions required to implement the project.

The proposed project will not require any new policies or administrative actions.

Describe how the environmental compliance estimate was developed. Have the compliance costs been discussed with the local Reclamation office?

The environmental compliance estimate was developed based on consultation with Reclamation's Western Colorado Area Office and BLM's Little Snake Field Office. In addition, recent experience with similar projects on the Maybell Canal were relied upon. A portion of the budget has been set aside to assure that the project will be in full compliance. Reclamation will be consulted regarding any NEPA, ESA, and NHPA requirements prior to any ground-breaking work commencing.

Evaluation Criterion D - Nexus to Reclamation

Describe the nexus between the proposed project and a Reclamation project or activities.

Is the proposed project connected to a Reclamation project or activity? If so, how?

The applicant does not receive Reclamation project water and the proposed project is not located on Reclamation project land or involve Reclamation facilities.

The proposed project is connected to Reclamation project activities by contributing to the common goals within the Colorado River Basin, which has multiple Reclamation projects. Common goals include conserving water, preserving agriculture, and protecting environmental and habitat interests. The proposed project also directly supports the Recovery Program, of which Reclamation is a program partner.

In addition, the proposed project is in line with Reclamations canal lining policy as outlined in DS-3-5. This policy states that "in order to conserve water and to secure other benefits, to consider fully the lining or placing in pipe of all constructed waterway for the conveyance and distribution of project water supplies".

Will the project benefit any tribe(s)?

The proposed project will not have any direct benefits, or negative impacts, to any tribes.

Evaluation Criterion E – Department of the Interior Priorities

Describe to what extent the proposed project demonstrates the Department of the Interior priorities.

Creating a conservation stewardship legacy second only to Teddy Roosevelt

The Maybell Canal water conservation project will implement a widely accepted irrigation efficiency best management practice that increases the adaptability of the water system to changes in the environment. In a basin with multiple beneficial uses, including the environment, more efficient use of the Yampa River will help reduce future conflict and support agriculture long-term.

Restoring trust with local communities

MID is committed to stewardship of the Yampa River water resources and is a current trusted partner in the basin. The proposed project will demonstrate to basin stakeholders, the Recovery Program, and state water administrators that Maybell Canal users continue to build towards a more efficient use of diverted irrigation water.

Striking a regulatory balance

The proposed project will demonstrate MID's good faith effort to reduce water waste and lessen the risk of an administrative or regulatory action by Colorado's Department of Water Resources. In addition, the project supports the goals the Recovery Program which relies on collaboration and partnerships within the basin to allow endangered fish populations to recover and be removed from federal protection.

Modernizing our infrastructure

Earthen canals are out of date with the standards and practices of today's modern irrigators. Lining a portion of the Maybell Canal will help modernize and make the conveyance system more efficient. In addition, the proposed project is in line with Reclamation's canal lining policy.

Project Budget

Funding Plan

Please see the enclosed Funding Plan from The Nature Conservancy of Colorado. Also, please see the enclosed Letter of Funding Commitment from The Nature Conservancy of Colorado.

Budget Proposal

All project funds will come from the Bureau of Reclamation, through this proposal, or from private philanthropic donations/pledges received by TNC. There are no third party or federal contributions contemplated.

Table 1.—Summary of Non-Federal and Federal Funding Sources

FUNDING SOURCES	AMOUNT
Non Federal Entities	
1. The Nature Conservancy	\$139,623.27
Non-Federal Subtotal	\$139,623.27
Other Federal Entities	
1. None	\$0.00
Other Federal Subtotal	\$0.00
REQUESTED RECLAMATION FUNDING	\$75,000.00

Table 2.—Budget Proposal

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	TOTAL COST
	\$/Unit	Quantity		
Salaries and Wages				
Yampa River Project Director	\$41.41	40	Hours	\$1,656.40
Fringe Benefits				
Full-Time Employees	\$16.564	40	Hours	\$662.56
Contractual/Construction				
Purchase & Installation of Liner				\$160,000.00
Environmental Compliance				\$10,000.00
TOTAL DIRECT COSTS				\$172,318.96
Indirect Costs				
NICRA	24.55%	\$164,318.96		\$42,304.31
TOTAL ESTIMATED PROJECT COSTS				\$214,623.27

Budget Narrative

Salaries and Wages

Geoff Blakeslee, the Yampa River Project Director at The Nature Conservancy(TNC) will serve as the program manager for this project. It is projected that program oversight will cost \$1,656.40. This amount is based on 40 hours for project oversight times his hourly rate of \$41.41. The labor rates included in the budget proposal represent the actual labor rate for the identified personnel.

Fringe Benefits

TNC fringe benefits are budgeted at our approved federally negotiated rate for FY 19 (40%). TNC's Negotiated Indirect Cost Rate Agreements (NICRA) are negotiated annually and TNC will charge and report fringe benefits at the rate per the final, applicable NICRA.

Contractual

Based on similar work performed in the area, Headwater Engineering & Consulting was contacted to provide an estimate for the purchase and installation of liner in the two high risk segments in the irrigation canal. Improvements in Segment 1 is based on 1,000 ft of new liner times an estimate of cost of \$120 /ft for a total cost of \$120,000. Improvements in Segment 2 is based on 300 ft of new liner times an estimated costs of \$120/ft for a total cost of \$36,000. The \$120/ft includes the cost of the liner plus installation. Headwater estimates the cost for design fees and administration costs to be \$4,000. The total estimate for this contract work is \$160,000

Included in the budget is \$10,000 for environmental and regulatory compliance costs. The contractor will be determined at a later date.

Indirect Costs

TNC has an approved indirect cost rate of 24.55% for fiscal year 2019 beginning on 7/1/2018. The Conservancy will charge the annual NICRA rate at the time the charge is incurred up to the budgeted amount for indirect costs in this proposal.

Environmental and Cultural Resources Compliance

This section includes a bulleted list of responses directly addressing questions proposed in the FOA.

- The proposed project is expected to improve both water quality and water quantity by increasing the efficiency of the Maybell Canal. This is expected to result in decreased diversions from the Yampa River, increased streamflow immediately downstream of the headgate, and reduced sediment loading by preventing hillside sloughing resulting from excessive seepage of the existing earthen canal. No known impacts are expected to negatively impact air quality or animal habitat.
- MID is not aware of any species listed or proposed to be listed in the proposed project area. While outside the proposed project area, anticipated increased flows in the stretch of the Yampa River immediately downstream of the Maybell Canal headgate will benefit endangered fish species such as the humpback chub, boneytail chub, Colorado pike minnow, and razorback sucker.

- There are not any wetlands or other surface water inside the proposed project area boundary that would potentially fall under Clean Water Act jurisdiction as “Waters of the United States”.
- The Maybell Canal was constructed in 1896. The proposed project will modify the original earthen canal by lining. In recent decades MID has worked to modernize infrastructure by installing check structures, an automatic waste gate, a new flume where the canal crosses the Yampa River, and completed some canal lining.
- There are no known buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic places. Through consultation with BLM, MID has a practice of not disturbing hand laid rock; however, there are none in the proposed project area.
- There are not any known archeological sites in the proposed project area.
- The proposed project will not have a disproportionately high and adverse effect on low income or minority populations.
- The proposed project will not limit access to and/or ceremonial use of Indian sacred sites or result in other impacts on tribal lands.
- The proposed project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area. Occurrences of Leafy Spurge have been documented in the region but are not associated with the proposed project area.

Required Permits or Approvals

The proposed project will take place on private land owned by a Maybell Canal shareholder or within the boundary of a Bureau of Land Management easement, recorded in the official records of the Little Snake River Field Office (Serial Number COGS—0 022987). MID will notify BLM prior to commencing work. No permits are expected based on experience with recent, similar canal lining work.

Official Resolutions

Please see enclosed.

Unique Entity Identifier and System for Award Management

081323871



Maybell Irrigation District

PO Box 131 Maybell, CO 81640

WHEREAS, the U.S. Bureau of Reclamation seeks to manage, develop, and protect water and related resource in an environmentally and economically sound manner in the interest of the American public,

WHEREAS, the U.S. Bureau of Reclamation has announced a funding opportunity entitled "WaterSMART Grants: Small-Scale Water Efficiency Projects Fiscal Year 2018,"

WHEREAS, the Maybell Irrigation District is an interested and eligible applicant,

WHEREAS, the grant application requires an official resolution by the applicant's Board of Directors or governing body authorized to commit the applicant to the financial and legal obligations associated with receipt of a financial assistance award under the Funding Opportunity Announcement,

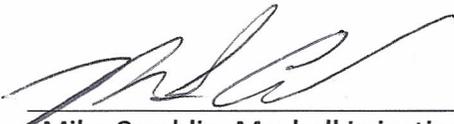
WHEREAS, Mike Camblin has the legal authority to represent the Board of Directors of the Maybell Irrigation District,

WHEREAS, the Board of Directors has reviewed and supports the application submitted,

WHEREAS, the Maybell Irrigation District has the capability to provide the amount of funding and/or in-kind contribution authorizes specified in the funding plan,

WHEREAS, the Maybell Irrigation District will work with the U.S. Bureau of Reclamation to meet established deadlines for entering into a grant or cooperative agreement,

NOW, THEREFORE, BE IT RESOLVED, the Board of Directors of the Maybell Irrigation District that an application be filed with the Bureau of Reclamation by Mike Camblin for funding from the WaterSMART Grants: Small-Scale Water Efficiency Projects for Fiscal Year 2018.



Mike Camblin, Maybell Irrigation District
President



Bruce Barnes, Maybell Irrigation District
Vice President



Chris Brannan, Maybell Irrigation District
Secretary



Bureau of Reclamation
Financial Assistance Support Section
Attn: Matthew Reichert
P.O. Box 25007, MS 84-27814
Denver, CO 80225

Dear Mr. Reichart,

The Nature Conservancy is providing the match committed to the Maybell Canal Water Conservation Project. The cash match, in the amount of \$109,783.22 was privately raised, is secured, and is in hand. The remaining \$29,840.05 of match contribution is in-kind, a portion of our federally Negotiated Indirect Cost Rate Agreement in addition to staff salary. If the requested funding is awarded, the match funding will be available upon the execution of a grant agreement between the Bureau of Reclamation and the applicant. There are no time constraints on the availability of funds. There are no other contingencies associated with the funding commitment, so long as the Proposed Project is carried out as described with the grant application.

Thank you,

A handwritten signature in cursive script that reads "Paige Lewis".

Paige Lewis
Deputy State Director
The Nature Conservancy of Colorado



Bureau of Reclamation
Financial Assistance Support Section
Attn: Matthew Reichert
P.O. Box 25007, MS 84-27814
Denver, CO 80225

Dear Mr. Reichart,

The Nature Conservancy is providing the match committed to the Maybell Canal Water Conservation Project. The cash match, in the amount of \$109,783.22 was privately raised, is secured, and is in hand. The remaining \$29,840.05 of match contribution is in-kind, a portion of our federally Negotiated Indirect Cost Rate Agreement and in addition to staff salary. None of the in-kind costs included in the Proposed Project Budget will be incurred before the anticipated project start date. No funding was requested for received from other Federal partners. There are no pending funding requests that have not yet been approved. Consequently, the Proposed Project will not be affected by the uncertainty associated with such requests.

Thank you,

A handwritten signature in cursive script that reads "Paige Lewis".

Paige Lewis
Deputy State Director, Colorado
The Nature Conservancy of Colorado

MAYBELL CANAL



Take water back to
Yampa River

YANPA

Town of Maybell

YANPA
RIVER

40

40

USGS Gage
Yampa River Near Maybell
YAMAYBCO

Flume
Crosses River

Maybell Headgate

COLORADO
Division of Water Resources
Department of Natural Resources

