



WATER PROJECT GRANTS AND LOANS

GRANT APPLICATION

I. Project Information

Project Name: Deschutes Basin Flow Restoration – Group 3

Project Type: Conservation Reuse Flow Restoration and Protection
 Above-Ground Storage Below-Ground Storage
 Water Infrastructure Other: _____

Grant Funding Requested (must be no more than 75% of Total Cost of Project): \$ 1,200,000.00

Match Funding (must be no less than 25% of Total Project Cost): \$ 4,671,548.00

Total Cost of Project: \$ 5,871,548.00

II. Applicant Information

Applicant Name: Tumalo Irrigation District	Co-Applicant Name:
Address: 64697 Cook Avenue Bend Oregon	Address:
Phone: 541-382-3053	Phone:
Fax:	Fax:
Email: ken@tumalo.org	Email:

Principle Contact: Kenneth Rieck	Fiscal Officer: April Harris
Address: see applicant information	Address: See applicant information
Phone:	Phone:
Fax:	Fax:
Email:	Email:

Certification: I certify that this application is a true and accurate representation of the proposed work and that I am authorized to sign as the Applicant or Co-Applicant. By the following signature, the Applicant and Co-Applicant (if applicable) certify that they are aware of the requirements of an Oregon Water Resources Department funding award, have read and are aware of conditions within the [example grant agreement](#) on the Department’s website and are prepared to implement the project, if awarded.

Signature of Applicant/Authorized Person:  Date: 4-27-2000

Print Name: Kenneth Rieck Title: District Manager

Signature of Co-Applicant/Authorized Person: _____ Date: _____

Print Name: _____ Title: _____

III. Eligibility

Select applicant entity type for both applicant and co-applicant (if applicable).

<input type="checkbox"/>	City	<input type="checkbox"/>	Oregon County
<input type="checkbox"/>	Port	<input checked="" type="checkbox"/>	Irrigation District
<input type="checkbox"/>	Drainage District	<input type="checkbox"/>	Water Improvement District
<input type="checkbox"/>	Water Control District	<input type="checkbox"/>	Non-Profit Organization
<input type="checkbox"/>	Soil and Water Conservation District	<input type="checkbox"/>	Corporation
<input type="checkbox"/>	Partnership	<input type="checkbox"/>	Sole Proprietorship
<input type="checkbox"/>	Cooperative	<input type="checkbox"/>	Indian tribe
<input type="checkbox"/>	State of Oregon Agency	<input type="checkbox"/>	Individual
<input type="checkbox"/>	Federal Agency	<input type="checkbox"/>	Other:

To be eligible for funding a project must address an instream and/or out-of-stream water supply need and result in project implementation. Does the project address an instream and/or out-of-stream water supply need and result in project implementation? Yes No

Provide a brief, one to two paragraph description of the water supply need that the project intends to address. Please reference (and attach) supporting data or reports that document the need.

The first documented irrigation canal in Central Oregon was dug in 1883 to divert water from Tumalo Creek to surrounding farms and ranches. Over the next decades as more settlers arrived in the area, the system of open irrigation canals grew and was formalized in 1902 as the Tumalo Project to irrigate lands under the Carey Act. While these canals are credited with development and prosperity in the region, the canals were lined with porous fractured basalt that result in about half the water withdrawn to be lost due to seepage in the bottom of the canals.

Over a century later, the open irrigation canals are still operational and serving thousands of Central Oregon residents. However, in that time the Deschutes Basin has also suffered due to water temperature and habitat loss due in part due to withdrawals from the region's waterbodies. Over the past two decades, irrigation districts in the region and their partners have made significant investments enclosing the canals into leak-free piping; each piped portion immediately conserving the water previously lost to seepage. The Deschutes Basin Flow Restoration - Group 3 Project encloses an open canal referred to as the Allen lateral as well as its sub laterals. The water conserved will be certificated as an instream water right under Oregon's Conserved Water program to benefit ESA listed species and other wildlife and placed in both Crescent Creek and Tumalo Creek.

Is either the Applicant or Co-Applicant required to have a Water Management and Conservation Plan?

Yes No

If yes, has the plan been submitted to the Water Resources Department and received approval?

Yes No

Note: Pursuant to ORS 541.659 if an applicant is required to have a water management and conservation plan, the plan must be submitted to the Water Resources Department and receive approval prior to department acceptance of an application for a loan or grant from the account.

IV. Project Summary

Provide a brief, 4-5 sentence summary of the proposed project. This summary should include a brief description of the goal and scope of the project as well as summarize project implementation (i.e., planned infrastructure or activity). Please refer to the Water Project Grants and Loans Application Instructions for additional information on what to include in your project summary.

The Deschutes Basin Flow Restoration – Group 3 Project (Project) encloses open porous irrigation canals into leak free pipe resulting in water conservation, water delivery reliability and efficiency, energy conservation, and improvements to public safety. This project encloses Tumalo Irrigation District’s (TID) Allen Lateral, as well as its sublaterals and return approximately 4.2 cfs of water to the Deschutes Basin that was previously lost to seepage and evaporation. This water will benefit ESA and native fish species and contribute to better temperature conditions in the basin. The conserved water will be protected through the Oregon Water Resource Department’s Allocation of Conserved Water program.

V. Project Location

Instructions: Please answer the following questions about the location of the proposed project.

1. Please provide the following information about the project location.
 - a. Latitude/Longitude (in decimal degrees): 44.167338, -121.369367 (North); 44.132799, -121.396083 (South)
 - b. County: Deschutes
 - c. Watershed/Basin: Deschutes

2. Please attach and label, Attachment #1, a site plan map showing the following:
 - a. Project area boundaries
 - b. True north arrow
 - c. Map title and legend
 - d. Latitude and longitude of project location
 - e. Property boundaries
 - f. Tax Map and Lot numbers of each property in project area boundary and listed in Question #3. Use the same Tax Lot No. on the map as is used in Question #3.
 - g. Surface water bodies
 - h. Location of involved structures (existing or proposed)
 - i. Point of Diversion and Place of Use associated with the project (if applicable)
 - j. Proposed measurement locations (if applicable)

3. In the table below, identify any properties on which the project would occur and/or that would be impacted or accessed by project implementation. *Add rows as needed.*

Tax Map No. (e.g. 12S06W-12714)	Tax Lot No. (e.g. 100)	Ownership Type (✓ One)	Property Owner of Record	Will ground disturbing activity occur on this land? (✓ One)	Identify the type and extent of ground disturbing activity (e.g. borings, test pits, excavation, new road construction etc.)
17S 11E 03A0	300	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	PETERSON, THOMAS & CLAUDIA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
17S 11E 03A0	400	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	PETERSON, THOMAS & CLAUDIA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	1300	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	DE PERSIO, EDWARD & PAMELA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	1303	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	CAMPBELL REV TRUST, MARY BETH	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	1304	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	PATTEE, BRIAN SCOTT & LISA STANO	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	902	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	CALLEN, PAUL & BEVERLY	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	901	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	MARTIN TRUST, CHARLES & SUSAN	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	903	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	DINGERSON, ANN & KEVIN CORKERY	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	904	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	MILLS, MAX E. & LORI A.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	906	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	REYNOLDS, MARK E.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	905	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	SCHWAB, GENEVIEVE L.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	908	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	WHITELAW, WILLIAM & ELOISE	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	900	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	BARNES & COLE REV TRUST, EDWARD & JENNIFER	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	1000	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	COLEMAN, NANCY D.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	104	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	NAUER, CHRISTIAN & LEAH KING & ZELIA FLANNERY	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	100	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	MILLER, RONALD & DANA BENNETT	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3500	1000	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	PLEASANCE LIVING TRUST	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	302	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	VEZINA FAMILY TRUST	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration

Tax Map No. (e.g. 12S06W-12714)	Tax Lot No. (e.g. 100)	Ownership Type (✓ One)	Property Owner of Record	Will ground disturbing activity occur on this land? (✓ One)	Identify the type and extent of ground disturbing activity (e.g. borings, test pits, excavation, new road construction etc.)
16S 11E 3400	301	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	KRUEGER REV LIVING TRUST, KEITH & REBECCA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	201	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	HANSEN, DAVID & HOLLY	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	102	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	MAYER JR., PETER CARL	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 3400	101	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	PARKER, DAREN & WARNER, LYNN	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2700	603	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	POWELL, KATHY	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2700	606	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	HAMPTON REV. TRUST, JAMES	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2700	607	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	KOEHLER FAMILY LLC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2700	602	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	KOEHLER FAMILY LLC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2700	605	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	ROLA REV TRUST, JEFFREY	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2600	104	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	KOEHLER FAMILY LLC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2600	117	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	LEMON TRUST B, LEO W.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2600	111	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	MALONEY REV TRUST, MICHAEL & LINDA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2600	115	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	CLACK, ALLAN D.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2600	116	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	MOREHEN REV. TRUST, PATRICIA E.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2600	108	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	VAUGHN, BRYAN & GINA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2600	114	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	SMITH, EMILY	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2600	112	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	SMITH, MICHAEL & BLOCKLEY, AMANDA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2300	523	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	MCCORMICK, WILLIAM P.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2300	525	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	SMITH, DEBRA D. & DALE A.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration

Tax Map No. (e.g. 12S06W-12714)	Tax Lot No. (e.g. 100)	Ownership Type (✓ One)	Property Owner of Record	Will ground disturbing activity occur on this land? (✓ One)	Identify the type and extent of ground disturbing activity (e.g. borings, test pits, excavation, new road construction etc.)
16S 11E 2300	524	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	SMITH, RACHELLE DIANNE	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration
16S 11E 2300	526	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private	SMITH, DEBRA D. & DALE A.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Excavation, Piping, Restoration

4. For **each** property listed in Question #3, attach a [Landowner Agreement Form](#). Attach Landowner Agreement form(s) and label Attachment #2.
- Where a single landowner entity is the owner of record for multiple properties, one form may list the multiple properties owned by that entity.
 - For *public* lands attach the landowner form or other documented authorization from the federal or state government property owner allowing project implementation or documentation that demonstrates such authorization is being pursued.

TID has authorized legal access to the lands on which the project will occur, and the landowners are aware that monitoring information is public record. All construction activities would occur entirely within the District's existing rights-of-way (ROW), which were granted under the Carey Desert Land Act of 1894 (Carey Act). The District's ROW under the Carey Act extends 50 feet on each side of the canal from the toe of the bank for a total easement width of 100 feet plus the width of the canal. See Attachment 2 for details.

Additionally, TID is committed to clear communication with all landowners. Landowners are frequently notified of any activity that will happen within our easements. The latest communication with landowners occurred on April 20, 2020; a sample of that letter is included in Attachment 2.

VI. Project Specifics

Instructions: Please answer the following questions.

Project Description, Needs, and Goals

5. Provide additional information (building on the project summary) to further describe the proposed project and the project goal.

The purpose of the TID Deschutes Basin Restoration Group 3 project is to improve water conservation, water delivery reliability, public safety, and energy conservation by enclosing a portion of the TID system in leak-proof piping. This project will eliminate water loss due to seepage in the open canals, improve water conservation, improve instream flow for fish and aquatic habitat, eliminate risk to public safety from the irrigation canals, and result in energy savings by eliminating pumping.

In 1998, Tumalo Irrigation District (TID) chose to invest in piping the porous open canals as the preferred way to improve canal safety, increase irrigation efficiencies, conserve water, and most importantly return instream flows to the basin. To date, TID has completed 15 phases of piping

totaling 121,968 feet and returned 24.2 cfs of instream flow and 3136 acre-feet of stored water to the Deschutes Basin¹. TID isn't alone in their efforts enclosing open canals, this is a major undertaking for the entire Deschutes Basin irrigation community. Since 2000, the eight irrigation districts that make up the Deschutes Basin Board of Control have reduced annual irrigation diversions by more than 80,000 Acre-Feet of water and returned flows to the Deschutes River, Little Deschutes River, Crooked River, Ochoco Creek, Whychus Creek, Tumalo Creek, and Crescent Creek, benefiting salmon, steelhead, bull trout, Oregon spotted frog, and other native species. In 2017, TID developed the System Improvement Plan (SIP; Attachment 6) to complete 366,740 length-feet of piping over eleven phases. In all, the SIP will result in 50 cfs of water conservation.

This phase of the Project includes enclosing the Allen lateral and its sub laterals as well as all associated turnouts and meters to accurately regulate and deliver water to over 500 acres of farmland. The Project results in 4.2² cfs of water conservation that will be certificated as an instream water right under Oregon's Conserved Water Program.

This Project has a direct and immediate impact on water conservation and instream flow restoration. One hundred percent of the publicly funded conserved water through each phase of the SIP will be returned and protected instream; providing substantial water quality and quantity benefits to the Deschutes Basin; with a majority being returned to Tumalo Creek. Tumalo Creek, Crescent Creek, the Little Deschutes River, and the Deschutes River are listed as impaired waterways under Section 303(d) of the CWA (the "Clean Water Act" became the common name with the 1972 amendments to the Federal Water Pollution Control Act of 1948) because they do not meet one or more of the State of Oregon's water quality standards for salmon and trout, as well as other beneficial uses. Water temperature reaches dangerously elevated levels in the summer. Tumalo Creek, originates in springs and snowmelt west of Bend. According to a study by the Upper Deschutes Watershed Council for the Deschutes River Conservancy, Tumalo Creek flows entering the Deschutes are substantially cooler than flows in the Deschutes above the confluence. Thus, "... increasing flows in Tumalo Creek may therefore represent an opportunity to achieve the greatest cooling effect in the Middle Deschutes...by contributing a greater volume of colder water at the confluence." (UDWC 2013).

This Project has a direct and immediate impact on water delivery and operation efficiency. In addition to seepage and evaporation losses in the open canals, it can take days to recharge open canals and laterals after TID reduces its diversions, further affecting the reliability of water deliveries for its patrons. When the District increases its diversion rate again to increase the water level in the canal, the ends of the District's laterals remain dry as the system recharges. During these periods, the District cannot always fully meet its obligations to deliver water to its patrons

¹ The instream water is split between 5.8 CFS in the Deschutes River near Bend, 11.2 CFS to Tumalo Creek, and 7.2 cfs split between Tumalo Creek and Crescent Creek. Additionally, 3136 Acre-feet of water is conserved in Crescent Lake that is released to Crescent Creek. All of this flow is a senior water right protect through the Allocation of Conserved Water program.

² Conserved water will be re-verified in the summer of 2020 and is subject to fine tuning. For our last project, conserved water verification was within <3% so we do not expect a significant change. Also Conserved Water from the a 2200ft stretch of a sublateral will be additive to the 4.2. The amount conserved in the group 6 portion will be measured / determined, in the summer of 2020. All water conserved from the project will be placed instream in the summer after substantial completion regardless of the completion status of the instream certificates.

due to conveyance inefficiencies. The District's canals and laterals do not transport and deliver water as precisely, accurately, or efficiently as a modernized system would. The District's antiquated canal and laterals make it difficult to deliver the correct amount of water to patrons at the correct time, particularly early and late in the irrigation season. During these periods, the District's water rights require it to divert water at a reduced rate. At these reduced flow rates, the canals and laterals are more sensitive to small changes in streamflows at the diversion or deliveries at each point-of-delivery. The reduced flow rates in the open canal and laterals make it much more challenging for the District to deliver the amount of water that patrons need when they need it.

This project also has a direct and immediate impact on public safety. Open canals pose a risk to public safety during the irrigation season. In addition to multiple instances of injury, several drowning deaths have occurred in adjacent districts' canals in 1996, 1997, and 2004. The District's location in a partly urbanized area heightens the potential for an accident, as the canals pass through urban areas, rural residences, private lands, and irrigated fields. During the summer, water depths in the District's canals range between 2 to 6 feet, with velocities up to 5 feet per second in places. These conditions make it difficult for a healthy, strong adult to stand in or climb out of a canal without assistance. A child or non/weak swimmer would have an even higher risk of drowning in a canal with these attributes. If a person or animal falls into a District canal, they could have serious difficulty gaining hold on the banks in order to climb out due to the volume and speed of the moving water. Barriers or fences at the top banks of the canals are not currently installed. Deschutes County was the second fastest growing county in Oregon in 2015 based on the Oregon Population Report (PSU 2015). Public safety risks associated with open canals will continue to grow as urbanization expands into previously rural areas such as TID's service area.

Finally, this Project is a step toward delivering pressurized water to their patrons. While many irrigation districts in the region have chosen or considered hydroelectric power generation as a priority, TID has instead chosen to combine reductions in power needs by eliminating need for pumping, with minor improvements in generating hydroelectric power, and delivering pressurized water to its members. Delivering pressurized water eliminates the need for patrons to hold water in retention ponds to be pumped through irrigation systems. This reduces on-farm losses and power needs by TID and its members.

In summary, this Project has economic benefits that result from improving efficiencies both on farm and for TID operations, the social benefits of improving public safety by enclosing the open canals, and environmental benefits that result from restoring instream flow for the benefit of the entire Deschutes Basin.

6. Provide a summary of evidence to demonstrate project feasibility. This summary may include the results of a feasibility study. Attach the results of the study or other evidence, as necessary to support the summary.

To date, TID has completed the enclosure of 121,968 length feet of open canal including the entire Bend Feed Canal, Tumalo Feed Canal, as well as Group 1 of the SIP. Extensive documentation for planning and execution of this effort has also been completed including:

- Attachment 6: SIP
- Attachment 4: Tumalo Irrigation District Irrigation Modernization Project Watershed Plan/Environmental Assessment, 2018
- Attachment 5: Finding of No Significant Impact for Tumalo Irrigation Modernization Project Deschutes County Oregon

Furthermore, several reports and regional efforts prioritize improvements in irrigation management as priority actions for addressing ecological factors in the Deschutes Basin. The primary limiting ecological factors of the basin include low summer flows, temperature and water quality that is inhabitable to native and endangered species, and habitat degradation. The following reports confirm and prioritize the need to return natural flow to Tumalo Creek (reports not attached are available upon request):

- Upper Deschutes Subbasin Assessment, Upper Deschutes Watershed Council, 2003- A key recommendation in the Water Quantity chapter directs agencies to “Support current and future methods to improve the efficiency of water delivery systems. Support canal piping projects that comply with Oregon’s conserved water statute” (page 121).
- Upper Deschutes Subbasin Fish Management Plan, Oregon Department of Fish and Wildlife, 1996- ‘Recommended Acton 5.1’ states: “Develop strong partnerships with irrigation districts, irrigators...to improve water distribution and application techniques in an effort to use less water more efficiently in order to establish increased minimum flows necessary to maintain aquatic life and retrofit facilities to reduce fish mortality and provide passage.”(pg. 63).
- Deschutes River Subbasin Plan, Northwest Power and Conservation Council, 2005- The Deschutes Subbasin Plan provides almost 80 pages of site-specific findings, objectives, and management strategies many of which involve increasing stream flow in reaches adversely affected by irrigation diversions. Key habitat objectives or strategies that are relevant to this project include:
 - Deschutes River (Big Falls to Bend) – “improve the river’s flow regime by increasing the minimum summer flow to meet instream water rights” and “The reach of the Deschutes River near the mouth of Tumalo Creek is a priority area for habitat restoration” (MP-77)
 - Tumalo Creek – “increase the minimum summer flow and develop a coordinated water policy to protect and secure instream flow enhancements from conservation, leases, transfers and acquisitions.” (MP-78)
- Little Deschutes River including Crescent Creek – “Work with water users to increase the efficiency of water delivery and management practices to increase minimum summer streamflow.” (MP-88)
- Upper Deschutes River— “Improve the river’s flow regime by increasing the minimum winter flow and reducing the summer peak flow.” (MP-75)
 - Deschutes Basin Board of Control Habitat Conservation Plan (2013) Spotted Frog - the increased flows returned to Crescent Lake and run through Crescent Creek by conservation provide an exceptional management asset to TID to better protect habitat for the Spotted Frog.

7. Describe partnerships and collaborative efforts associated with the planning or implementation of this project. Include a description of how parties of diverse interests worked, or will work together to achieve a common goal.

The Project is a portion of a basin-wide effort to facilitate long-term water resource management, including significant investment in water conservation through piping open irrigation canals, in the Deschutes Basin. TID supports and participates in several regional collaborative bodies including the Deschutes Basin Board of Control (DBBC), the Deschutes Water Alliance (DWA), and a key stakeholder in the Deschutes River Conservancy. The DBBC is a collaboration between eight

irrigation districts in the region. The main priority of these groups is to facilitate long-term water resource management in the basin and identify how to meet diverse needs. TID works in collaboration with these groups to achieve restoration of instream flows leading to healthy populations of fish and wildlife in the Basin.

Also, through the DBBC, TID works with eight other irrigation districts to coordinate and share resources and management assets to conserve water, improve services to farm and ranch families, and enhance river conditions for wildlife species and recreational opportunities. Through this collaboration, the DBBC has developed the Deschutes Basin Habitat Conservation Plan (2018), furthered piping projects for water conservation, improved fish, and wildlife habitat restoration, and produce renewable energy through hydropower generation projects.

Additionally, TID is a community of people united in their respect for the critical role sustainable agriculture plays in the region; the land and the water resources that nourish that land; and the wildlife that depends on access to healthy, native habitat. To that charge, TID is involved in several community organizations providing educational opportunities and outreach to the Deschutes Basin community. TID is a member in several Basin organizations that coordinate outreach efforts focused on water resources in the Deschutes Basin including the DBBC, DWA, Deschutes River Conservancy, and Oregon Water Resources Congress. TID is in constant communication with its members through monthly board meetings, a newly redesigned website and consistent newsletters informing the membership about all project and district news. Lastly, TID provides educational opportunities for schools, Girl and Boy Scout troops, and other community organizations to better understand the importance of balanced water resources management in the Deschutes Basin.

8. List letters of support (name and/or affiliation of sender is sufficient). Attach copies of the letters to your application.

Several of our supporters were unable to produce a letter prior to the deadline of this grant due to COVID-19 and have elected to send their support letters into OWRD directly. Attached are letters received over the progression of several phases of the SIP efforts.

Eric King, City of Bend
Ryan Houston, Upper Deschutes Watershed Council
Nancy Gilbert, U.S. Fish and Wildlife Service
Kate Fitzpatrick, Deschutes River Conservancy
Michael Tripp, Trout Unlimited
Oregon Department of Fish and Wildlife
Phil Ward, Oregon Water Resources Department
Paul Cleary, Oregon Water Resources Department
Governor Ted Kulongoski, Oregon

Project Tasks

9. Identify tasks necessary for the proposed project using the following format and including as many tasks as necessary to implement the project. In the event that your proposed project receives grant funding, the tasks identified will be incorporated into your grant agreement as

the “Project Description.”

Note: Project management and administration are common functions within specified project tasks and not a separate project task. All cost match and grant budget funds must apply to the tasks identified below. See the Budget Procedures and Allowable Costs document for more.

For each Task address the following:

Task number. Key Task Title

- Task schedule: The approximate dates during which the key task will be completed.
- Description of key task activities: Include specific details of the task such as task purpose, planned approach, and proposed methods.
- Permits/Regulatory Approvals Required: List any permits or regulatory approvals required to conduct the task. All permits/regulatory approvals identified must also be listed in question 15 of this application.

Task 1. Materials Acquisition

- Task schedule: Q4 2020 – Q1 2022
- Description of key task activities:
 - develop solicitation document for pipe and ancillary material procurement
 - publicly advertise and receive bids for material procurement
 - select and award to material supplier following Oregon Statutes for Public Procurements
 - supplier to manufacture and ship materials to project site
- Permits/Regulatory Approvals Required: None.

Task 2. Bid Solicitation

- Task schedule: Q3 2021
- Description of key task activities:
 - develop solicitation document for construction contractor procurement
 - publicly advertise and receive bids for contractor procurement
 - select and award to contractor following Oregon Statutes for Public Procurements
- Permits/Regulatory Approvals Required: None

Task 3. Contracting

- Task schedule: Q3 2021
- Description of key task activities:
 - Execute Contract with selected contractor
- Permits/Regulatory Approvals Required: None

Task 4. Construction

- Task schedule: Q4 2021 – Q2 2022
- Description of key task activities:
 - Contractor mobilization to project site
 - Contractor implement facilities and controls
 - Contractor clear, grub

- Contractor install pipe, materials and appurtenances in accordance with the professional design drawings and specifications
- Contractor substantially complete the work
- Contractor final complete the work in accordance with the plans and specifications
- Permits/Regulatory Approvals Required: FONSI acquired.

Task 5. Project Inspection and Post Project Implementation Review

- Task schedule: Q4 2021 – Q4 2022
- Description of key task activities:
 - Attend initial project meetings with selected contractor
 - Review and approve submittals
 - Review and coordinate requests for information, potential change orders, change orders and other contract related documents
 - Perform part-time field observation services
 - Attend weekly meetings with the contractor and owner
 - Prepare daily monitoring reports
 - Participate in Substantial and Final Completion observations of the work to ensure compliance with the contract documents
- Permits/Regulatory Approvals Required: None

Task 6. Project Maintenance

- Task schedule: Q2 2022 – Q2 2024
- Description of key task activities:
 - TID to perform initial and course of establishment seeding and maintenance
 - Contractor and TID to perform Warranty walk 1 year after project Substantial Completion
 - TID to operate and maintain system elements
- Permits/Regulatory Approvals Required: None

Task 7. Project Water Rights

- Task schedule: Application submitted by Q3 2022
- Description of key task activities: Secure project water rights through the Allocation of Conserved Water program through Oregon Water Resources Department
- Permits/Regulatory Approvals Required: Water rights process permitting.

10. Project Task Scheduling – Estimated total project duration: 27 months (months/years)

Place an “X” in the appropriate column to indicate when each Project Task would take place. Note that successful projects generally do not receive their first reimbursement until late Q1 or early Q2 of the year after application submission. Project tasks listed must match the tasks identified in Question 9.

Key Tasks (Add additional rows as needed)	Grant year				Grant year				Grant year			
	2020				2021				2022			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Materials Acquisition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bid Solicitation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Contracting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project Inspection and Implementation Review	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Project Maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Project Water Rights	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

11. Describe how you propose to measure and report the water diverted and used from the proposed project. Include a proposed method, timing, frequency, and location of measurement in your proposal. If you have questions please contact the Department for more information. Consider that many forms of measurement will incur additional costs.

Note: Funded projects are required by statute to “regularly measure and report the water diverted and used from the project” [ORS 541.692(3)].” Common approaches for measuring water diverted and used include totalizing flow meters, stream gages, reservoir staff plates and water level sensors paired with volume-depth curves, and flumes. The Department makes the final determination on the method, timing, frequency, and location of measurement. This requirement applies if there is any diversion of water. Grant/loan funds can be used to pay for measurement and reporting expenses during the life of the grant.

Oregon Water Resources Department and other state and federal agencies maintain stream gauges along Tumalo Creek and the Deschutes River. The conservation effects of the piping will be tracked and measured through the stream gauges, further improving the ability to monitor and measure usage and manage the Deschutes Basin for multiple purposes.

12. Provide suggestions for interim and long-term project performance benchmarks and how those benchmarks would be measured.

The conserved water returned through the instream water right transfer is required and tracked by the Oregon Water Resources Department at their gage on Tumalo Creek and Crescent Creek. With each phase of construction completed, the results of the conserved water can be confirmed and tracked through instream flow measurements.

Beyond water conservation, other benefits will be realized and tracked upon completion construction as well as successive phases of the SIP including:

- Improvements in measurement of deliveries as tracked by each diversion on farms;
- Patron-led on-farm efficiency investments tracked by survey of patrons;
- Ecosystem-based function improvements on Tumalo Creek and in the Deschutes Basin including water temperature and habitat enhancement that are tracked and verified by Oregon Department of Fish and Wildlife, Oregon Department of Environmental Quality, and local organizations like the Upper Deschutes Watershed Council;

- Improvements to public safety as measured by the elimination of drowning hazards;
- Reduction in transport of non-point source pollutants that can be tracked and verified by the Deschutes Soil and Water Conservation District as well as ODEQ; and
- Reduction in maintenance costs and financial stability of TID as tracked by the district administration and verified by the board of directors.

13. Describe any issues, unknowns, or conditions that may affect the completion of the key tasks or project. If applicable, describe any measures planned to mitigate them.

With several successful phases of construction, TID is very confident in achieving construction within the desired time frame. However, weather-related issues could affect the completion of key tasks or construction. The region has experienced several difficult winters in recent history that complicate construction. If weather delays construction, the schedule will be pushed to the following winter. Additionally, with COVID-19 related closures, there may be difficulty acquiring materials. TID will monitor and assess schedule as needed.

Permits and Regulatory Approvals

14. Identify any water rights needed to implement the proposed project below. Check all of the following that apply and provide the information requested:
- The proposed project requires a new water right or other water right transactions. If checked, list transaction(s) required (e.g., new right, transfer, etc.): Allocation of Conserved Water transfer is required.
 - The applicants holds the water right(s) required for the project. If checked, list all such water rights required for the project in the table below, adding rows as needed. See the Application Instructions for further instruction, including how to find water right information.
 - The applicant has legal access to a water right that will required for the project and has been given permission to utilize the water right(s). If checked, list all such water rights required for the project in the table below, adding rows as needed. See the Application Instructions for further guidance, including how to find water right information.

Water Right Number (Include prefixes, if applicable, e.g., <u>00010</u>)	Is this an application, permit, certificate, limited license, special or final order, transfer, decree, lease, or claim?	Water Right Amount			Tax Map/Lot IDs within the Place of Use where water will be used to implement the proposed project
		Max Volume (ac-ft)	Max Rate (cfs)	Duty (ac-ft/ac)	
74146	<i>Certificate</i>		71.571		n/a
74147	<i>Certificate</i>		136	9.91	n/a

15. In the table below, provide a list of any permits and regulatory approvals needed to implement the project and indicate the status of each in the table below. Please submit copies of any

secured permits/approvals or describe efforts in securing necessary permits/approvals, including current status. If no permits or regulatory approvals are required, please provide an explanation. *Add rows as needed.*

Permit/ Regulatory Approval	Status and Efforts To Date
Finding of No Significant Impact (FONSI) from U.S. Department of Agriculture	Received August 2018 (Attachment 6)

VII. Public Benefits

Instructions: Describe how the project would provide public benefits in each of the three public benefit categories identified below. In your responses, describe current conditions and anticipated project outcomes and benefits and provide evidence to support your claims. Describe how the project outcomes will contribute to each anticipated public benefit. Descriptions should be quantitative when possible. Applications will be scored and ranked solely based on the descriptions of the economic, environmental, and social/cultural public benefits and the likelihood of the project achieving the claimed benefits. More specifically, the evaluation will be based on the change in conditions expected to result from the project as demonstrated in the application.

Please see the Scoring Criteria document available on the [Applications, Forms and Guidance webpage](#), for definitions of each public benefit and a description of how the public benefits will be evaluated. Applications that do not demonstrate public benefit in each of the three categories (economic, environmental, social/cultural) will be deemed incomplete.

Leave blank any public benefits that are not applicable to the proposed project.

16. Economic Benefits – ORS 541.673(2)

- a. Does the project create or retain jobs? If so, explain.

This Project, as well as previous and future phases of the SIP, reliably create livable wage jobs in design and construction, as well as secure and retain long-term jobs in agriculture.

The last several years have seen steady job growth in Central Oregon, with construction continuing to be the biggest source of job growth in Deschutes County (Oregon Employment Department, 2019 Report.) Construction accounts for nearly 6% of the total jobs in Central Oregon with a minimum prevailing wages \$36.55 - \$45.90 for power equipment operators (Bureau of Labor Services, February 1,2020) Since 2005, TID has reliably employed Oregonians every winter through various phases of piping projects. TID expects to construct

portions of the System Improvement Plan most winters at least through the next decade, providing stable, well-paying jobs for the region. Last year, TID construction projects created over 200 construction jobs through the winter.

The project also utilizes local gravel, reinforcing steel, concrete, equipment supplies and rental, fencing companies and seed suppliers indirectly creating jobs through this supply chain. As of 2020, over \$22 million has been invested in TID's conservation initiatives and piping projects. Using calculation criteria from the American Recovery and Reinvestment Act, this Project will create 66 construction jobs in addition to the approximately 240 jobs in the past decade [ARRA uses one job created for every \$92,000 in infrastructure spending.]

Agriculture in Deschutes County accounts for nearly 50,000 direct jobs with an average wage of \$34,730 (BOLI, 2018), with over half those jobs directly related to crop production. The completion of the project also represents a significant investment in agriculture job stability and retention through higher agricultural yields, improved irrigation methods, and other efficiencies. Each completed phase of the SIP results in an increased pressurized irrigation delivery for TID patrons. A pressurized system allows for patrons to directly hook-up to the TID system rather than diverting water from an open canal into a retention pond with a pumping system. Eliminating the use of pumps will save patrons at least \$60/acre per year in energy costs. The pressurized system will also incentivize on-farm improvements for improved coverage of irrigated lands, leading to higher agricultural yields for the same amount of land. This conversion will increase cost margins for TID patrons, directly benefiting job retention for farmers and farm workers.

In addition to decreased operational costs for patrons aiding job retention, and creation of construction jobs, continuing efforts to conserve water and return instream flows contribute to the vitality of streams, thus solidifying TID's commitment to meet multiple purposes with their operation. Vitality of streams benefit the rich ecosystem of Central Oregon and enhances the natural and scenic value of the region. In a 2011 Report by Trout Unlimited through the University of Michigan School of Natural Resources and Environment, researchers concluded that "The Deschutes River provides annual market value of \$134.7 million as revenue to six focal industries: agriculture, tourism, recreation, hotels, real estate, and commercial salmon. Agriculture in Central Oregon irrigated by the Deschutes River generates \$40.2 million in annual revenues... Many jobs in agriculture, hotels, tourism and recreation would not be available without the river and these four industries provide an estimated 3,433 jobs with total wages of \$73.0 million to Central Oregon for residents of the region each year" (Hartmann, Kasameyer, Springer 2011 – Report available upon request.) Every effort to conserve water for restoration of in-stream flows in the Deschutes Basin grows and retains jobs by protecting the most valuable resource to the region.

b. Does the project increase economic activity? If so, explain.

Since 2005, TID has consistently invested in piping the open canals and associated laterals totaling over \$22 million dollars through 2020. This spending is beyond the normal operating budget of TID; and represents an investment in the modernization of its infrastructure and the vitality of Central Oregon. With each successive phase, TID retains engineering firms, construction firms, and other consultants to ensure a safe and sustainable design and construction of the piped canal. The phased approach to construction also creates sustainable and dependable work into the next decade.

In addition to economic activity relating to the design and construction of the project, delivery of pressurized water will sustain long-term economic activity related to investments in efficient agriculture practices as well as eliminating of wasteful retention ponds, flood irrigation, and pump systems. Currently, land and resources are wasted by withdrawing water into large retention ponds that is then pumped into an irrigation system. Retention ponds not only wastewater, but also waste large amount of land that could be used for productive purposes. Pumps are resource intensive requiring fuel or energy source to operate. Pressurized water gives patrons an incentive to upgrade their system to more efficient drip or sprinkler systems that eliminate energy costs, allow for more usable land, and improve water coverage and thus yield of crops. While upgrades represent an upfront cost to patrons, it presents a significant cost savings for patrons well into the future that can then be spent on other economic improvements to their land and business. These impacts are anticipated to sustain gradual economic activity well into the next decade, if not further.

c. Does the project result in increases in efficiency or innovation? If so, explain.

The primary purposes of this Project are to conserve water, eliminate inefficient open canals, deliver pressurized water, and conserve energy. The innovative design of this Project results in significant increases in water and energy efficiency as well as reduced operation and maintenance cost. By enclosing the open porous canals, TID is able to return and secure 4.2 CFS of water back to the Deschutes Basin that was previously lost due to inefficiency. Additionally, the design of the system will deliver pressurized water to patrons, eliminating the need for wasteful retention ponds that also lead to water loss and pumping costs.

Irrigation canals in Central Oregon were constructed over 100 years ago by the first settlers of the area. The canals were dug into open earth and unlined. Due to the design of the canals, about half of the water withdrawn from rivers and streams is lost through seepage. Thus, irrigation districts using the open basalt canals must withdraw double their district's need to adequately serve their members. Construction of conservation and piping projects, like the System Improvement Project, more than double the efficiency of TID operations. The canals are piped with no-leak systems allowing for withdrawal of only the needs of TID; leaving more water in-stream and none lost to seepage or evaporation in the canals. In a seepage loss analysis included in the Attached SIP, it was found that the total loss during the period of the Loss Assessment program was 50.4 cfs through the canals.

Not only will this project expand water efficiency, the resulting conserved water is extremely valuable to restoring flow to Tumalo and Crescent Creek. Tumalo Irrigation District, in conjunction with the Deschutes Water Alliance, has invested significant resources into studying and quantifying the feasibility of efficiency projects throughout the basin. Attachment 7: Irrigation District Water Efficiency Cost Analysis and Prioritization is a report through the Deschutes Water Alliance (a partnership of four major basin organizations to develop and implement integrated water resources management programs in the upper Deschutes Basin.) The report summarizes the completed efficiency projects and quantifies the associated water savings and cost. This study was then used to determine how to best prioritize proposed future efficiency projects within the basin. This report confirmed that TID's piping projects were the best available conservation opportunity to secure Tumalo Creek and Crescent Creek instream

flows.

Additionally, the project results in significant reduction in energy needs, carbon, operation cost, and maintenance cost through the development of a pressurized system and implementation of micro-sprinklers. Piping the Allen lateral and its associated sublaterals will decrease pumping cost by 67%. In all, the implementation of the complete SIP will lead to an energy conservation of 4,002,951 KWH/Year and green energy production (hydropower) of 1,538,492 KWH.

The pressurization of the system due to the construction of the entire System Improvement Plan/Project will provide exceptional time, energy, and operational savings to TID and its patrons. With the current system, water is diverted into retention ponds or pumped from a diversion; then that water transported via pumping system to sprinklers or another distribution method. With a pressurized system, patrons can hook up sprinklers directly to a diversion eliminating the need for retention ponds and pumping. This results in better coverage of irrigable land, increased efficiency of water, and more control of withdrawals because water is no longer lost through seepage or pumping efficiency losses.

In all, this project represents a significant modernization of the TID system, resulting in significant efficiencies through innovative modern practices. The modernization allows TID to better manage its valuable resources and make a significant investment toward efficient practices both in operation and management.

- d. Does the project result in enhancement of infrastructure, farmland, public resource lands, industrial lands, commercial lands or lands having other key uses? If so, explain.

Construction of this Project will increase property values through the improvements caused through the pressurized system as well as freeing up land previously used for canals and pump storage for landowner use. The current irrigation canals offer no value to the property they cross.

Currently, patrons divert water from the canals and typically store that water in retention ponds. The water is then pumped into sprinklers and distributed throughout their land. Piping these laterals and their associated sublaterals replaces this antiquated delivery system constructed a century ago into a modernized pressurized delivery system. Through this improvement, pressurized water will be delivered to farms and on-farm systems directly with enough pressure to directly hook up to sprinkler systems. This eliminates the need for retention ponds, freeing up usable space on farms for agriculture products or other use. It also eliminates the needs for pumping, decreasing operation costs from energy needing to run pumps; that savings can directly be applied to improvements to the land or job retention. The pressurized system also allows for a more consistent application of the water resource through efficient sprinkler systems and better regulation of the water; eliminating the need to withdrawal more water than necessary due to seepage, pump loss, or other inefficiencies.

The piped laterals will be buried. Currently, the canal traverses through several patron lands. Burying the pipe and eliminating the canal will free up approximately 4 miles of previously unusable land. This will increase property values for the area affected. To date, TID has piped over 23.1 miles of land that is now able to be used for other purposes.

In addition to gaining usable land, the piping further secures a sustainable and reliable water source; a vital importance to the value of agricultural land in Deschutes County. This major infrastructure improvement for TID allows for TID to withdrawal only what is needed to fulfill its patrons needs; eliminating the need to withdraw additional water to account for 50 percent seepage loss. Once the canal is piped, there will be no loss in the piped section. The pipe being used has water-tight joints. The water that was traditionally diverted and lost due to inefficiencies will remain instream. This project is a significant enhancement of TID's infrastructure and increases the efficiency of water use through the construction and implementation of piping infrastructure that will serve TID well into the future.

- e. Does the project enhance economic value associated with tourism or recreational or commercial fishing, with fisheries involving native fish of cultural significance to Indian tribes, or with other economic values resulting from restoring or protecting water instream? If so, explain.

Consistently, tourism is the single largest industry in Central Oregon, employing 9,920 residents and generating total economic impacts that exceed \$1.28 billion annually (Visit Central Oregon Annual Report, 2018.) The Deschutes River is designated as both a National Scenic River as well as a National Recreation River. Both Tumalo Creek and the Deschutes River are extremely popular locations for summer in-water recreation including rafting, floating, fishing, and swimming. Economic value of recreation in the Deschutes Corridor is estimated to be above \$200 million per year. Increasing instream flows during summer months is a direct benefit to in-water recreation.

This Project will return all conserved water instream, boosting Tumalo Creek summer flows 379% from 5.8 cfs to approximately 22 cfs when complete. Tumalo Creek runs through Tumalo State Park and is approximately 7 miles outside of Bend, Oregon. Due to its proximity to Bend as well as Tumalo Creek, the park is extremely popular for camping, wading, swimming, and in-water recreation. Recreational fishing for redband trout and brown trout is very popular in the park, along Tumalo Creek and through to the Deschutes River. This is especially important and helpful during the summer months when water is low and historically too warm for fish. The increased instream availability of flow will result in increased water recreation; resulting in increased daily park fees at Tumalo State Park, increased fishing licenses, and improve the scenic quality of Tumalo Creek and the Deschutes River.

In addition to benefits to recreational fishing, the protected instream flow provides a substantial benefit for the Deschutes River System to Lake Billy Chinook; including enhanced flow for endangered Bull Trout and Steelhead, as well as popular recreational fish species like rainbow trout, brown trout, kokanee, and smallmouth bass. Lake Billy Chinook is a popular recreational fishing lake, and an important cultural landmark to the Confederated Tribes of the Warm Springs. Adding instream flow to the system will enhance the tribe's efforts for recovery of culturally important species, such as kokanee and steelhead, in the lake.

- f. Does the project result in increases in irrigated land for agriculture? (which may include increasing irrigated acres, agricultural economic value, or productivity of irrigated land) If so, explain.

The intent of the project is not to increase TID's system-wide irrigated land. However, the project is expected to provide a reliable pressurized delivery to the TID patrons and to enhance the ability of patrons to cover irrigated lands more effectively, that could increase crop yields. Currently, the district serves 8,110 acres of land served by 703 patrons. Reduction in pumping costs will allow patrons to move to more efficient sprinkling practices and the finances to enhance on-farm systems and associated efficient coverage on lands that may have not been as effectively farmed in the past. Depending on the efficiency method, yields can increase 10 – 30% on the same land. Thus, this project could yield to more effective and efficient irrigated lands that could result in higher crop yields, more efficient irrigation practices, and overall improvements to agriculture for the region.

17. Environmental Benefits – ORS 541.673(3)

- a. Describe any measurable improvements in protected streamflows that are likely to result from the project. Indicate the legal means by which the water will be permanently dedicated instream and protected by the Oregon Water Resources Department and list the water rights to be protected in the table below.

Note: The legal protection of water instream MUST be included to receive a score for this public benefit. Projects which permanently dedicate water instream will receive a scoring bump in the environmental public benefit category.

Legal means of Protection (e.g., Instream Transfer, Allocation of Conserved Water)	Identifying number of water right to be legally protected instream (e.g., S-###, new right)	Rate(s) (cfs) of the water right	Estimated rate (cfs) of water to be legally protected instream	Percent (%) of right to be legally protected instream**
Allocation of Conserved Water	74146/74147		4.2 cfs	100% ³

****Attention: If awarded funding, the legal protection of water instream, described in the table above, will be a condition of funding. The grant agreement will specifically cite the percent identified above, not the estimated rate.****

³ 100% of the conserved water achieved through public funding will be protected instream using the Allocation of Conserved Water program.

Describe how the protected streamflows accomplish one or more of the following:

- (A) Supports the natural hydrograph;
- (B) Improves floodplain function;
- (C) Supports state- or federally-listed sensitive, threatened or endangered fish species;
- (D) Supports native fish species of cultural importance to Indian tribes; or
- (E) Supports riparian habitat important for wildlife:

All (100 percent) conserved water resulting from this Project will be returned instream and protected through a senior instream water right held by the State of Oregon. Thus, this project will directly impact and improve the natural hydrograph; support state and federally listed sensitive, threatened, and endangered fish species; support native fish species of cultural importance to Indian tribes; and support riparian habitat important for wildlife.

Supporting the Natural Hydrograph

This Project restores 4.2 cfs of water to Tumalo Creek and 1,740.12 acre-feet of water to Crescent Lake (and thus Crescent Creek) during the storage season (total of 4,178 acre-feet.)⁴ Tumalo Creek is fast-moving, short and glacier fed; contributing water approximately 10 degrees cooler than the Deschutes at the confluence. Both the Deschutes River and Tumalo Creek are over-appropriated, authorizing more water to be diverted than what is available instream. Prior to the implementation of the Tumalo and bend Feed Canal piping projects, flow in the middle Deschutes sunk from a natural flow of 1,300 cfs to as little as 30 cfs. Similarly, in Tumalo Creek, a natural flow of 60 cfs averaged as little as 8 cfs. As recently as the 1990s, Tumalo Creek frequently ran dry; and it is only since the implementation of conservation projects that flows have been returned and protected in Tumalo Creek. TID's conservation efforts will result in increased dry season stream flows in Tumalo Creek from 5.8 cfs to approximately 17.6 cfs. It will also increase fall, winter and spring stream flows in Crescent Creek, the Little Deschutes River, and the Deschutes River by approximately 8.2 cfs. The increased flows from Tumalo Creek will also provide important cool water to the Deschutes in the summer months when temperature affects fish survival. Several documents support the prioritization of this flow restoration effort including:

- The Deschutes Subbasin Plan, Northwest Power and Conservation Council, 2005
- Upper Deschutes River Fish Management Plan, Oregon Department of Fish and Wildlife, 1996
- Upper Deschutes Agricultural Water Quality Management Area Plan, Oregon Department of Agriculture, 3rd rev. 2013
- Integrated Water Quality Report, Oregon Department of Environmental Quality, 2004/2006
- Deschutes Basin Restoration Priorities, Oregon Watershed Enhancement Board, 2006
- Middle Deschutes Monitoring Project, Oregon Department of Fish and Wildlife, 2012
- Instream Flow Restoration and Temperature Responses Technical Report, Upper Deschutes Watershed Council, 2013

⁴ This value is from the System Improvement Plan. TID is currently working to confirm these numbers over Summer 2020 and will update OWRD when practicable.

Supporting State- or Federally listed Sensitive, Threatened or Endangered Fish Species

Studies in the basin show that additional water left instream is a critical factor in supporting habitat and water quality on the mainstem Deschutes River and Tumalo Creek. The reach of the Deschutes River running through the city of Bend currently is already at or near the upper limit of Oregon's water quality standards. The Upper Deschutes Watershed Council (UDWC) performed a recent water quality analysis that found restoring flow to Tumalo Creek contributes to reducing stream temperatures and improving water quality on the mainstem Deschutes River. Furthermore, the same analysis found that leaving more water in the Deschutes River at the City of Bend, where most irrigation water is diverted, will not reduce downstream water temperatures but rather reduce the rate of downstream warming. Alternatively, monitoring results suggest that allowing additional cold Tumalo Creek water to remain instream could reduce stream temperatures on the Deschutes River below Bend.

This project will provide substantial instream benefit improving stream flow, water quality and habitat conditions for recently reintroduced steelhead as the area and depth of the wetted channel increase. In February 2010, Mid-Columbia steelhead were not identified by the USFWS as occurring in Deschutes County, but the steelhead were recently reintroduced into a tributary of the middle Deschutes River (Whychus Creek), approximately 35 miles downstream of the project area. Big Falls, a natural barrier to steelhead, is about 25 miles downstream of the project area and will likely prevent steelhead from accessing all but a portion (15 miles) of the stream reach improved by the project.

This project will benefit Oregon Spotted Frog in Crescent Creek and the Little Deschutes River. The Fish and Wildlife Service listed the Oregon Spotted Frog (*Rana pretiosa*) as threatened under the Endangered Species Act in 2014. Federal agencies have declared Crescent Creek, the Little Deschutes River, and the Deschutes River down to the City of Bend as critical habitat for the frog (see <https://www.fws.gov/oregonfwo/Species/Data/OregonSpottedFrog/>). They have documented the presence of the frog in Crescent Creek downstream from Crescent Lake. Phase 6 will return 1,740.12 acre-feet to Crescent Lake.

The Fish and Wildlife Service has identified Crescent Creek as a priority for the recovery of the Oregon Spotted Frog. The agency has suggested that increasing winter and spring stream flows in Crescent Creek will benefit the Oregon Spotted Frog. This project will conserve stored water from Crescent Lake and allow for its release during the storage season, contributing to improved conditions for frog overwintering and mating.

Supports Native Fish Species of Cultural Importance to Indian Tribes

The protected instream flow provides a substantial benefit for the Deschutes River basin that flows to Lake Billy Chinook; including enhanced flow for endangered Bull Trout and Steelhead, as well as popular recreational fish species like rainbow trout, brown trout, kokanee, and smallmouth bass. Lake Billy Chinook is a popular recreational fishing lake, and an important cultural landmark to the Confederated Tribes of the Warm Springs. Adding instream flow to the system will enhance the tribe's efforts for recovery of culturally important species, such as kokanee and steelhead, in the lake.

Supports Riparian Habitat Important for Wildlife

Changes in a stream's hydrologic regime alter streambank structure, sediment transport dynamics, and hydrologic connectivity with riparian vegetation (National Research Council 2002). This project would provide improved habitat function within the 162 miles of rivers and streams in the study area by providing additional flows that are more similar to the natural hydrograph: additional winter flows downstream of Crescent Lake and additional irrigation-

season flows in Tumalo Creek. Reduced bank erosion along the rivers and streams in the study area could occur if riparian vegetation became more established along stream channels and functionality of the riparian areas increases.

Reestablishing a more natural hydrologic regime in these reaches could allow the river channel to supply water to riparian areas via infiltration through channel banks. This change would enhance riparian function by facilitating processes such as surface and groundwater exchange, physical and chemical transformations, and supporting riparian plant communities. Based on the information provided above, the HDPE Piping Alternative would have a minor effect on riparian areas in the short-term and a negligible-to-minor effect on riparian areas in the long-term as instream conservation is implemented.

b. Does the project result in water conservation? If so, explain.

The primary purpose of this project is to conserve the water previously lost through the open porous canals. Currently, between 45-60% of the water that travels through the canals is lost due to seepage and evaporation. Enclosing the canals eliminates this loss. 100% of the water conserved will be protected instream under Oregon's Conserved Water program to benefit ESA listed species and other native species in Crescent Creek and Tumalo Creek. Water conserved through this project is estimated to be at least 4.2 cfs. The amount of conserved water will be verified during Summer 2020.

Additionally, TID commits that all conserved water from the Project will be placed instream the summer after substantial completion regardless of the completion status of the instream certificates.

c. Describe the anticipated measurable improvement in groundwater levels that enhances environmental conditions in groundwater restricted areas or other areas.

Returning conserved water to protected instream use will allow for a more natural hydrograph in the Basin. This may provide more normal conditions for fill and refill of groundwater sources, thus improving groundwater levels.

d. Describe if and how the project would create a measurable improvement in the quality of surface water or groundwater.

This project will have a measurable improvement in the quality of surface water through improved temperature conditions as well as a reduction in pollutants and invasive species transport through the open canals.

The Middle Deschutes River is 303(d) listed for temperature during the summer months. According to the ODFW Upper Deschutes River Fish Management Plan (1996), low stream

flows are a leading cause of poor water quality in the middle Deschutes River. If a sufficient volume of water can be secured in Tumalo Creek, there will be a decrease in the summer water temperatures for the Middle Deschutes in the reach below the confluence of the two streams.

This project will provide substantial improvement to water temperature in Tumalo Creek and the Deschutes River during the vital summer months. Temperatures upstream from the Tumalo Feed Canal diversion generally meet state water quality standards. However, rapid warming associated with historically low stream flows has caused temperatures in the 2.8-mile reach immediately below the Tumalo Feed Canal diversion to exceed state standards. Monitoring and evaluation by the Upper Deschutes Watershed Council (Attachment 8) suggests that the completion of this project will provide the stream flows necessary to meet state water temperature standards in this reach. Monitoring by the Oregon Department of Fish and Wildlife (Attachment 9) suggests that native redband trout concentrate in and around cold-water inputs to the Deschutes River, including Tumalo Creek, and further emphasize the importance of these stream flows.

According to the Upper Deschutes Watershed Council 2012 Water Quality monitoring program, the restoration of Tumalo Creek flows should be prioritized to achieve greater temperature benefits and provide the best return on investment for improved water quality in the basin.

In a letter of support to TID in 2010, ODFW reiterated the water quality improvement potential of the piping project. "The contribution to reduced temperatures in the Deschutes River between Big Falls and Lake Billy Chinook will provide benefits to migrating Chinook salmon, summer steelhead, and bull trout."

In addition to summer water quality improvement, there will also be improvement in winter flows on the Upper Deschutes River. Extreme flow fluctuations have exacerbated bank erosion and sedimentation associated with increased exposure of fine-grained sediments to freeze-thaw processes. This increases loss of habitat and contributes to poor water quality. Reaches of the Upper Deschutes exceed state water quality criteria for dissolved oxygen, turbidity, and sedimentation. In addition, the flow regime makes it difficult for riparian vegetation to establish, creating highly challenging conditions for on-going bank and channel restoration efforts by the USDA Forest Service, Oregon Department of Fish and Wildlife and other partners. Because low stream flow is directly linked to depressed fish populations, excessive stream bank erosion, loss of riparian vegetation and instream sedimentation, winter stream flow restoration in the Upper Deschutes River has been identified as a high priority in the following reports (available upon request):

- Upper Deschutes River Wild and Scenic Management Plan (USFS)
- Upper Deschutes River Subbasin Assessment and Action Plan (Upper Deschutes Watershed Council)
- Upper Deschutes River Restoration Strategy (ODFW)

Additionally, the project will also reduce the transport of non-point source pollutants and invasive species in the open canals. This project will fully pipe open canals. This eliminates the entrainment and conveyance of pollutants and invasive species via the previously open canals between farms. Currently, invasive species and pollutants are easily transferred between lands. Invasive species, such as the Spotted Knapweed and Russian Thistle, are significant issues for the lands that TID serves – causing increased use of herbicides and interventions. Enclosing the

open canals will eliminate the transport of these pollutants and invasive species in the District. Improvements to water temperature and reduction of pollutants are top priorities to improving the watershed as a whole. This project will specifically address water temperature and transport of invasive species. These issues impact salmonid spawning, rearing, migration, and passage in addition to resident fish spawning and rearing. Additionally, reduction of pollutants also has direct effects to water contact recreation and water body aesthetics

e. Does the project increase ecosystem resiliency to climate change impacts? If so, explain.

Conserving water to be protected instream is a valuable tool in improving ecosystem resiliency to climate change impacts. ClimateWise models anticipate higher temperatures, increased precipitation in winter months and declines in snowpack leading to lower summer stream flows in the Deschutes Basin. Qualitatively, this project will allow for protected increases in instream flow and improved temperature conditions. Tumalo Creek provides one of the only sources of cold water (over 10 degrees cooler at the confluence) to the middle Deschutes River. Further restoration of this flow will improve instream summer temperatures in the Deschutes River, improving cool water habitat for both endangered species as well as native fisheries. Water conserved through this project is critical to meeting those instream needs (both quantity and quality) now and in the future.

The completion of this Project will facilitate and allow for improved water management. TID has a dual source system, drawing water from either the Deschutes River or Tumalo Creek. TID will be able to work in collaboration with other irrigators and water users in the basin to better manage water in both the Deschutes River and Tumalo Creek for multiple uses. This will help reduce the supply and demand imbalance by continuing to meet irrigation demand, while making water available for instream and municipal mitigation needs. The project will reduce the potential for conflicts and crisis in the future.

TID is a part of the Deschutes Basin Study Work Group (BSWG) that is actively managing a Deschutes Basin Study that will look at climate change impacts. TID is a voting member of the study group and an active member of the Deschutes Basin Board of Control. That study will be able to quantify benefits of conservation efforts to ecosystem resiliency.

f. Does the project result in improvements that address one or more limiting ecological factors in the project watershed? If so, explain.

Several assessments have identified stream flow as a key limiting factor to water quality and fish production in the Upper Deschutes Subbasin. Any conserved water that is able to be returned and protected instream is a benefit to the entire watershed. There are also several regional efforts working toward improved conservation and enhancing river conditions. Efforts and assessments include:

- Deschutes River Subbasin Plan, Northwest Power and Conservation Council, 2004 - The Deschutes Subbasin Plan provides almost 80 pages of site-specific findings, objectives, and management strategies, many of which involve

increasing stream flow in reaches adversely affected by irrigation diversions. Key habitat objectives or strategies relevant to this proposal include:

- Deschutes River subbasin – “Streamflow extremes, especially seasonally low or intermittent flows, are probably the most significant factors limiting fish production in much of the Deschutes River subbasin today.” “The quantity of streamflow affects all fish life stages including spawning, incubation, rearing, and migration.” This page also references reduced connectivity, fragmented populations, increased risk of disease, and reduced water quality related to elevated temperatures and reduced flows that adversely affect fish. (Assessment 6-3, 8-3) a repeat of Limiting Factors and Conditions (Assessment 7-1 & 7-2).
- Deschutes River (Big Falls to Bend) – “improve the river’s flow regime by increasing the minimum summer flow to meet instream water rights” and “The reach of the Deschutes River near the mouth of Tumalo Creek is a priority area for habitat restoration.” (MP-77)
- Recovery – “Stream minimum flow recovery will be the single most important future change that will lead toward achievement of the subbasin plan’s biological objectives.” (Assessment 8-7)
- Upper Deschutes Subbasin Assessment, Upper Deschutes Watershed Council, 2003
 - A key recommendation in the Water Quantity chapter directs agencies to “Initiate river mitigation programs to assist the cities of Deschutes County in obtaining future municipal groundwater supplies and maintain minimum summertime flow levels in the middle Deschutes River below the City of Bend that are consistent with the levels identified by the Oregon Department of Fish and Wildlife as necessary to protect fish and wildlife habitat.” (page 120, 121)
- Upper Deschutes Subbasin Fish Management Plan, Oregon Department of Fish and Wildlife, 1996
 - “Of the factors limiting fish production, the seasonally low water, or no water conditions in streams and rivers are probably the most significant factor in the Upper Deschutes River subbasin.” “The amount of stream flow affects all fish life stages including spawning, incubation, rearing, and migration. Fish abundance is directly related to volume of water available in streams and rivers.” (pg. 25)
 - ‘Recommended Acton 5.1’ states: “Develop strong partnerships with irrigation districts, irrigators...to improve water distribution and application techniques in an effort to use less water more efficiently in order to establish increased minimum flows necessary to maintain aquatic life and retrofit facilities to reduce fish mortality and provide passage.” (pg. 63)

- Anadromous Fish and Bull Trout Management in the Upper Deschutes, Crooked, and Metolius subbasins. ODFW. 2003
 - “Long term restoration work should focus on flow supplementation, riparian improvements, and channel stability. Flows in the upper Deschutes subbasin have been severely altered by management for off-channel use. Streamflow supplementation will rely on purchase, lease, and water conservation projects to help achieve minimum streamflows.” (pg. 22)
- Instream Flow Restoration and Temperature Responses, Upper Deschutes Watershed Council, 2013
 - “Streamflow restoration projects that strategically increase flows in Tumalo Creek in proportion to the flow contribution of the upper Deschutes at North Canal Dam may therefore be an effective approach to maximize reductions in temperature in the middle Deschutes downstream of Tumalo Creek.” (pg. iv)
- “...preferentially increasing flows in Tumalo Creek over restoring streamflow in the Deschutes may achieve greater temperature benefits at an equivalent cost.” (pg. iv)
- Deschutes Basin Habitat Conservation Plan, Deschutes Basin Board of Control, 2013
 - “The operation of irrigation storage reservoirs in the upper Deschutes Basin has the potential to seasonally modify the hydrology of occupied Oregon spotted frog habitat from Bend upstream to the project reservoirs. Spotted frog habitat within the margins of the reservoirs could be influenced by raising and lowering of water levels...” (pg. 16)

18. Social/Cultural Benefits – ORS 541.673(4)

- a. Does the project promote public health and safety and of local food systems? If so, explain.

This project has a direct benefit to public safety and securing local food systems by enclosing a dangerous drowning hazard, improves efficiency and reliability for food producers, and eliminates the transport of pollutants between farms.

Public use of TID’s open canals present a growing safety concern for TID (Attachment 4: Environmental Assessment.) Canal access roads are used for recreation, and there have been two recent drowning deaths in adjacent district canals. In the summer, the water can be 2-6ft deep, with a flow rate of up to 200 cfs. The canal winds through private lands of pine forests, irrigated fields, and rural residences. Although the area is not heavily populated, TID’s maintenance road, where not fenced off by private owners, is used by the public for walking, jogging, and horseback riding. There is no barrier at the top of the bank of the canal to keep

people from slipping and falling into the canal. Once in, people and animals can have serious difficulty gaining footing on the banks and to climb out due to volume and speed of the moving water. This presents a potential liability to the District in areas where access is open.

Canal bank failure is another public risk created by the open canals. In 2002, TID experienced an irrigation season canal bank breach that caused extensive off-easement damage. Other local irrigation districts have experienced similar issues with substantial property damage. Aging canal banks may become breached due to new construction, utility crossings, gopher holes, rotting tree roots, and other causes.

The Project improves TID's water delivery infrastructure, further securing its ability to deliver water to its patrons that contribute to the local food systems. The TID serves about 8,110 acres and has about 675 patrons. Most of the water use is agricultural (7,400 acres) for food and livestock products. Approximately 35% of the land served by TID is planted in alfalfa, 40% in hay/pasture, 15% in grains, and 10% in lawn and garden.

Piping of these laterals also prevents contaminants, such as herbicides and pesticides, from entering the water supply for TID's patrons. This is extremely important to the safety of the local food system; especially for a patron dairy producer and several farms that sell food products to the local farmers markets.

- b. Does the project result in measurable improvements in conditions for members of minority or low-income communities, economically distressed rural communities, tribal communities or other communities traditionally underrepresented in public processes? If so, explain.

TID recognizes the importance of improving conditions for those in our communities that are underrepresented in public processes. The conserved water achieved through the project will provide measurable improvement to tribal fisheries. The protected instream flow provides a substantial benefit for the Deschutes River System to Lake Billy Chinook; including enhanced flow for endangered Bull Trout and Steelhead, as well as popular recreational fish species like rainbow trout, brown trout, kokanee, and smallmouth bass. Lake Billy Chinook is a popular recreational fishing lake, and an important cultural landmark to the Confederated Tribes of the Warm Springs. Adding instream flow to the system will enhance the tribe's efforts for recovery of culturally important species, such as kokanee and steelhead, in the lake.

- c. Does the project promote recreation and scenic values? If so, explain.

The Deschutes River is designated as both a National Scenic River as well as a National Recreation River. Both Tumalo Creek and the Deschutes River are extremely popular locations for summer in-water recreation including rafting, floating, fishing, and swimming. Economic value of river recreation in the Deschutes Corridor is estimated to be above \$200 million per year. By returning cold Tumalo Creek water to the Deschutes River system and promoting a

more natural hydrograph, TID is promoting to enhanced fisheries, more flow for summer recreation including boating, and enhancing the scenic value to Central Oregon.

Additionally, TID has a history of promoting recreation and scenic opportunities that intersect our operations. In 2002, TID partnered with Bend Park and Recreation District to allow the expansion of the Deschutes River Trail system along the piped section of the Bend Feed Canal, a previously open canal that was enclosed. Enclosing the canal into pipe enhances recreation opportunities while increasing public safety.

The District's maintenance roads are used regularly by hikers, bikers, runners, and horse-back riders where the ROW is not fenced by property owners. While using the maintenance roads, the trail users have views of the irrigation canals and the surrounding area. Although the District does not prohibit public use of the maintenance road, users are technically trespassing on District or private land. The exception is on maintenance roads included in the Bend Urban Trails Plan joint-use agreement between TID and the Bend Park and Recreation District. An informal trail on BLM land runs along the Tumalo Reservoir Feed lateral, with the potential of BLM building a new trailhead in the near future.

Biking also occurs on public roads that intersect the project area. Twin Bridges Scenic Bikeway is a popular bike route with a high volume of traffic. This Bikeway is a 36-mile loop that begins at Drake Park in Bend. The route passes through Shevlin Park, the community of Tumalo, and to the east of Tumalo Reservoir (Deschutes County 2017a). The Bikeway crosses TID's canals and laterals that would be modernized under the proposed action at multiple points.

After construction, areas adjacent to the canal would be restored to near prior contours. The area over the pipe would be graded to blend with the side of the canal. Disturbed areas, including the newly buried pipes, would be planted with a seed mix of native grasses and forbs in consultation with NRCS. Recreationists would have views of a vegetated corridor rather than either open water or an empty canal, depending on the season. Disturbance to existing mature trees during construction would be minimized to the extent possible, and these trees would also be part of the vegetated corridor. Additionally, these activities consistent with the Outstandingly Remarkable Values (ORVs) of Wild and Scenic Rivers and State Scenic Waterways.

- d. Does this project contribute to the body of scientific data publicly available in this state? If so, explain.

Oregon Water Resources Department and other state and federal agencies maintain stream gauges along Tumalo Creek and the Deschutes River. The conservation effects of the piping will be able to be tracked and measured through the stream gauges, further improving the ability to track usage and manage the Deschutes Basin for multiple purposes.

Several other irrigation districts and regional partners are also engaged in piping conservation projects in Central Oregon. In the near future, the Deschutes Basin will have more water protected instream than in the past 100 years. Effects to the ecosystem function of the protected instream water will be observed and quantified for the next several decades. TID looks forward to continuing to participate in conservation and habitat improvement efforts with its regional partners that contribute to the body of knowledge of both water management and ecosystem function in the region.

- e. Does this project promote state or local priorities, including but not limited to the restoration and protection of native fish species of cultural significance to Indian tribes? If so, explain.

TID supports and participates in several regional collaborative bodies including the Deschutes Basin Board of Control (DBBC), the Deschutes Water Alliance (DWA), and a key stakeholder in the Deschutes River Conservancy. The DBBC is a collaboration between eight irrigation districts in the region. The main priority of these groups is to facilitate long-term water resource management in the basin and identify how to meet diverse needs. TID works in collaboration with these groups to achieve restoration of instream flows leading to healthy populations of fish and wildlife in the Basin.

Also, through the DBBC, TID works with eight other irrigation districts to coordinate and share resources and management assets to conserve water, improve services to farm and ranch families, and enhance river conditions for wildlife species and recreational opportunities. Through this collaboration, the DBBC has developed the Deschutes Basin Habitat Conservation Plans (2006 and 2018), furthered piping projects for water conservation, improved fish, and wildlife habitat restoration, and produce renewable energy through hydropower generation projects.

- f. Does this project promote collaborative basin planning efforts, including but not limited to efforts under Oregon's Integrated Water Resources Strategy? If so, explain.

As mentioned in question (d) above, TID is a member of the Deschutes Basin Board of Control (DBBC), an unprecedented collaboration between eight irrigation districts (Arnold, Central Oregon, Lone Pine, North Unit, Ochoco, Swalley, Three Sisters and TID). TID also participates in the Deschutes Basin Study Work Group (BSWG) through an agreement with Bureau of Reclamation and the Deschutes Basin Board of Control to complete the Deschutes River Basin Study. The BSWG is an incredibly diverse group with members from the eight

irrigations in addition to Avion Water Company, Bend Paddle Trail Alliance, Ventral Oregon Flyfishers, Cities of Bend, Madras, Prineville, and Redmond, Crooked River Watershed Council, Deschutes County, Deschutes River Conservancy, Native Reintroduction Network, Natural Resources Conservation Service, Oregon DEQ, OWRD, Portland General Electric, Trout Unlimited, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, U.S. Forest Service, Upper Deschutes River Coalition, Upper Deschutes Watershed Council, Water for Life, and Water Watch. Both of these diverse collaborative groups produce studies contributing to the body of knowledge of the basin, develop habitat conservation plans, identify immediate and long-term needs of the basin's water resource management, and provide a venue to communicate and coordinate all basin efforts. These efforts are an excellent example of collaborative place-based planning for the Deschutes Basin.

This Project also directly correlates to the efforts suggested through the Integrated Water Resources Strategy. The following Recommended Actions in the IWRS directly relate to this project:

- Recommended Action 3.a: Regional efforts identified the needs for instream; thus, encouraging conservation projects such as piping projects.
- Recommended Action 4.c: Piping the canal contributes to energy savings through the elimination of pumps in addition to the significant water savings by eliminating 50 percent seepage through the canals.
- Recommended Action 7.a: This project is a significant investment in sustainable infrastructure that will be minimal maintenance and serve the district for decades.
- Recommended Actions 9.a - 9.c: Irrigation districts in the Deschutes Basin coordinate and collaborate in several venues that contribute to collaborative place-based planning efforts including the Deschutes Basin Board of Control, the Deschutes Basin Study Work Group, Deschutes River Conservancy, and other efforts. Canal piping is a direct result from this successful place-based planning effort.
- Recommended Action 10.a: Completion of this project will eliminate a 50 percent seepage loss in the irrigation canals, a substantial benefit to water use efficiency and water conservation.
- Recommended Action 10.D: Tumalo Irrigation District is committed to transferring the water right for all conserved water over to the State of Oregon for protection instream. This is a large environmental benefit that occurred without regulatory intervention
- Recommended Actions 11.A, 11.B, 11.D: Returning water instream improves watershed health, resiliency, and capacity, provides instream flow protections, as well as protecting and restoring instream habitat for fish and wildlife.

TID and its partners in the DBBC and BSWG have held numerous public meetings and outreach throughout their history to both inform and include the public on its activities. In addition, all BSWG meeting notes are publicly available on the Bureau of Reclamation's website.

TID's board meetings are also open to the public with sufficient time for public comments and communication with the public. All meeting agendas and minutes are available at TID's website.

VIII. Project Budget

Instructions: Please answer the following questions about the proposed project budget using the tables provided. All Loan and Other Funds must be allowable costs as described in the Department's Grant Budget Procedures and Allowable Costs document.

19. Please provide an estimated line item budget for the proposed project. Examples include: direct project specific costs, such as in-house staff salary, contractual services, travel and administrative costs. See the Budget Procedures and Allowable Costs on the OWRD [Applications, Forms, and Guidance webpage](#) for further guidance.

OVERALL PROJECT BUDGET Line Items	Number of Units* (e.g. # of Hours)	Unit Cost (e.g. hourly rate)	In-Kind Match	Cash Match Funds	OWRD Grant Funds	Total Cost
Materials			70,000			70,000
Contractual/Consulting				4,450,000	1,200,000	5,650,000
Staff Salary/Benefits			111,548			111,548
Equipment (must be approved)						
Supplies						
Other:						
Administrative Costs**			40,000			40,000
Total			221,548	4,450,000	1,200,000	5,871,548

* The "Unit" should be per "hour" or "day" – not per "project" or "contract." $Units \times Unit\ Costs = Total\ Cost$
 ** Administrative Costs may not exceed 10% of the total funding requested from the Department

20. Identify the budget for each key task below. Key tasks identified below should be the same as the key tasks identified in Questions 9 and 10.

Key Tasks	In-Kind Match	Cash Match Funds	OWRD Grant Funds	Total Cost
Task 1: Materials Acquisition				
Task 2: Bid Solicitation	10,000			10,000
Task 3: Contracting	10,000			10,000
Task 4: Construction	181,548	4,450,000	1,200,000	5,831,548
Task 6: Project Maintenance				
Task 7: Project Water Rights	20,000			20,000
Total	221,548	4,450,000	1,200,000	5,871,548

IX. Match Funding

Instructions: Fill out the table below and attach the appropriate documentation for both secured and pending match (add rows as needed). Label the documentation as Attachment #3. Applications requesting grant funds must demonstrate match that at a minimum equals 25% of total project cost.

For secured funding, you must attach a letter of support from the match funding source that:

- Specifies the dollar amount identified for this project,
- Equals the dollar amount shown in the “Amount/Dollar Value” column in the table below, and
- Describes the work to be accomplished through the match.

For pending resources, you must attach other written documentation showing a request for the matching funds. Documentation must:

- Include the project name,
- Note the date on which a future funding application will be submitted,
- Identify the funding program from which funds are pending, and
- Provide evidence that the project is eligible for the funding program identified.

Match Funding Source (if in-kind, briefly describe the nature of the contribution)	Type (✓ only One)	Status (✓ only One)	Amount/ Dollar Value	Date Match Funds Available (Month/Year)
NRCS PL 566	<input checked="" type="checkbox"/> cash <input type="checkbox"/> in-kind	<input checked="" type="checkbox"/> secured <input type="checkbox"/> pending	4,200,000	8/2018
Tumalo Irrigation District	<input checked="" type="checkbox"/> cash <input checked="" type="checkbox"/> in-kind	<input checked="" type="checkbox"/> secured <input type="checkbox"/> pending	221,548	4/2020
OWEB: Restoration Grant	<input checked="" type="checkbox"/> cash <input type="checkbox"/> in-kind	<input type="checkbox"/> secured <input checked="" type="checkbox"/> pending	250,000	10/2021(Anticipated)
	<input type="checkbox"/> cash <input type="checkbox"/> in-kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
Total of Match Funds			= \$4,671,548	

X. Storage-Specific Project Requirements (if not a storage project skip this section)

Instructions: If your proposal is for a storage project that will divert water under an existing or new storage water right or limited license, answer questions 21 through 23 in this section. If your proposal is for above-ground storage, also answer question 24 through 26. All other projects can skip this section.

21. Identify Storage Project Type: Above-Ground Below-Ground

22. Indicate the capacity of the storage project and any new-developed water below:

- What will be the *total* capacity of the storage project in acre-feet after completion? _____
- What will be the volume of the *newly-developed* water in acre-feet? _____

23. Answer the following “Yes/No” questions about the storage project.

- a. Will the project divert more than 500 acre-feet of surface water annually? Yes No
- b. Will the project impound surface water on a perennial stream? Yes No
- c. Will the project divert water from a stream that supports sensitive, threatened or endangered species? Yes No

If you answered “yes” to **any** of the questions above, (a), (b), or (c), the project will need a *Seasonally Varying Flow (SVF) Prescription*, determining the duration, timing, frequency and volume of flows (including ecological base flow), necessary for protection and maintenance of biological, ecological, and physical functions outside of the irrigation season. The Department will establish the SVF prescription after funding is awarded, for more information about this requirement, please contact Technical Coordinator, Rachel LovellFord at 503-986-0941.

24. **Above-Ground Storage Only:** If you answered “yes” to Question 23 (a), (b), or (c) above, your proposed project is above-ground storage, **and** you are requesting **grant** funding then a **minimum of 25%** of the newly developed water must be dedicated to instream use. This is separate from the SVF Prescription. ***If awarded funding, the percentage identified below will be a condition of funding.***
Note: Any storage project which permanently dedicates water instream will receive a scoring bump in the environmental public benefit category.

Please identify the percentage of stored water to be dedicated to instream use. _____%

25. **Above-Ground Storage Only:** Into which stream(s) will the project release water? _____
26. **Above-Ground Storage Only:** How does the project control the outflow from the reservoir? Describe:
- a. What infrastructure governs changes to reservoir outflow rates?
 - b. Whether changes to the outflow rate are made automatically or by hand.
 - c. If water is released into more than one stream, what controls the rate of release and how much water goes to which stream?
 - d. What are minimum and maximum release rates to each water source?
 - e. Any other factors that limit the rate at which water is released from the reservoir.