

Final Completion Summary

The Deep Creek - Town Diversion project is located in the town of Adel in Lake County, Oregon. The Town Diversion, established prior to the 1921 Warner Lakes Adjudication Survey, provides irrigation and stock water to the Adel Water Improvement District (AWID) . The concrete weir diverts water into the AWID diversion canal which then delivers water to down-valley AWID patrons. The diversion was a complete fish passage barrier due to the structure's vertical height and high water velocities. Obstructed fish passage affects Warner sucker (Federally-threatened), Warner Lakes redband trout (Oregon-species of concern), and other native species inhabiting the Warner Basin.

In February of 2019 the existing concrete headwall and associated diversion headgates and forebay (i.e., headworks) to the diversion canal was replaced. The existing headworks was degraded due to concrete spalling. Replacing this headworks has provided safety and efficiency to the diversion operation.

In November of 2019 the existing weir was enhanced with a 250 ft-long rock ramp that joined the existing northern diversion weir crest. The modified wier forms a defined vertical boundary which joins the rock ramp allowing for the goal of fish passage upstream. At this time a 100 ft sluiceway was also completed that was added into the design. The purpose of the sluiceway is to flush out sediment keeping the head gates cleared.

Project partners include the Lake County Umbrella Watershed Council, AWID, U.S. Fish and Wildlife Service, U.S. Bureau of Land Management, and Oregon Department of Fish and Wildlife.

Background

The Deep Creek Town Diversion was a complete fish passage barrier due to the structure's vertical height and high water velocities. Obstructed fish passage affects Warner sucker (Federally-threatened), Warner Lakes redband trout (Oregon-species of concern), and other native species inhabiting the Warner Basin. The existing headworks on the diversion that provides stock water and irrigation to the Adel Water Users was degraded due to concrete spalling and posed safety and efficiency concerns. The Warner Basin Aquatic Habitat Partnership began talks with the Adel Water Improvement District to determine a plan to meet both problems.

Work Done

Deep Creek provides irrigation and stock water to the agriculture producers of the Warner Basin while providing a source of life to the native aquatics species. Diversions that provide for the

agriculture producers are barriers for the native fish to travel upstream to find habitat and refuge for reproduction and life history. To improve and restore the health of this watershed both dependents on this source of life were taken into account.

The existing concrete headwall and associated diversion headgates and forebay (i.e., headworks) to the diversion canal was replaced. The existing headworks was degraded due to concrete spalling. Replacing this headworks has provided safety and efficiency to the diversion operation. The existing weir was enhanced with a 250 ft-long rock ramp that joined the existing northern diversion weir crest. The modified wier forms a defined vertical boundary which joins the rock ramp allowing for the goal of fish passage and connectivity to upstream habitat.

Changes from Proposed

Project changes from start to completion included an addition of a 100 foot sluiceway. Deposition and sediment build-up concerns were expressed by the Adel Water Improvement District. The added sluiceway will allow sediment (that is deposited in front of head gates) to be flushed downstream. This will ease the long term maintenance of the updated system.

Public Awareness or Education

The Deep Creek Town Diversion project has been highlighted in the OWEB Telling the Story video which captures the overarching fish passage efforts in the Warner Basin. While construction footage of the diversion is shown several times in the video it is also featured in the publication that accompanies the video. The video is being shared via youtube and social media with partners and stakeholders along with other natural resource organizations. The Deep Creek Town Diversion project was also featured in the Lake County Examiner (local newspaper) in February of 2019 along with a video showing at the Lake County Fair Booth in September 2019 and the LCUWC Annual Gathering December of 2019.

Lessons Learned

There is much value in relationships with partners and stakeholders in these types of restoration projects. Like a triangle, all points are players in the game and are crucial for the project to succeed. With that lesson it becomes highly important to meet the needs and values of those players to keep the relationships intact and functioning.

The addition of the sluiceway had its pros and cons and different opinions among group members. With productive and open conversations the group determined the benefits were worth the cost and it was constructed.

Looking at future projects the WBAHP will work to address modification prior to construction.

Recommendations

While implementation was highly effective with the Deep Creek Town Diversion project, verbal conversations and agreements need concrete written understanding so end of project task items are addressed.

Aquatic Habitat

The following activities were adhered to:

DSL – Permit to construct fish passage structure; General Authorization for Fish Enhancement or Removal/Fill permit

ODFW - 1) a determination that fish are present and that fish passage must be maintained; 2) an approval of a proposed fishway design, if one is required; and 3) a determination that the fishway, once constructed, is adequate and operated in an appropriate manner.

Guidance and/or Considerations

The local ODFW District Fish Biologist is involved in the project and was able to determine what species of fish are present, review passage structure designs, giving consideration to all native species, and able to provide sources of technical assistance.

Special Conditions

1. Signed Cooperative/Landowner Agreements for Project sites
2. Pre-Project Photos and Map
3. Flow meter or water use measuring device shall be installed as part of the project. Photo documentation that it is installed.
4. Progress Report on status and progress of project sent by email due July 1st 2019

<i>Funding Sources</i>				
Source	Identifier	Cash	Inkind Type	Inkind
Bureua of Land Management	WBHP 19	\$76,354.11		\$0.00
Bureua of Land Management		\$6,362.00		\$0.00
Oregon Department of Fish and Wildlife		\$50,000.00		\$0.00
OWEB	218-4018-16051	\$393,030.00		\$0.00
Ruby Pipeline		\$9,628.00		\$0.00

US Fish and Wildlife Service	F18367	\$25,000.00		\$0.00
US Fish and Wildlife Service	F18395	\$90,000.00		\$0.00
US Forest Service RAC		\$92,000.00		\$0.00
Western Native Trout Initiative		\$45,000.00		\$0.00

<i>Totals</i>					
OWEB Amount	Non OWEB Cash	Inkind Total	Non OWEB Amount	OWEB Match	Total Project Cost
\$393,030.00	\$394,344.11	\$0.00	\$394,344.11	100.0%	\$787,374.11

<i>Uploaded Files</i>		
Image Type	File Name	Description
Exhibit B	218-4018 exhibit b Final.pdf	
Photo Point	Deep Creek Pre Project Weir and Headgates.jpg	Pre Project Weir and Headgates
Permit (ODF, DSL or other)	DSL Permit - Deep Creek Town Diversion (1).pdf	DSL Permit
Permit (ODF, DSL or other)	Deep Creek Town Diversion Renewed DSL Permit.pdf	DSL Permit Renewal
Land Use Form	Deep Creek - Land Use Form (1).pdf	Land Use Form
Other	ODFW Fish Passage Approval - Deep Creek Town Diversion Restoration Proje... (1).pdf	ODFW Passage Approval
Photo Point	Post Project Downstream View.JPG	Post Project Weir and Headgates
Photo Point	Pre Project Looking South.jpg	Across the Creek Looking South Pre Project
Photo Point	Looking South Across Creek.JPG	Post Project Looking South
Photo Point	Upstream View Town Diversion.jpg	Pre Project Upstream View
Photo Point	Upstream View Post Project .jpg	Upstream Post Project