



FY2015 ANNUAL REPORT

MARCH 1, 2015 THROUGH FEBRUARY 28, 2016
YAKAMA RESERVATION WATERSHEDS PROJECT
BPA Project #1996-035-01-Contract #35636



Lasalle Flood plain reconnection and bank stabilization project (Photo 2015).



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Introduction

A. Project Overview

The Yakama Reservation Watershed Project (YRWP) combined the Ahtanum, Toppenish and Satus creek watershed in 2005. Since the last report in 2015, YRWP staff have continued several tasks including close monitoring of stream discharge and irrigation withdrawals, monitoring of juvenile steelhead and coho outmigration, steelhead spawning surveys, and analysis of irrigation extent and timing. We have also continued our restoration efforts in these three watersheds, completing a road removal project, meadow protection enclosure fencing, and engineer design for Starvation Flats and Toppenish Creek River Mile 37 for the 2015 work season.

II. Restoration Projects

A. Lakebeds Meadow Road Decommission Project

YRWP staff began the design of the Lakebeds Meadow Road improvement Project early in the 2015 contract period. The designs prescribed the removal of the road fill material that bisected the meadow and disrupted the hydrology at the site, removal of two undersized culverts, water bars and an armored meadow crossing that would allow water to move through the meadow at a slow and sustained rate (figure 1). Following surveys performed by YN cultural resources, a complete redesign of the project was required to avoid impacts to cultural resources. The new design (Lakebeds Meadow Road Decommission Project (figure 2), essentially left all the fill in place. Additionally, water bars were kept in the scope of work, culverts were removed, and the road was completely closed. The road was to be ripped and re-seeded with a native seed mix. A cultural resource observer was also deemed necessary to be on-site during all construction activities.

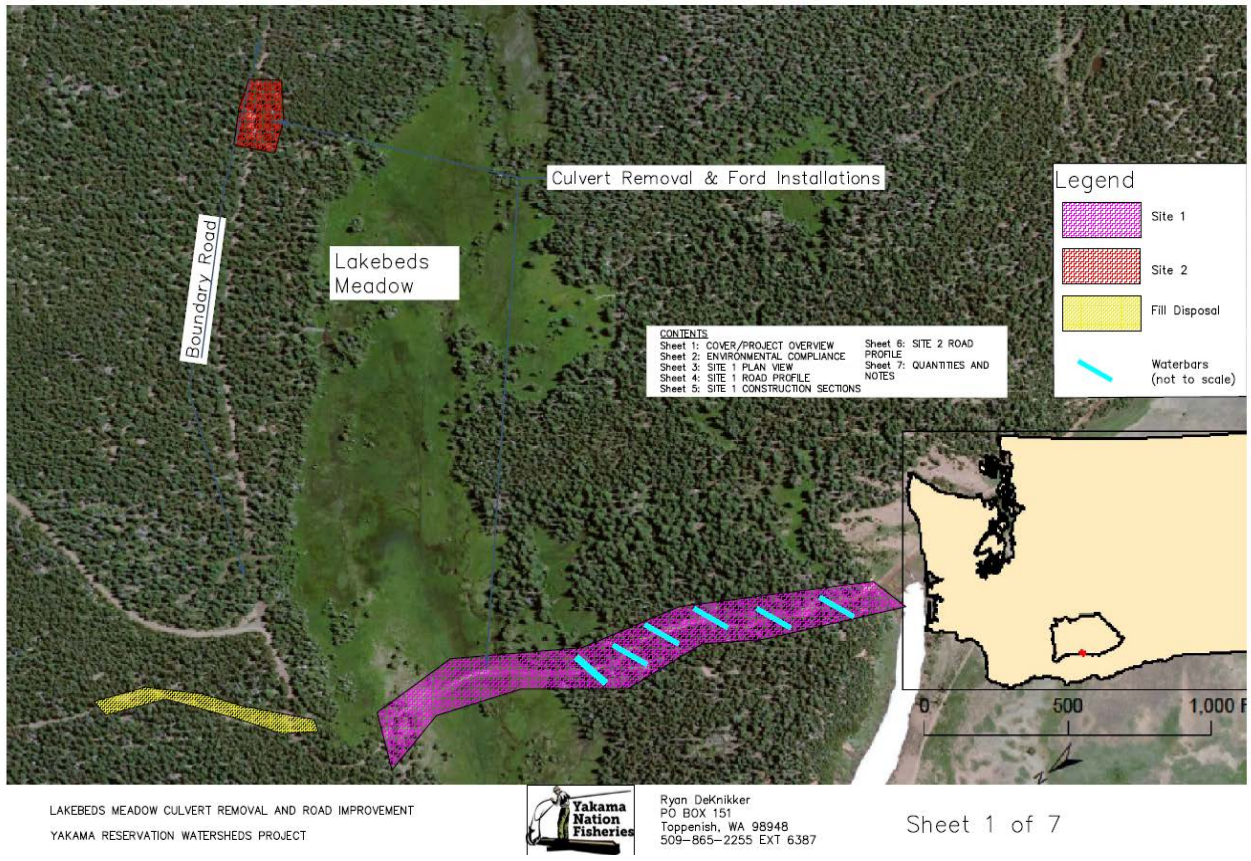


Figure 1. Original scope of work (Lakebeds Meadow Culvert Removal and Road Improvement Project prior to cultural resource survey).

Lakebeds Meadow Road Decommission Project Yakama Nation Fisheries Yakama Reservation Watersheds Project

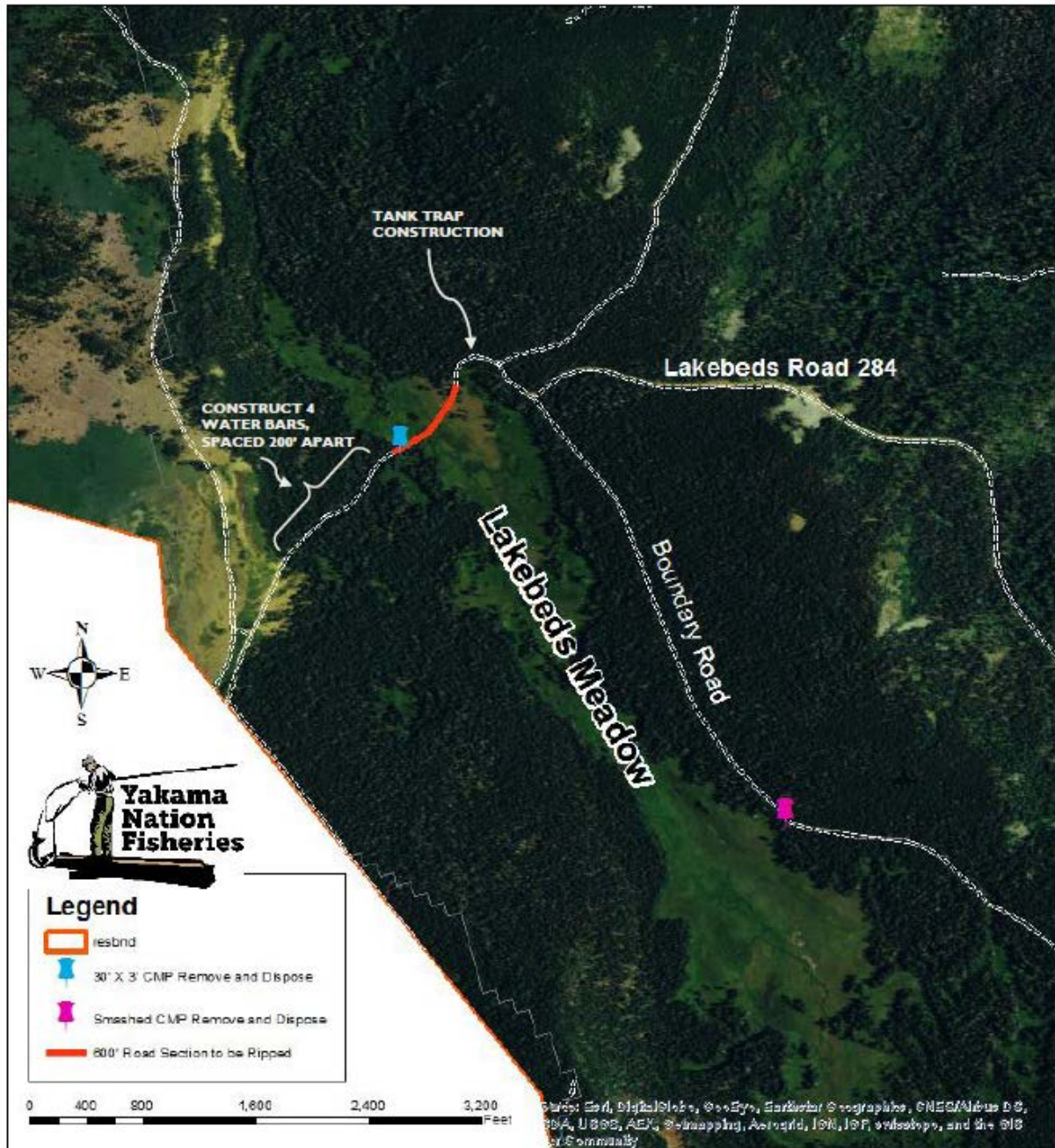


Figure 2 Ultimate plan which was constructed October 6th, 2015

On October 6th, 2015 equipment was mobilized to the Lakebeds Meadow site by the sub-contractor. Work began on constructing water bars on the road south of the meadow to allow the

road to drain properly. Four water bars total were constructed, with the furthest south water bar constructed to prevent access by motorized vehicles. The disturbed areas were seeded and covered with certified weed free straw to mitigate erosion and sedimentation (Figure 3).



Figure 3 Lakebeds road disturbed areas that was seeded and covered with weed free straw.

The culvert within the meadow (Logy Creek) was then removed and disposed. The cultural resources monitor authorized the sloping back of the banks where the culvert had previously been and also authorized the placement of a wind-blown log with root wad in place of the culvert to help stabilize the channel (Figure 4).



Figure 4 Removal of culver and wind-blown debris with root wad placed in channel

The road prism was then ripped with a tooth on the excavator bucket, seeded, and straw mulch was applied to the exposed surfaces (Figure 5).



Figure 5 Ripped road resseeded.

A berm at the North side of the meadow was then constructed to exclude vehicles and close the road entirely (Figure 6). Another undersized culvert was then removed further east that bisected the Boundary Road and was intended to convey Satus Creek flows (Logy Creek and Satus Creek originate from Lakebeds Meadow).



Figure 6 Closed road from allowing vehicles to enter the meadow.

The construction of the project lasted approximately 5 hours, and the sub-contractor mobilized equipment from the site the afternoon of October 6th. Immediately following construction, precipitation in the form of rain and snow has covered the site and prevented re-entry until conditions improve. The project had to be re-designed to minimize the impacts to cultural

resources, but the benefits to fish will persist as it was constructed. Compaction and surface flow was arrested by following the measures prescribed. This will help reduce peak flows and improve base flows while adding to the cumulative reduction in water temperatures in the watershed which is a key limiting factor.

Fencing this project did not occur in fall of 2015 due to snow and road conditions in the closed area. Fencing is planned on being commenced in the summer of 2016.

III. Fencing

A. Upper Toppenish Meadow buck and pole fence line

Upper Toppenish Meadow Buck and Pole Fence is 75% completed. The cougar creek fire closed the forested area slowing down the progress of the fence (Figure 7). Once the fire was contained and the closed area was open staff tried to finish the fence, but weather played a factor in the ability to access the site. Plans to finish the fence will begin once access is attainable.

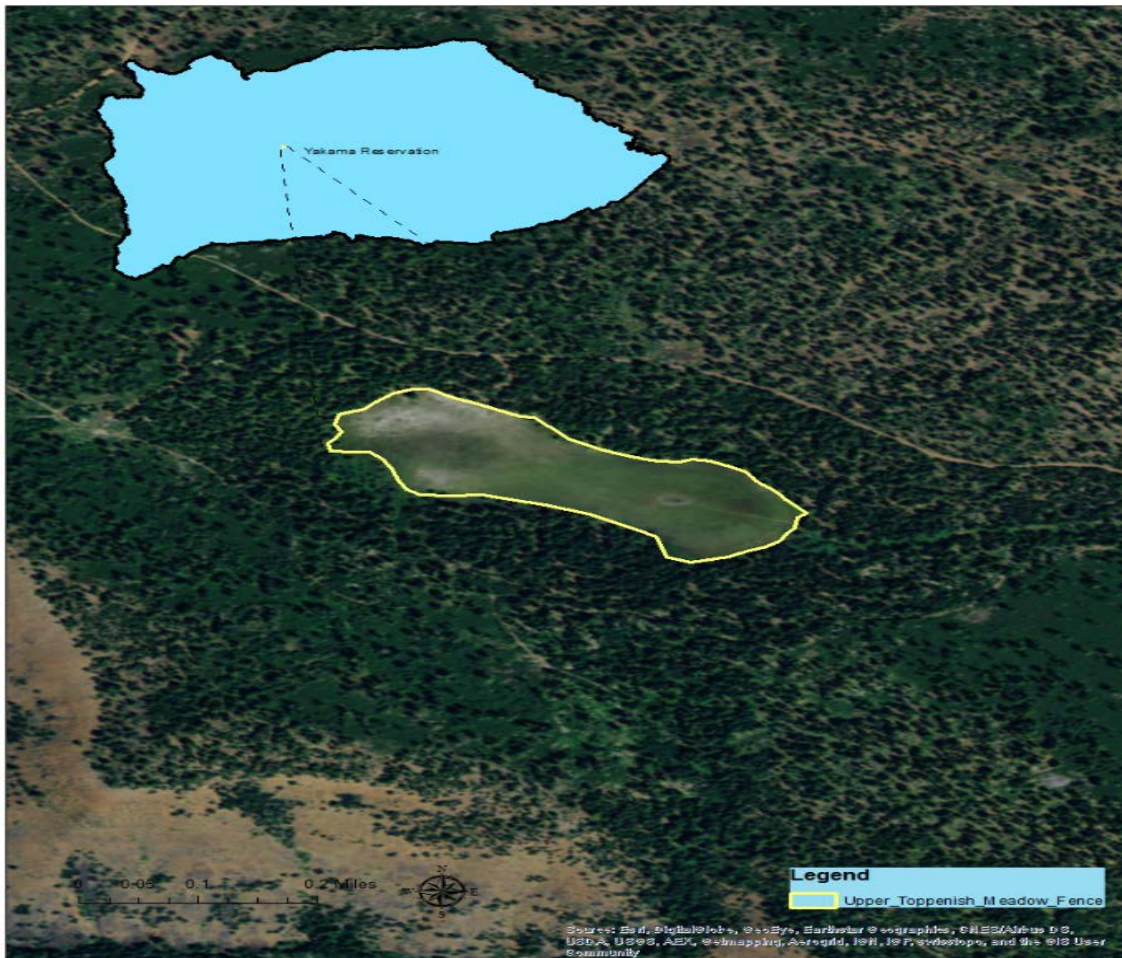


Figure 7. Upper Toppenish Meadow buck and pole fence line. Entire perimeter fence will be completed once accessible in 2016.

B. Fencing at Toppenish Creek at River Mile 37

Shaker Church to Marion Drain Road Barb Wire Fence in lower Toppenish will be completed by the end of February 2016. This fence will serve to keep cattle out of the watershed and protect the area once the planned restoration project for 2016 is complete. (Figure 9).

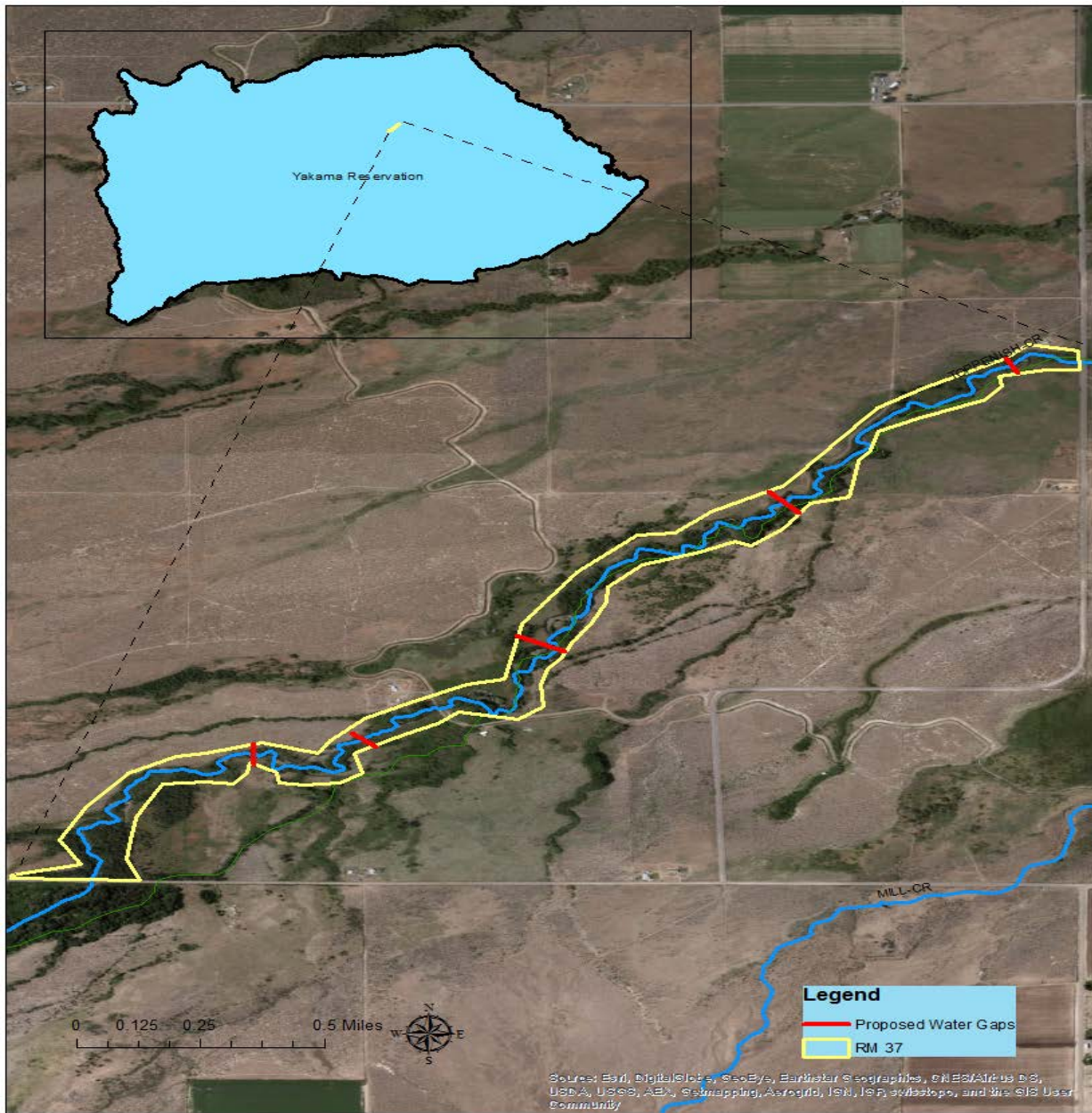


Figure 8. Toppenish Creek Fence from Shaker Church road to Marion Drain.

C. Logy Creek Buck and Pole Fencing

Due to the changes on the engineering design and cultural resource interaction this delayed the fencing of this project. Fencing is planned to begin in the fiscal year of 2016 once weather and road conditions permit.

IV Engineering

A. Starvation Flats

Starvation Flats Meadow Restoration is located in the headwaters of North Fork Dry Creek and is approximately 2,514 acres with an elevation of 3,370 ft. This meadow is a culturally and ecologically significant site for the Yakama Nation. The meadow provides important ecological functions, including a hydrologic influence on streamflow in downstream reaches of dry creek, which supports ESA-listed steelhead trout. The meadow has been heavily degraded by logging, road building and ungulate grazing. Attempts to seclude cattle have been done by building 4.8 miles of fence in the main headwaters of the meadow that secludes 978 acres. In the past there has been attempts to restore this meadow by rock check dams, headcut revetments, livestock exclusion fencing, debris jams, and road relocation. Some of these efforts worked and some failed.

Technology today allows a more extensive look at Starvation Flats to develop a successful effort at restoring this meadow. In collaboration with Interfluvue engineering alternatives were analyzed to develop a strategy that would successfully meet all of DNR objectives: having more base flow through the year and support culturally significant foods. Interfluvue presented DNR staff 5 alternatives to examine for restoring starvation flats. Alternative 1 extend the fence line encompassing 1,536 acres from further ungulate damage. Alternative 2 create a series of earthen plugs within sections of incised channels to pond water within the upstream. The ponds are to force water to spread out on the floodplain instead of in the gully. Alternative 3 valley grade control that's are structures different from traditional check dams in that they are larger, more strong and are located in areas of valley confinement and flood flows can be funneled over the structure. Alternative 4 channel fill the degraded channel will be filled with appropriately sized material and are sized to accommodate the anticipated hydrology. Alternative 5 check dams using rock materials appropriate for channel, post/debris dams and living dams created using live stakes.

YN DNR staff met on the alternatives and came to an agreement to extend the fence line to circumference the entire starvation flats meadow to prevent further degradation by ungulates and to develop an engineered plan to construct the pond and plug method (Figure 10). The pond and plug method would have the most benefits to salmonid habitat by raising the water table for groundwater storage, support native vegetation, restore degraded gullies, thus allowing for cooler release flows during the summer. This final engineer design of the pond and plug method will be completed by the end of February.



Figure 10. Example of the pond and plug method photo is from Plumas National Forest report (USFS 2010, Photo: Jim Wilcox).

B. Toppenish Creek River Mile 37

Background and Location:

The Yakama Nation Fisheries Program (YNFP) has identified Toppenish Creek (Toppenish) in the vicinity of river mile (RM) 37 as a candidate location for habitat restoration (Figure 11). Toppenish is a tributary to the Yakima River, and is utilized by ESA listed middle Columbia River steelhead (*Oncorhynchus mykiss*) during multiple freshwater life history stages. *Oncorhynchus mykiss* exhibit complex life history traits and are capable of multiple spawning years in addition to being anadromous (Steelhead) or freshwater residents (rainbow trout). The middle Columbia River steelhead population is considered to be an evolutionary significant unit comprised of a distinct population segment; meeting specific physical, behavioral, and genetic criteria laid-out in the ESA (NMFS 2009).

History:

Spawning and rearing habitat availability in Toppenish has been impacted by human land uses, predominantly those related to agricultural practices and associated water withdrawals. Logging, grazing, and road construction throughout the Toppenish watershed have also contributed to declining habitat conditions. Direct impacts include channelization, grade control structures, bank armoring, canals and ditches, increased turbidity and temperature, and substrate embeddedness (Resseguie 2010). These impacts have resulted in ongoing channel incision, bank instability, floodplain disconnection, wetland losses, and a reduction in riparian cover and function. As a result, high quality off-channel habitat, suitable spawning gravels, and cover for

fish are all lacking in Toppenish. Toppenish once supported healthy populations of steelhead, Chinook, coho, and rainbow trout (InterFluve 2014). These populations have experienced sharp declines since human development of the landscape. Currently, small populations of coho are present in lower Toppenish, with rainbow trout and steelhead utilizing the project reach (InterFluve 2014).

Restoration Goals:

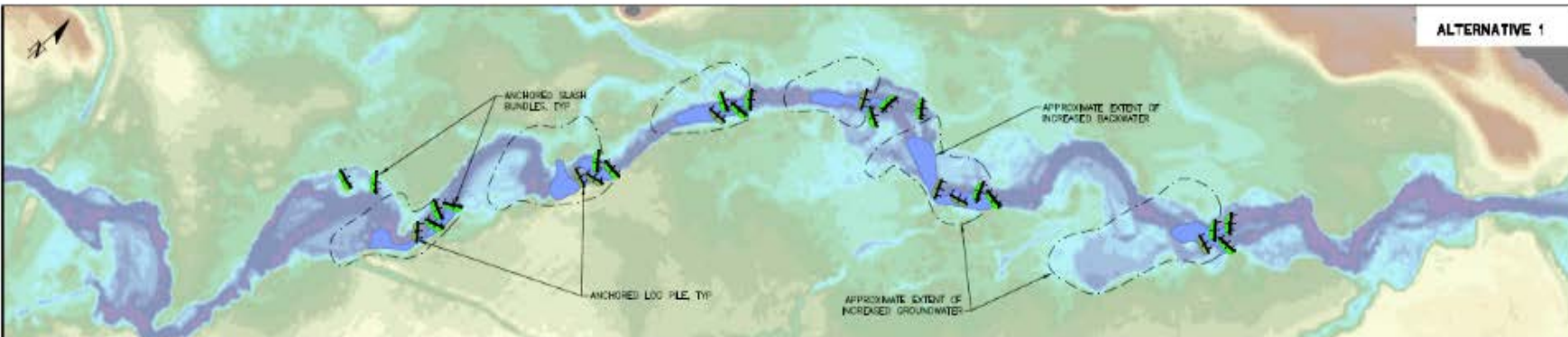
This restoration effort is primarily intended to increase spawning and rearing habitat for summer steelhead in Toppenish Creek. Specific restoration goals to achieve this end include the following:

- Slow instream velocities to reduce bed scour,
- Increase the number and quality of pools,
- Collect and store incoming sediment to prevent future bed degradation and trigger aggradation to raise the channel bed,
- Reactivate former floodplain surfaces and side channels that have been vertically isolated through incision,
- Provide diverse instream habitat with significant overhead and lateral cover,
- Disperse flows into multiple small channels to reduce flow depth and increase hydraulic complexity and sorting of spawning gravels,
- Increase instream water storage through increased depth of hyporheic gravels,
- Enhance lateral connectivity and water storage in the adjacent soil prism to increase flows during low flow conditions and support riparian vegetation,
- Provide stable large wood accumulations where the existing beavers can build larger, stable dams, further increasing instream and lateral water storage for fish rearing areas and recovery of the riparian community.

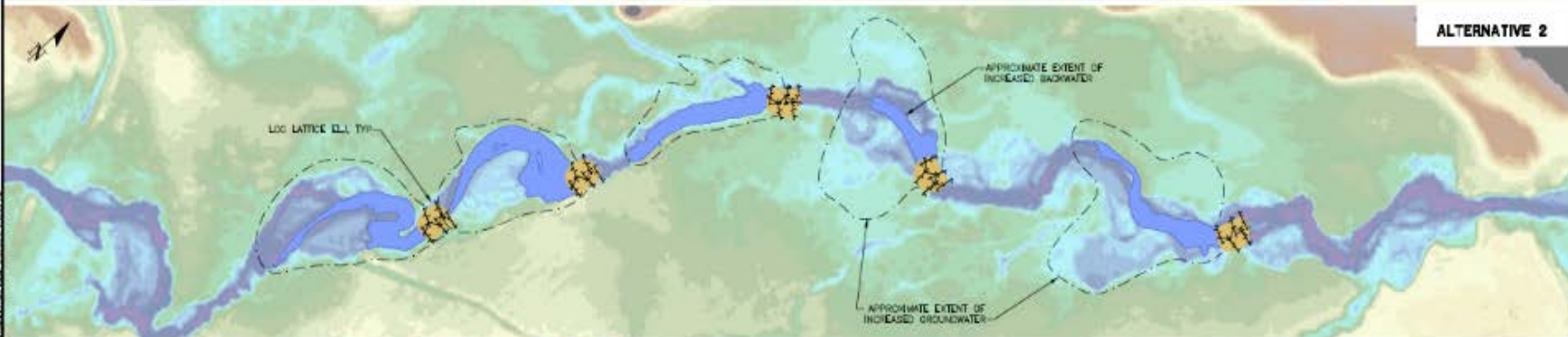
Restoration Concepts:

Natural Systems Design was contracted to investigate and provide restoration alternatives for the project. Conceptual alternatives are shown below:

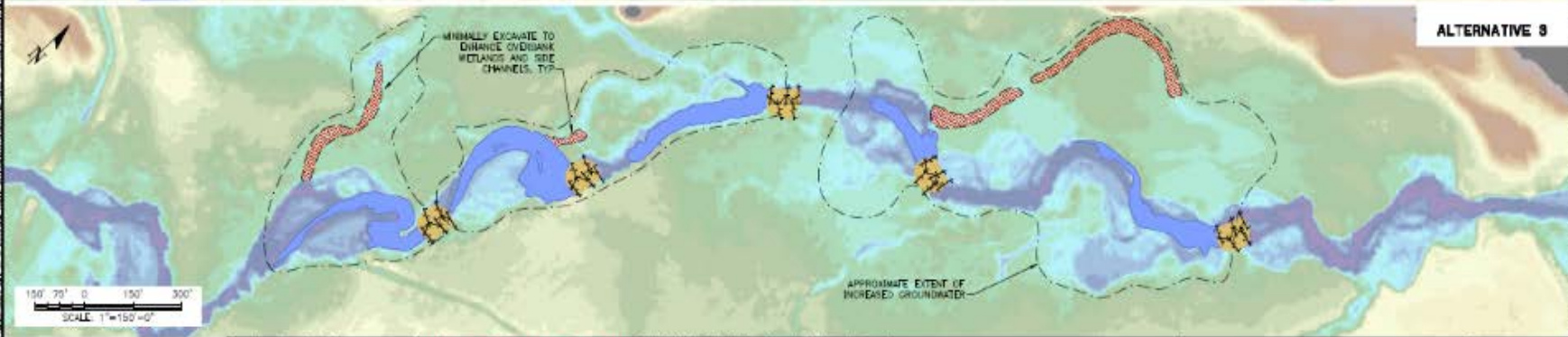
NON-FULL SCALE LINES ON THIS PLANVIEW



ALTERNATIVE 1



ALTERNATIVE 2



ALTERNATIVE 3

IF THIS DRAWING DOES NOT
INCLUDE IT, THIS
DRAWING IS NOT PLOTTED
TO ORIGINAL SCALE.



DATE OF INTERVIEW AND DATE		GEOGRAPHIC INFORMATION	
DESIGNED BY:	DATE:	LATITUDE:	LONGITUDE:
DRAWN BY:	DATE:	ELEVATION:	DATE:
CHECKED BY:	DATE:	SCALE:	DATE:

**TOPPENISH CREEK
RESTORATION**

**CONCEPT ALTERNATIVES -
PLAN VIEW**

Sep 08, 2015 30% DRAWINGS PRELIMINARY

C. Ahtanum @ 62nd

Background and Location:

The project reach includes 1.7-miles (mi) between river mile (RM) 8.5 - 10.2 of Ahtanum Creek in north central Yakima County, approximately 6-mi west of Union Gap, WA (Map 1). The watershed contributing to the project reach is approximately 71-mi², spanning a vertical relief of 5,900-feet (ft) from RM 8.5 to the headwaters. The reach extends between the 62nd and 79th Avenue bridges, with an average channel slope of 0.6%, but is locally up to 0.9% in straightened channel segments such as RM 8.8 – 8.7 and 10.2 – 10.1. Ahtanum Creek flows primarily to the east through the project reach, meandering through an alluvial valley at the distal end of an alluvial fan.

History:

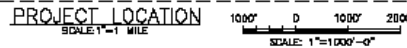
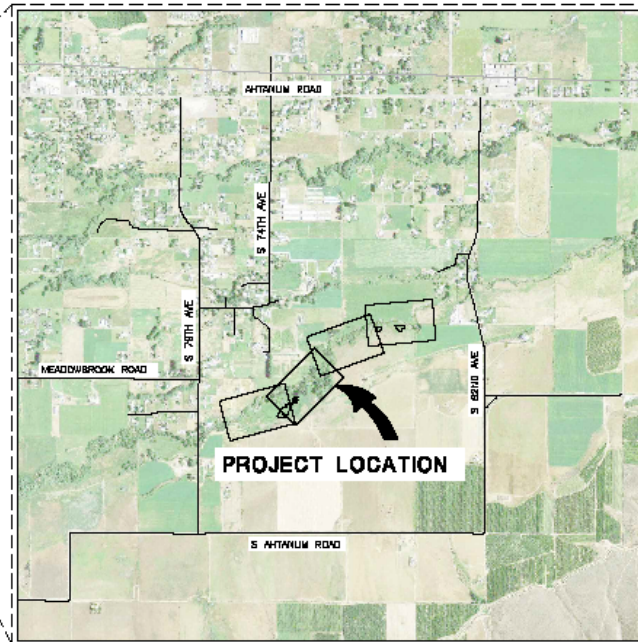
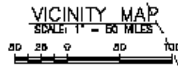
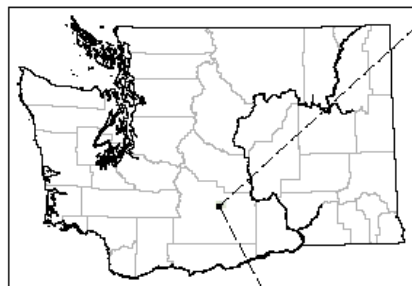
The North Yakima Conservation District (NYCD) and Yakama Nation (YN) have identified the reach of Ahtanum Creek between the South 62nd and 79th Avenue bridges as a candidate location for salmonid habitat restoration. The proposed restoration reach was targeted by NYCD and YN to address the following limiting factors impacting the spawning, rearing, and migration of ESA listed threatened summer steelhead and bull trout, as well as non-listed spring Chinook and coho. (Ecology 2005) :

- Floodplain disconnection/channel incision (loss of rearing habitat, lowering water table, riparian species impacted, bank destabilization)
- Impaired riparian function (channel length lacking sufficient shade, root strength, source of large woody material (LWM))
- Fish passage barrier (concrete debris in channel)
- Stream bank armoring (channel simplification, local incision, lack of cover)
- Lack of instream complexity (low LWM frequency, pools with cover, uniform substrate)

Restoration Goals:

The goal of this restoration project is to address all of these limiting factors within the project reach to the degree possible given known site constraints and available funding. The proposed restoration will focus on restoring natural geomorphic processes and historic wood loading, to the degree possible given the site constraints, to directly address the key limiting factors impairing habitat. This report includes descriptions of the methods and results of the geomorphic hydrologic, and hydraulic assessments completed to inform the restoration designs. Subsequent design reports will be developed that describe the project design process and proposed conditions. Natural Systems Design was contracted to investigate and provide restoration alternatives for the project. Restoration design concepts can be seen in Appendix A .

AHTANUM CREEK RESTORATION DESIGN PROJECT NORTH YAKIMA CONSERVATION DISTRICT



DRAWING LIST	
SHEET NUMBER	SHEET TITLE
1	COVER SHEET
2	GENERAL NOTES
3	LEGEND
4	SITE PLAN OVERVIEW
5	PROPOSED CONDITIONS - SITE 1
6	PROPOSED CONDITIONS - SITE 2
7	PROPOSED CONDITIONS - SITE 3
8	PROPOSED CONDITIONS - SITE 4
9	PROPOSED CROSS-SECTION VIEWS
10	PROPOSED PROFILE VIEWS
11	TYPE 1 ELW (BANK STRUCTURE) DETAILS
12	TYPE 2 ELW (MID-CHANNEL STRUCTURE) DETAILS
13	TESC PLAN - SITE 1
14	TESC PLAN - SITE 2
15	TESC PLAN - SITE 3
16	TESC PLAN - SITE 4

CONTACT INFORMATION

NATURAL SYSTEMS DESIGN, INC
1800 W NORTH-LAKE WAY, SUITE 211
SEATTLE, WA 98163
(206) 834-0175

NORTH YAKIMA CONSERVATION DISTRICT
1100 PERRY STREET SUITE C
YAKIMA, WA 98902
(509) 454-5738

IF THIS HAS BEEN
REVISIONED, THE
DATE AND REVISION
NUMBER SHALL BE
PLACED TO
ORIGINAL SCALE.



DESIGNED BY	CHECKED BY	DATE

AHTANUM CREEK RESTORATION

COVER SHEET

1
1 OF XX

JAN 19, 2016 DRAFT 30% DESIGN NOT FOR CONSTRUCTION

Figure 9. Double click on image above to see entire engineer design plan set.

References

- InterFluve. 2014. Upper Toppenish Creek reach assessment & restoration strategy. Draft report submitted to the Yakama Nation Fisheries Program. InterFluve, Inc.
- National Marine Fisheries Service (NMFS). 2009. Middle Columbia River Steelhead distinct population segment ESA recovery plan. National Marine Fisheries Service. Northwest Region. National Oceanographic and Atmospheric Administration. U.S. Department of Commerce.
- Resseguie, T. 2010. Improvements to Steelhead population monitoring on Toppenish Creek. Yakama Nation Fisheries Resource Management Program.
- Washington State Department of Ecology (Ecology). 2005. Final Programmatic Environmental Impact Statement for the Ahtanum Creek Watershed Restoration Program. Ecology Publication # 05-06-016