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Northwest **Power** and **Conservation** Council

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February 2, 2021

MEMORANDUM

TO: Council Members

FROM: Karl Weist

SUBJECT: Bird Track Springs Fish Habitat Enhancement Project Presentation

BACKGROUND:

Presenter: Allen Childs, Grande Ronde Fish Habitat Program Leader, CTUIR; Sean Welch, Tributary Habitat Policy Lead, BPA

Summary: A multi-year, multi-landowner, multi-partner habitat and channel restoration project, Bird Track Springs Fish Habitat Enhancement Project helps implement the Confederated Tribes of the Umatilla Indian Reservation's River Vision supporting the Tribes' First Foods policy. Restoration of two miles of river channel on the Grande Ronde benefits the various life stages of chinook, steelhead and bull trout in this highly impacted reach of the river.

Relevance: The Council's 2014/2020 Fish and Wildlife Program Part 6, Section II Investment Strategy identified a series of emerging priorities for implementation, one of which was to "continue efforts to improve floodplain habitat." Two longstanding projects funded under the Council program in the Grande Ronde Basin, 1996-08-300 Grande Ronde Watershed Restoration and 1992-02-601 Grande Ronde Model Watershed, direct and perform the restoration work at Bird Track Springs.

Background: Located at 3100 feet elevation along the mainstem Grande Ronde River between river mile 144.7 and 146.1 along State Highway 244, the 1.9 mile Bird Track Springs Fish Habitat Enhancement Project reach encompasses land in the Wallowa-Whitman National Forest (1.2 miles) and private lands (.7 miles). Human development has altered the natural processes of the Upper Grande Ronde in the project area and beyond. The loss of floodplain forests, wetlands, and natural and complex stream channel networks has resulted in widened and shallow streambanks and channels, subject to anchor ice formation, and disconnected from an extensive historic floodplain and channel network. The elevated stream temperatures, lack of large pool habitat, and absence of channel complexity have severely constrained fish habitat in the project reach.

Recognizing that the middle reaches of the Upper Grande Ronde were incapable of supporting their First Foods policy, the CTUIR formed a unique partnership of tribal (CTUIR), state (OWEB), federal (BPA, BOR, USFS) and local (Grande Ronde Model Watershed) agencies and local land owners to address the riparian disfunction of the Bird Track reach. To improve the physical and ecological processes in the project reach to support chinook, steelhead, bull trout, lamprey and other species the CTUIR and its partners established objectives to:

- Increase the number and quality of 'large' pools in the main and/or side channels.
 - Decrease the potential for ice formation and reduce the likelihood of damage from ice jams.
 - Re-invigorate self-sustaining native plant communities across the floodplain, including patches associated with beaver colony activity.
 - Turn the channelized area back into a functional floodplain to increase the quantity of habitat for juvenile Chinook rearing and emigration and for suitable habitat for adult salmonids.

The Grande Ronde Atlas process identified Bird Track Springs as a significant reach in 2014. The Atlas provided local stakeholders with a GIS-based, decision support tool to prioritize key stream reaches for restoration. CTUIR and the Bureau of Reclamation initiated restoration planning for this reach of the Upper Grande Ronde River in 2016 under the CTUIR's Grande Ronde Watershed Restoration project (1996-08-300), with BOR funding engineering and design work. Construction began in earnest in 2018 and completed in fall 2019. Major revegetation with native species also occurred during the 2018/2019 timeframe and will continue. CTUIR secured construction funding through a variety of sources including the Grande Ronde Model Watershed (1992-02-601) process for BPA funds, the Oregon Watershed Enhancement Board, and the CTUIR itself. Total project construction costs were \$2.8 million.

Significant accomplishments of the multi-partner process include: 135 acres of historic floodplain restored; the creation of 9,000 feet main

channel and 9,500 feet side channel, 1,200 feet of alcove, and 2,000 feet floodplain swale; 17 large main channel pools (10 pools/mile) – a 900% increase; 47 medium side channel pools (26 pools/mile); over 300 large wood structures; over 250 floodplain wood structures; 3,700 feet of streambank bioengineering; and approximately 40 acres of riparian, wetland, and upland seeding and planting. Post-project monitoring has begun.

Two consecutive flood events occurred during February and March 2020, with the March flood documented as largest of record (50-year event, ~9,000 cfs). The project floodplain absorbed the events with minimal effect, despite being in a post-construction, un-vegetated condition, evidence of the success of the restored floodplain processes. In December, Bird Track Springs was selected as the Pacific Coast Salmon Recovery Fund feature project for Oregon.

Unwilling to rest on their laurels, CTUIR initiated construction on the next restoration project in the Upper Grande Ronde at Longley Meadows just downstream from Bird Track Springs.

More Info: <https://www.cardno.com/projects/bird-track-springs-restoration-project/>
<https://www.youtube.com/watch?v=Y-unflwPIWU>
https://www.bpa.gov/efw/Analysis/NEPADocuments/nepa/BirdTrackSprings/BTS_FishEnh_EA_May2018.pdf
<https://www.grmw.org/data/project/478/>
<https://paluut.ctuir.org/services/uploads/P/2228/S/1009/BirdTrackSpringsCompletedProjectReport.pdf>



Northwest **Power** and
Conservation Council

Fish and Wildlife Committee Meeting

Tributary Habitat Update

February 9, 2021

Sean Welch, PE
Tributary Habitat Lead



Allen Childs
Grande Ronde Fisheries
Habitat Program Leader



Rock Creek Floodplain Restoration, CTUIR 2018

Presentation Outline

- BPA Tributary Habitat Program
 - Authorities & approach
- Floodplain Restoration Case Study: Birdtrack Springs Restoration
 - Evolution of floodplain restoration
 - Project approach and design
 - Construction and post implementation impacts
- Longley Meadows Project & 2020 Work
- Questions



Middle Upper Grande Ronde, CTUIR 2019



Tribal Trust Responsibilities



Northwest Power Act

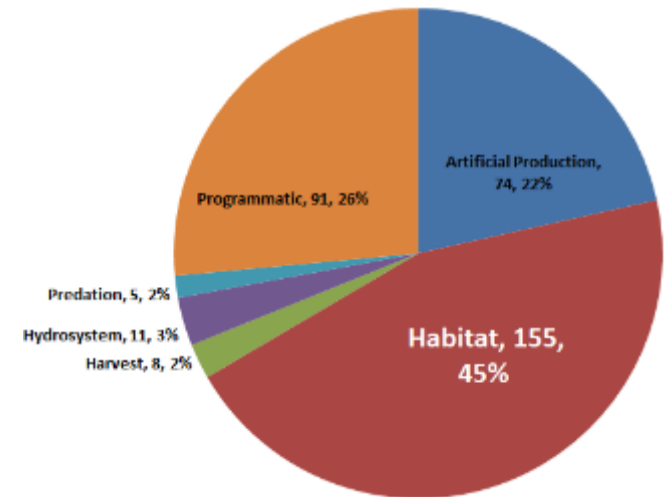
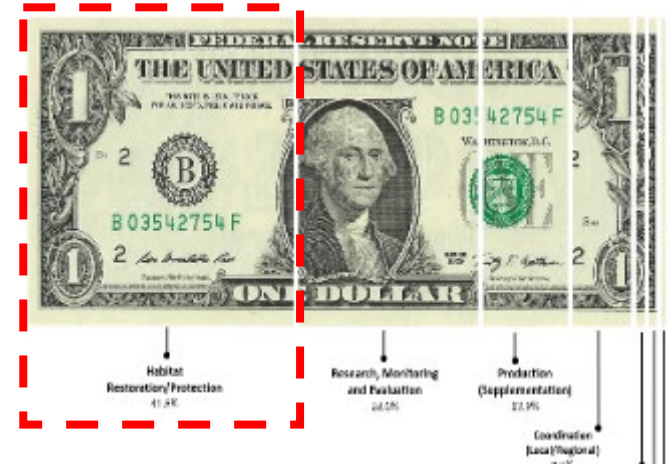


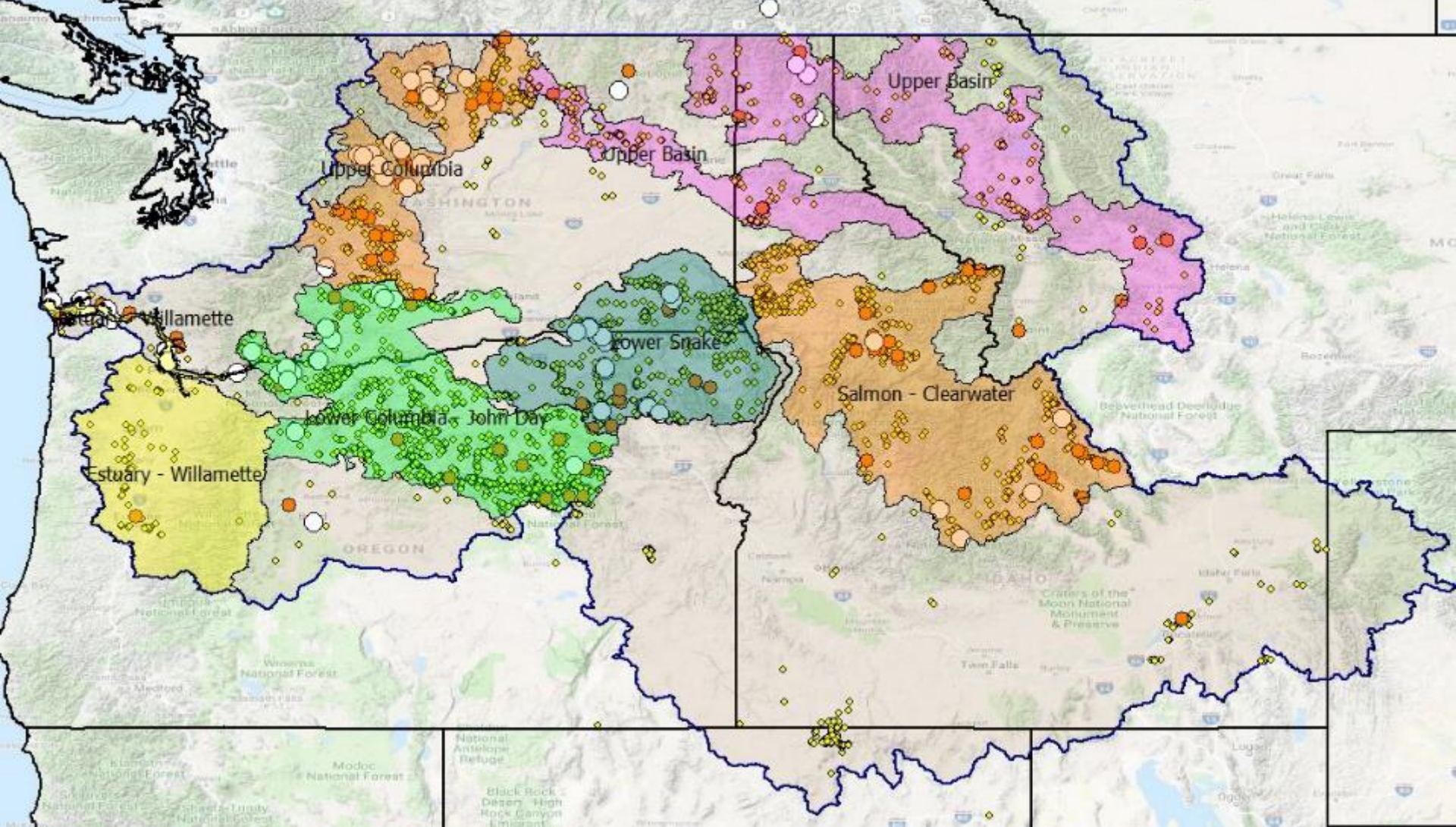
CRS Biological Opinions



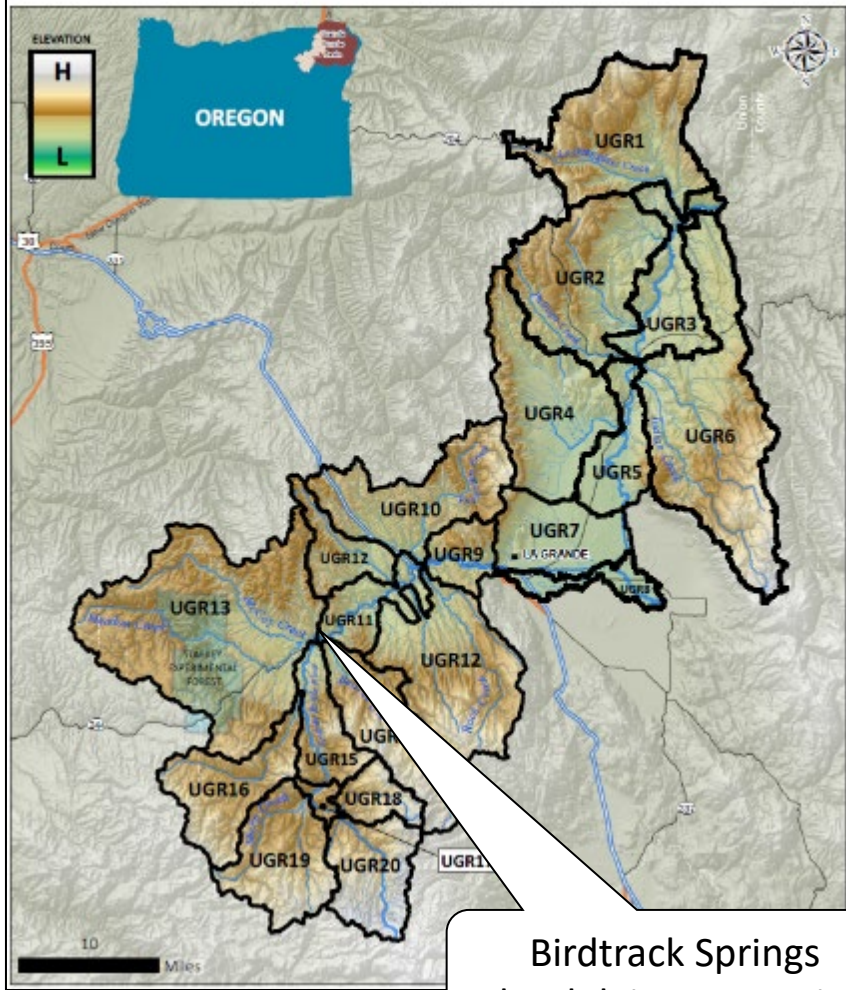
BPA Strategic Plan

BPA 2016-2023 Strategic Plan





Continue to support transition of F&W funded conservation programs from **opportunism** to a **strategic** approach where watershed conservation priorities are outlined and local partners are aligned around a common action plan that leverages respective abilities and supports integrated efforts to implementation.



Birdtrack Springs
Floodplain Restoration

2014 Council Program - Emerging Program Priorities:

2. Implement adaptive management by assessing the effectiveness of ongoing projects, and taking into account the effects of climate change

7. Continue efforts to improve floodplain habitats

The NOAA Science Center:

Actions are among the highest priorities for restoring salmon habitat and addressing climate change include:

- Removing barriers
- Reconnecting floodplains
- Restoring incised channels
- Improving streamflow

1996-083-00 Grand Ronde Watershed Restoration (CTUIR)

1992-026-01 Grande Ronde Model Watershed (GRMW)

1984-025-00 Grande Ronde-Umatilla Fish Habitat (ODFW)

CTUIR Grande Ronde Watershed Project

NPCC Project #1996-083-00

CTUIR's Restoration Goals & River Vision
 Restore Floodplain and Increase First Foods for Tribal Use



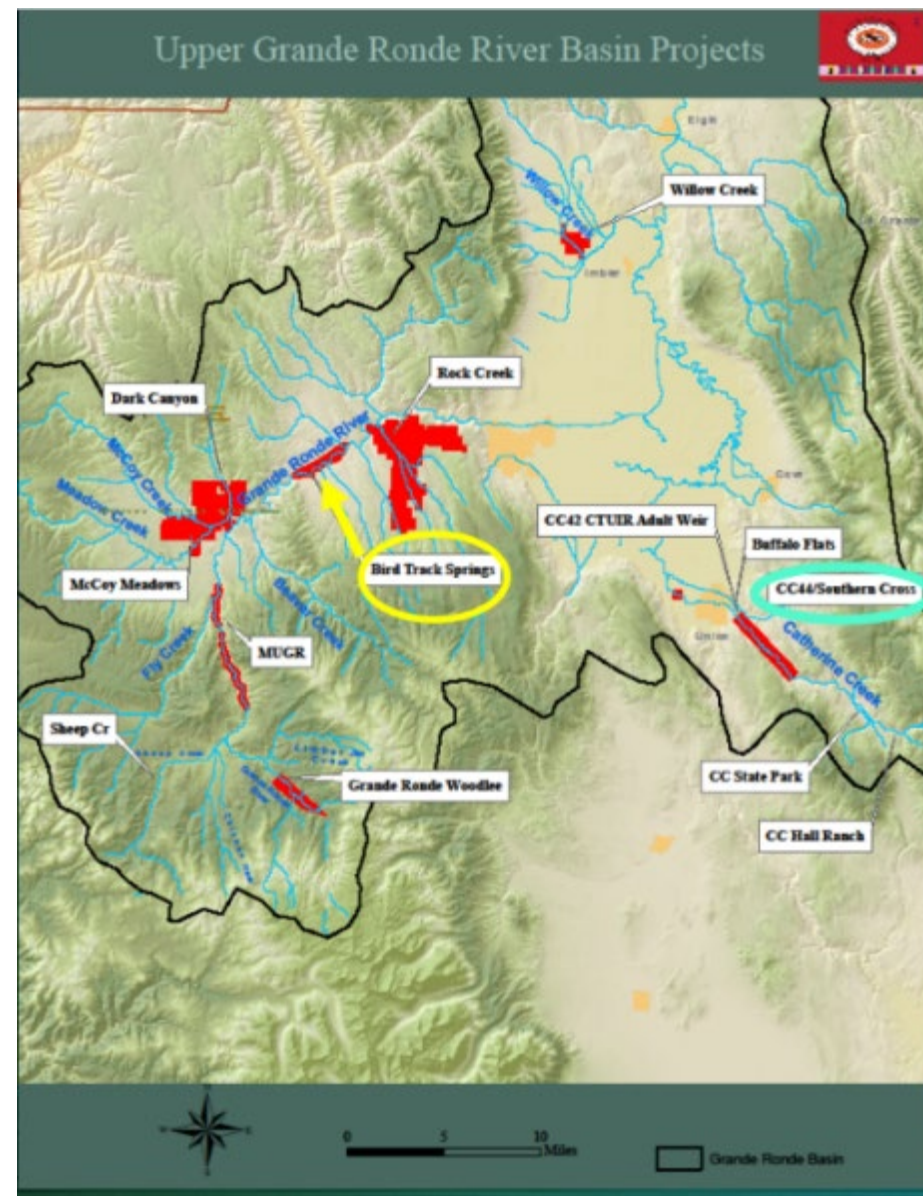
Hydrology	Geomorphology	Connectivity	Riparian Vegetation	Aquatic Biota
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CTUIR Grande Ronde Habitat Staff

- Allen Childs – Project Leader
- Jake Kimbro – Fish Biologist
- Travis Dixon – Fish Biologist
- David Mack – Fish Technician
- Dwayne Pecosky – Fish Biologist

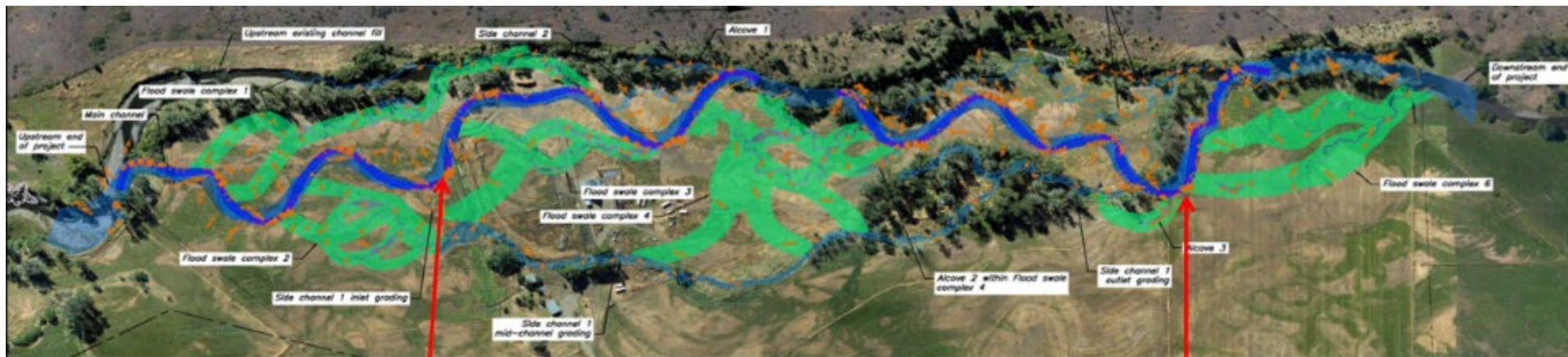
CTUIR Grande Ronde RME Staff

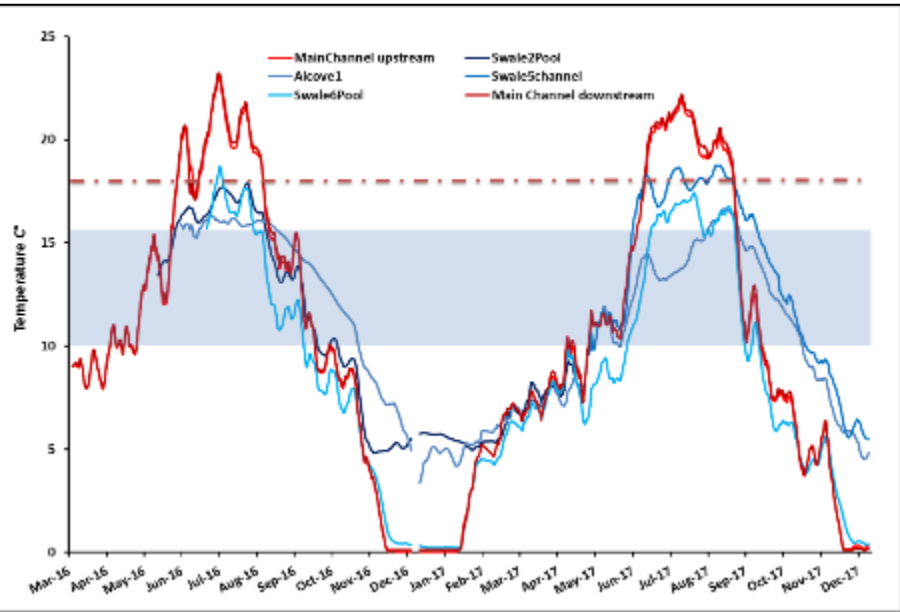
- Les Naylor – Project Leader
- Carrie Crump – Fish Biologist
- Andy Van Sickle – Fish Biologist



Catherine Creek – Southern Cross Fish Habitat & Floodplain Restoration

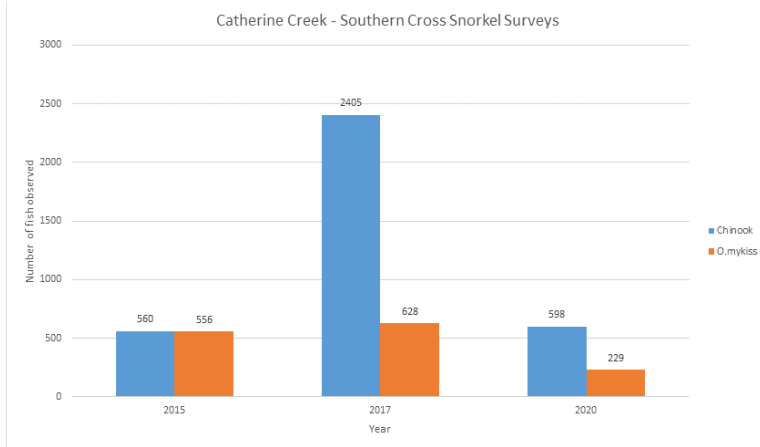
(Construction 2015 to 2016)





Southern Cross Chinook Spawning

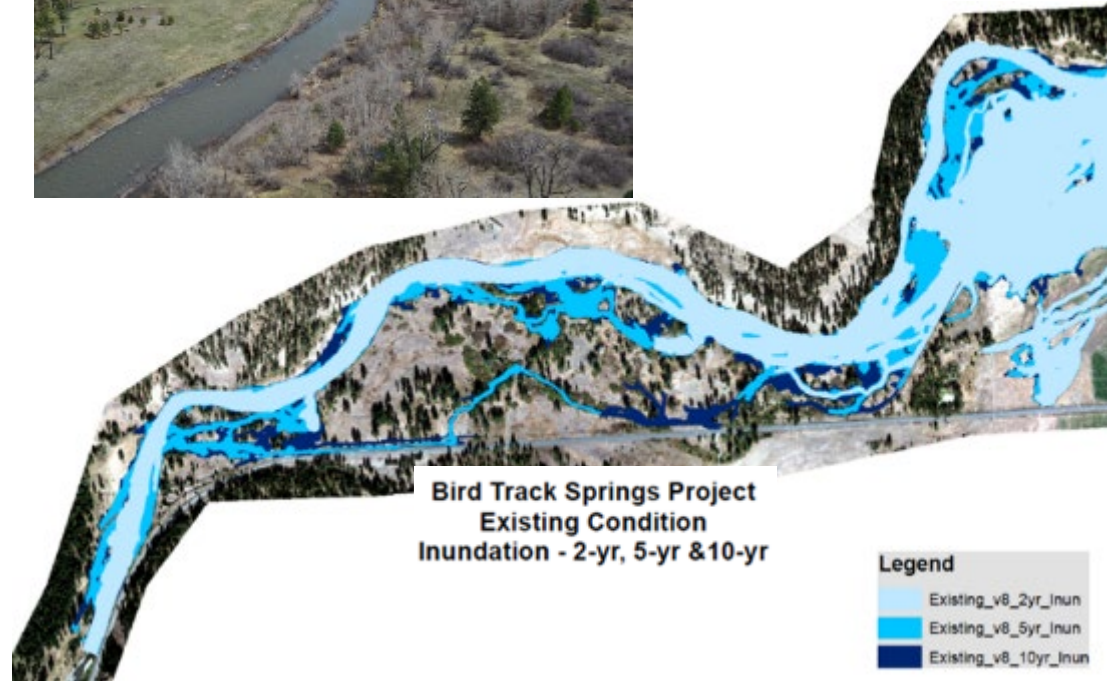
Year	SC Chk Redds	CC Total Redds	% of Total
2014	3	383	0.78%
2015	2	222	0.90%
2016	5	146	3.42%
2017	0	51	0.00%
2018	4	69	5.80%
2019	1	83	1.20%
2020	5	126	3.97%





Existing Conditions & Limiting Factors

- Disconnected Floodplain
- Over-widened & homogenous
- 70% loss of historic pools
- Lack of habitat complexity (wood)
- Embedded streambed
- Altered thermal regime



Project Planning & Design

Project Design Objectives

1. Geomorphic Planform

(“Floodplain is the River”.. Stan Gregory)

Plane Bed to “Forced Island-Braided” connected to floodplain

2. Wet the Sponge

Greater frequency & duration of floodplain inundation, groundwater & hyporheic connection

3. Water Temperature

Restore thermal diversity and refuge

4. Complexity and Diversity

Pools, riffles, runs and glides, side channels, alcoves, sediment, wood and riparian habitat

5. Side Channels & Alcoves

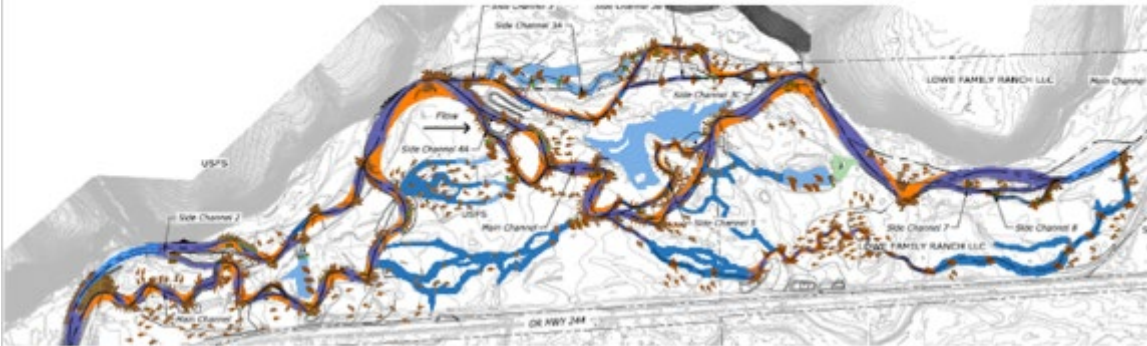
Off-channel, low velocity habitats

6. Riparian & Beaver Habitat Suitability

BIRD TRACK SPRING FISH HABITAT & FLOODPLAIN RESTORATION PROJECT
(Existing Condition)

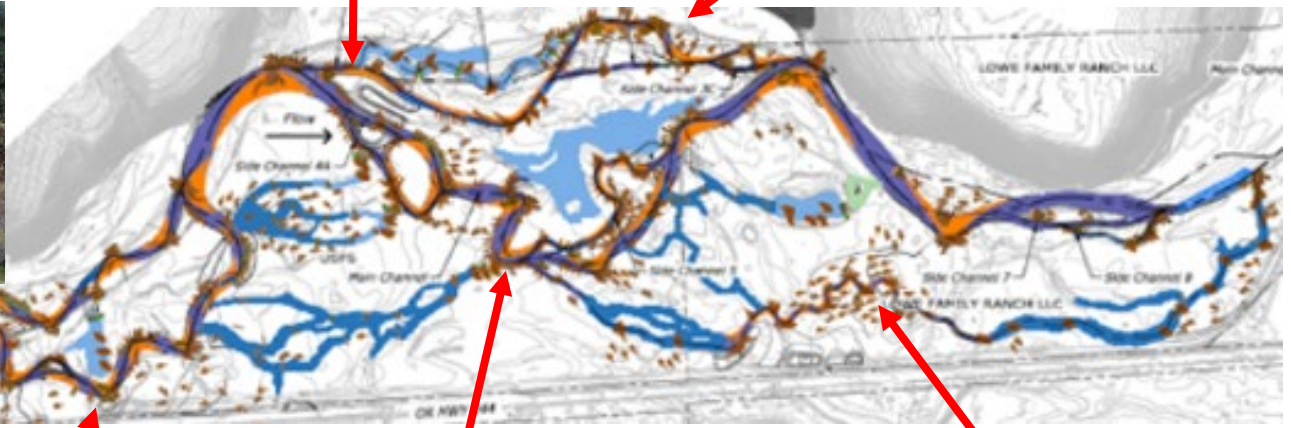


PROJECT DESIGN



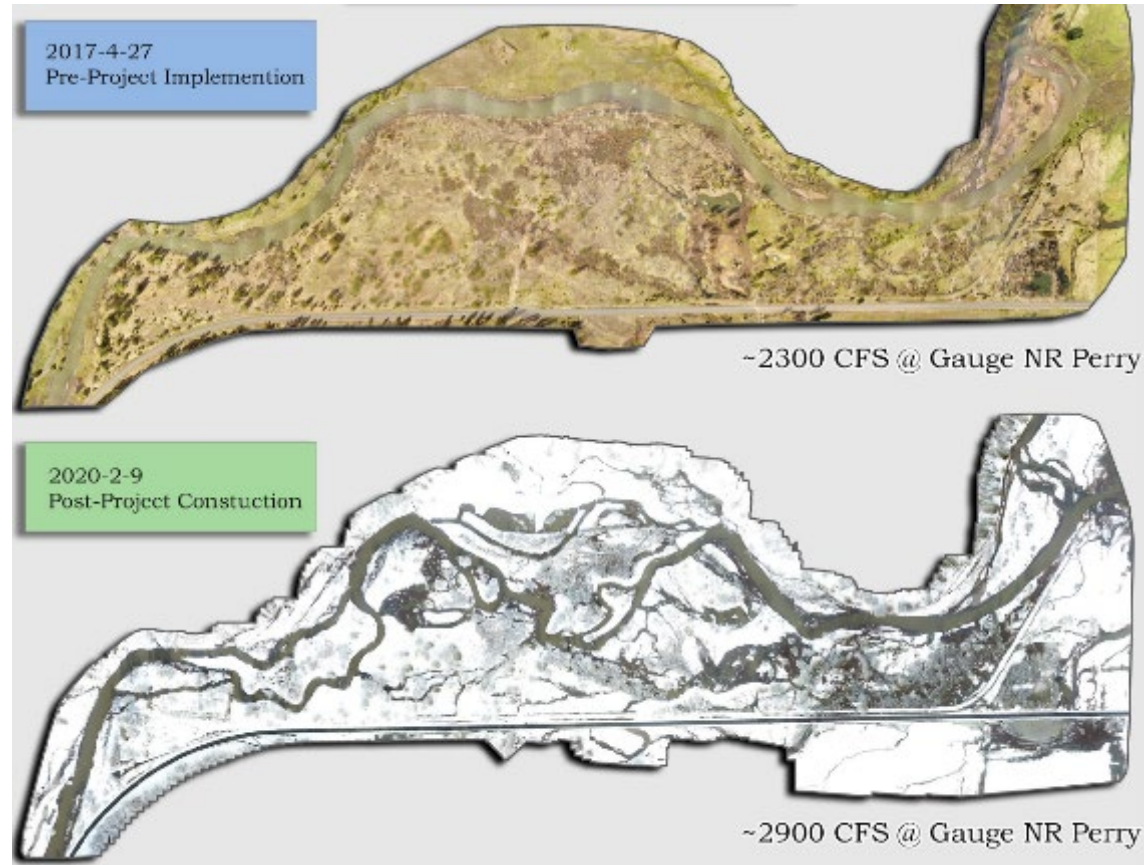
NOVEMBER 2019 ORTHO IMAGE (95% CONSTRUCTION COMPLETED)





Project Features

- ~**135** acres of reconnected historic floodplain
- 9,500 ft. new channel
- 1,200 ft. alcove
- 2,000 ft. Floodplain Swale
- **17** Large main channel pools (10 pools/mile, 900% increase)
- **47** Medium side channel pools (26 pools/mile)
- 300+ large wood structures
- 250+ floodplain wood structures
- 3,700 ft. streambank bioengineering



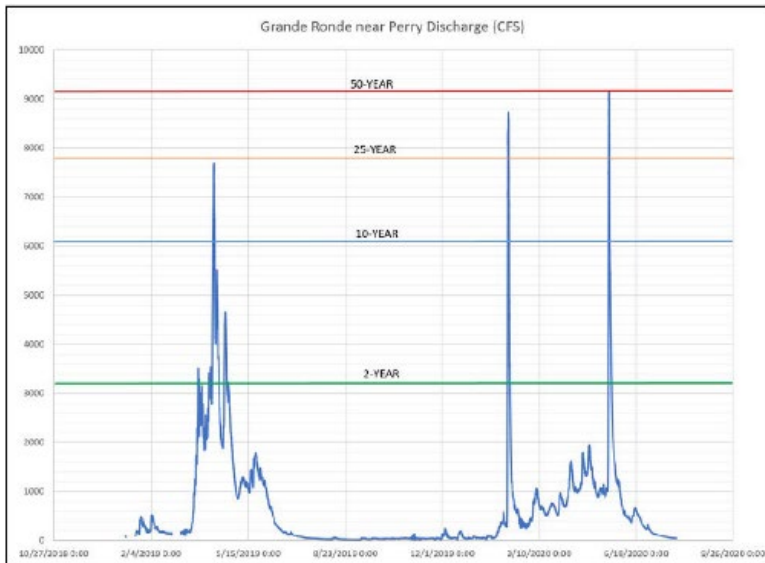
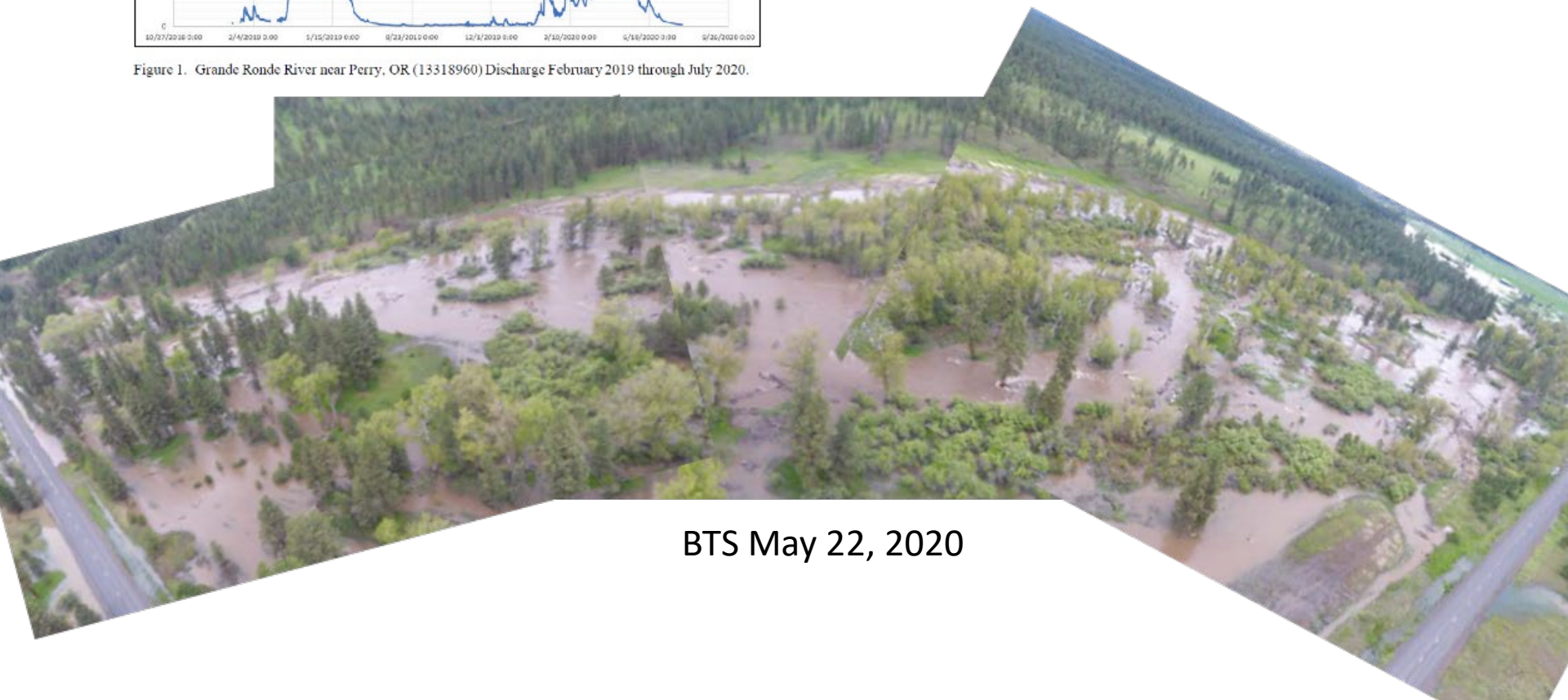


Figure 1. Grande Ronde River near Perry, OR (13318960) Discharge February 2019 through July 2020.

RANK	Date	Peak Flow
1	1/30/1965	9,424
2	1/1/1997	6,563
3	5/20/2020	6,320
4	2/7/2020	6,017
5	3/18/1932	5,935
6	3/31/1931	5,681
7	4/9/2019	5,306
8	5/16/2011	5,245
9	2/23/1986	5,234
10	5/8/1956	5,060

Table 1. The top 10 historical peak flows at Grande Ronde River below Jordan Creek measured and reconstructed for the project reach (at historic gauge 13318500, Grande Ronde near Hilgard, RM 142.9) from water years 1904-2020. Reconstructed flows are adjusted from measurements at gauges 13319000 and 13318960.



BTS May 22, 2020

MONITORING & EVALUATION

- Hyporheic and Cold Water Refuge Research *“How do stream and floodplain rehabilitation practices create or enhance thermal refuge at different spatial scales?”*
- Water and air temperature
- Groundwater (temp & elevations)
- Flow (Stage Recorders)

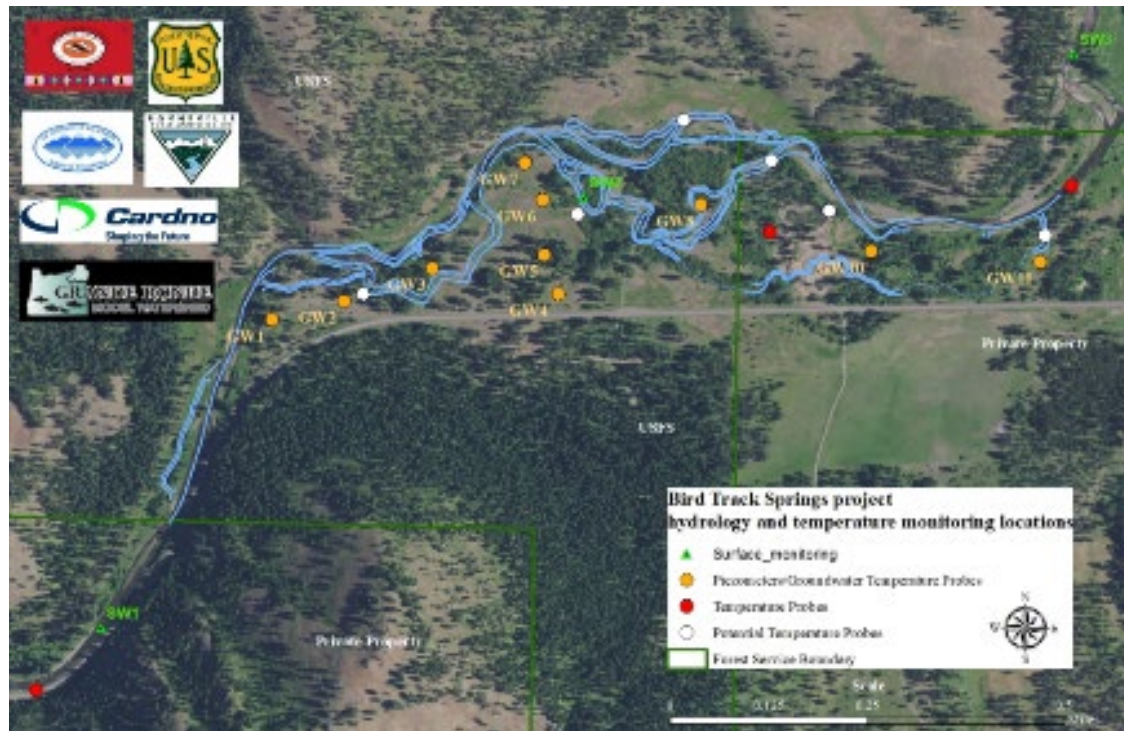
Spawning surveys

Snorkel surveys

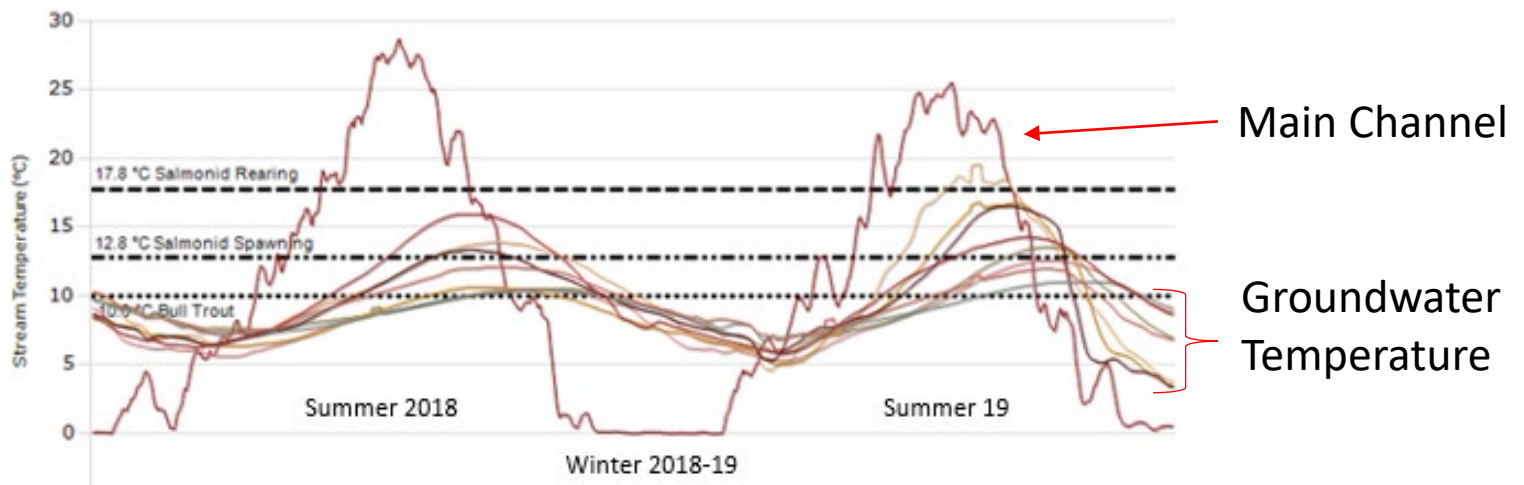
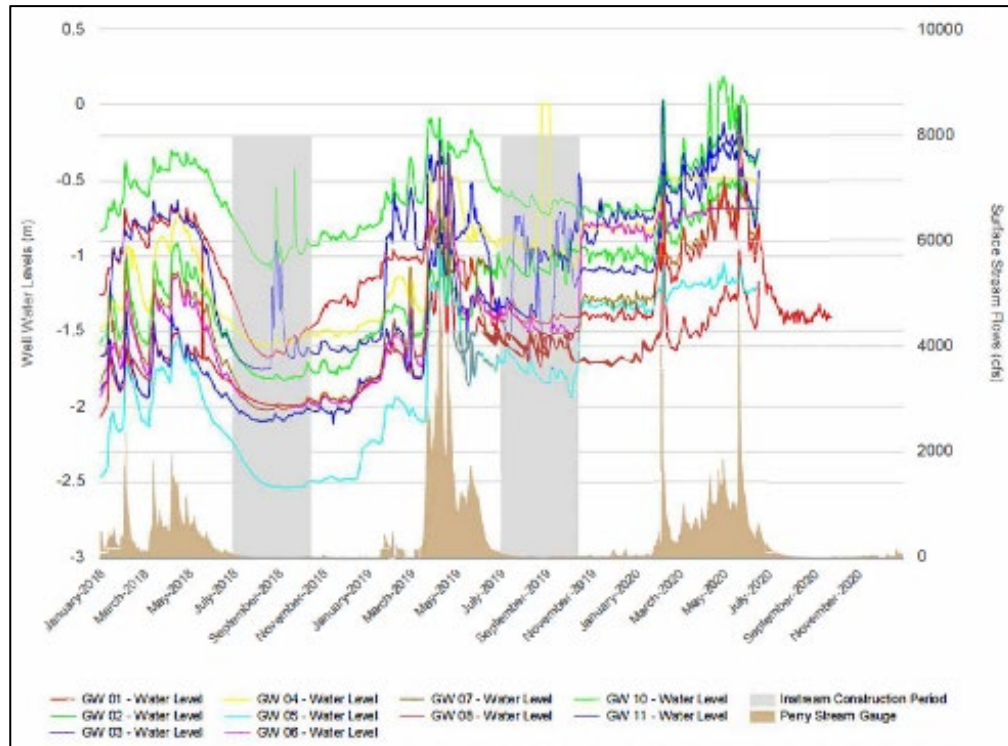
Habitat & Morphology

Remote Sensing (drone, LIDAR, FLIR)

Photo points and ortho imagery



Temperature & Groundwater Evaluations

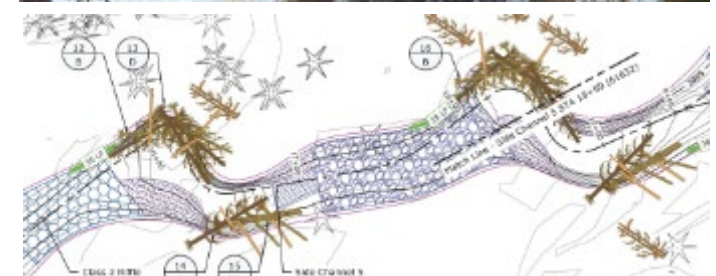
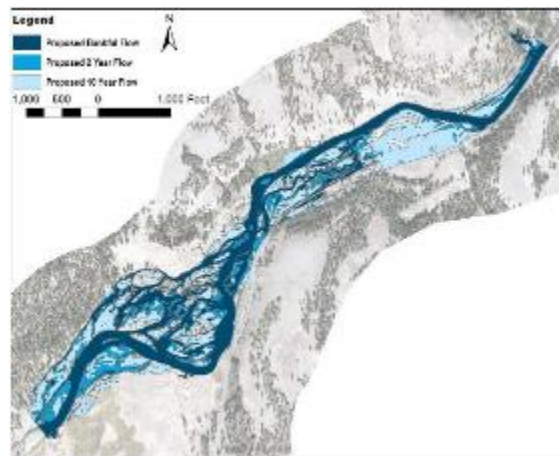
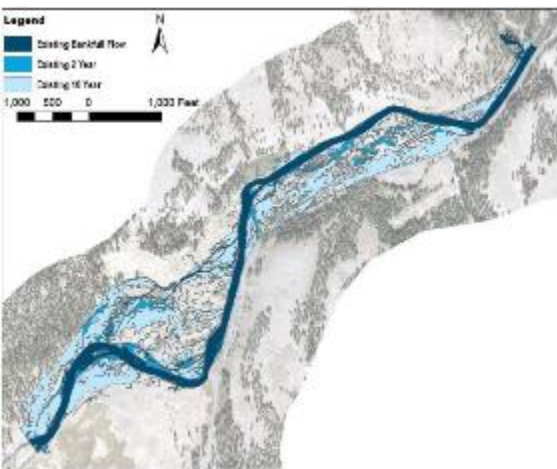
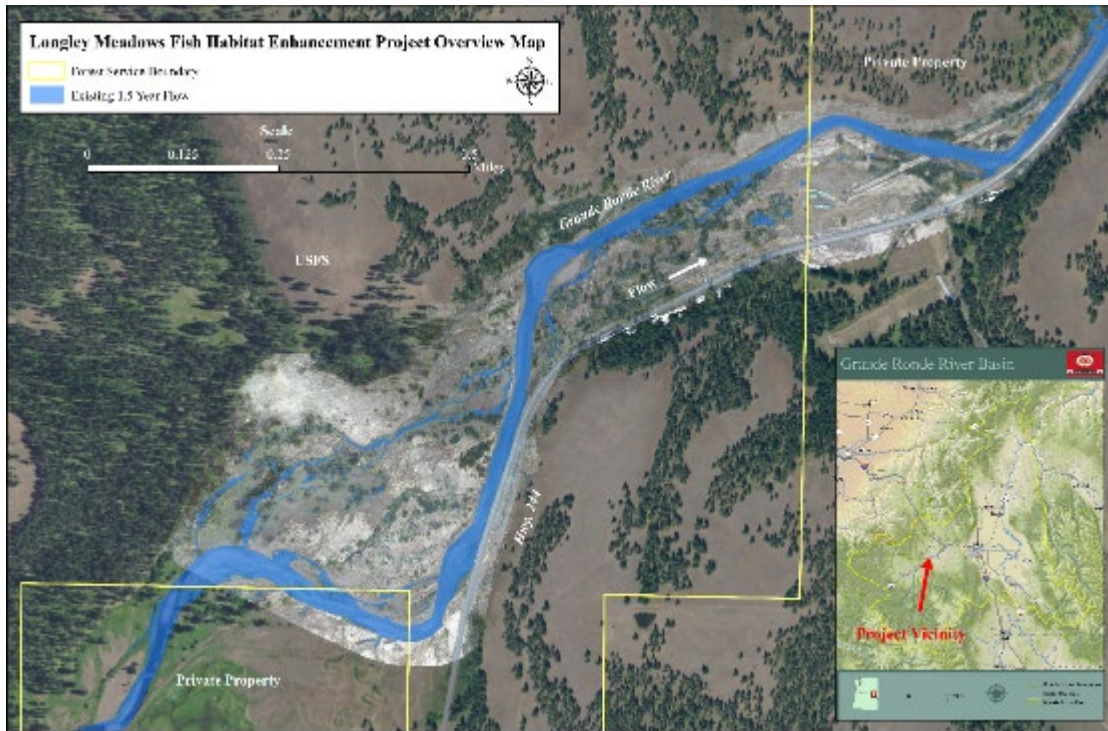


Grande Ronde River Longley Meadows Project

Year 1 Construction (Oct-Dec 2020)
Project Completion Nov 2021

2 Mile Project Reach

- 70 acres floodplain restoration
- 0.54 miles new main channel
- 1.4 miles side channel
- 450 ft. alcove



Thank You



Questions

