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

August 8, 2023

MEMORANDUM

TO: **Council Members**

FROM: **Mark Fritsch**

SUBJECT: **Update on Project *#1992-026-01,* Grande Ronde Model Watershed**

BACKGROUND:

Presenter: Jesse Steele, Executive Director, Grande Ronde Model Watershed (GRMW)

Summary: Jesse will provide an update and overview of the accomplishments administered by this project that coordinates watershed restoration within the Grande Ronde River and Imnaha River subbasins of Northeastern Oregon. The watershed activities are focused on habitat protection, restoration and enhancement for salmon and steelhead and other native fishes, while encouraging and supporting land and water management, economics, and multiple land uses consistent with sound ecosystem management.

This presentation was requested as part of the Council recommendation associated with the Anadromous Fish Habitat and Hatchery Review in April 2022. The periodic presentation is intended to provide an update on the project's accomplishments and results. No decision is needed at the meeting.

Relevance: [Project #1992-026-01, *Grande Ronde Model Watershed*](#) is one of the seven umbrella[1] projects supported by the Fish and Wildlife Program. The

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[1] see page 2 for information regarding the Program's umbrella projects.

project uses a comprehensive watershed management approach, using structured and science-based decision tools to enhance implementation of on the ground activities, resolve conflicts, and formulate priorities for action.

Workplan: Fish and Wildlife Division work plan 2023; Program planning & coordination.

Background: The GRMW Program is located in the Blue Mountain Province and incorporates the Grande Ronde River and Imnaha River subbasins. The area includes 5,265 square miles of land and over 4,000 stream miles of salmonid habitat in Oregon's Union and Wallowa Counties as well as a portion of Asotin County, Washington. Approximately 54 percent of the Grande Ronde Subbasin and 30 percent of the Imnaha Subbasin are privately owned.

Established in 1992, the GRMW's goal is to develop and oversee the implementation, maintenance and monitoring of coordinated watershed enhancement and restoration activities. At that time, the Grande Ronde River was selected by the Council as the model watershed project in Oregon managed by a Board of Directors, composed of local representatives and agency personnel involved with the multiple uses of natural resources within the basin.

As a model watershed, the GRMW was designed to serve as an example for the establishment of watershed management partnerships among local residents, state and federal agency staff, and public interest groups concerned with the management of a watershed at a locally-based effort to improve coordination, integration, and implementation to effectively protect and restore fish and wildlife habitat, improve water supply and quality, and foster community development within the region.

Umbrella Projects

Umbrella projects are a smaller subset of the projects (#7) currently being implemented through the Program. These umbrella projects are unique, because of the coordination role they play in a particular sub-region, and also because of their approach to their implementation in offering a solicitation and review process that can fund local entities to implement projects. The funding, review and selection process is much like a mini-grant program for the area. The science review that would normally occur through an Independent Science Review Panel (ISRP) review occurs at the local level with ISRP-reviewed criteria and local technical teams. While the processes differ slightly in each area the umbrella projects under this recommendation are largely defined by their approach to: 1) serve as a coordinating entity among sponsors in a particular sub-region to identify, review, and select projects; 2) use a formal project solicitation process;

and 3) allocate and administer Bonneville funds to other entities for implementation.

In 2013, as part of the Geographic Category Review in 2013, the Council formalized and established a set of principles to guide umbrella habitat projects were identified and discussed in the review decision document as Programmatic Issue B - *Evaluate and Improve Umbrella Projects*. Umbrella projects are a unique subset of the habitat projects implemented through the Program because of the coordination role they play in a particular subregion and their offering of a project solicitation and review process that can result in local entities implementing habitat projects with Program funds.

All the Program's Umbrella Projects (except the lamprey project[2]) were part of the recently completed Anadromous Fish Habitat and Hatchery Review in April 2022. As part of the Council decision associated with this review the Council confirmed the importance of the umbrella projects and the principles as established in 2013 and 2017, with the exception that the report that was requested by Council annually (i.e., Principle #6) will no longer be a required, but requested that the sponsors of the umbrella projects present to the Council biennially on their accomplishments and results at appropriate times for the region.

More Info:
- Grande Ronde Model Watershed website
- BPA Annual Report 2022
- Grande Ronde Model Watershed Synthesis, 1992-2016
- Publications
  - The Grande Ronde Model Watershed: Integrating Science into Restoration Implementation and Adaptive Management
  - A comparison of methods for estimating juvenile salmon habitat capacity to assist with restoration planning and evaluation

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[2] In 2017, Project #2017-005-00, Pacific Lamprey Conservation Initiative was included with the original umbrella projects. It is implemented with the guidance established in the Council's 2013 recommendation through the established principals for the benefit of Pacific Lamprey.

Grande Ronde Model Watershed
1992-026-01
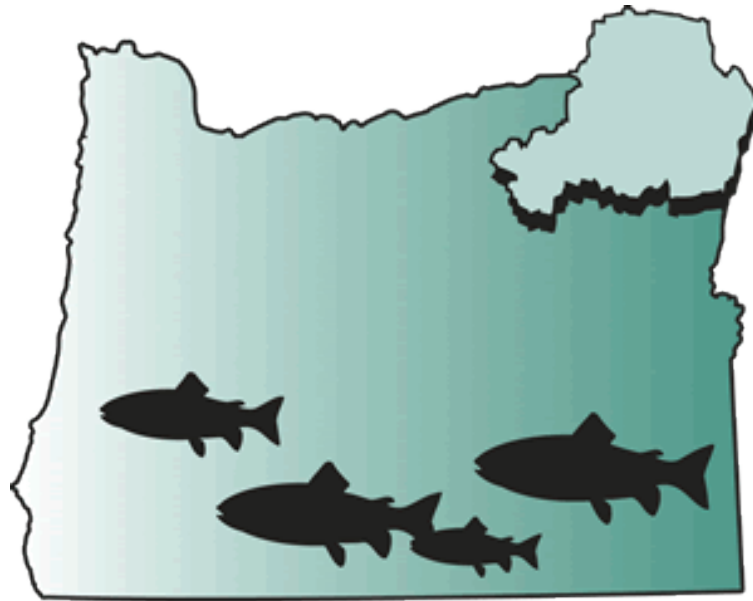
The mission of the Grande Ronde Model Watershed Program is to develop and oversee the implementation, maintenance and monitoring of coordinated resource management that will enhance the natural resources of the Grande Ronde River and Imnaha River Basins.
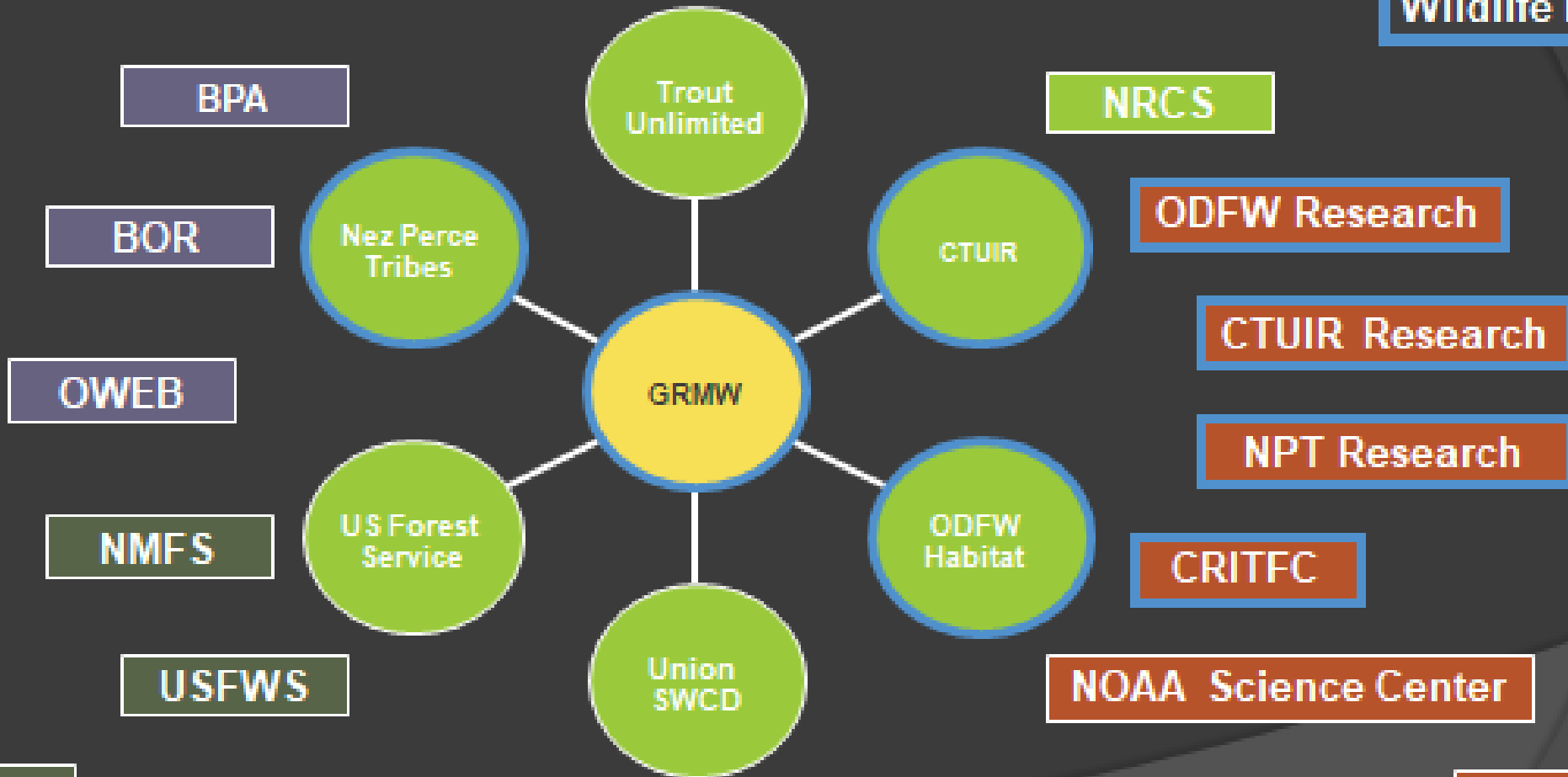
Outline

- **Grande Ronde Partnership**
- **History of GRMW Program**
- **Restoration Prioritization in the Grande Ronde and Imnaha Basins**
- **Recent Accomplishments**
  - **Projects & Project Evaluations**
  - **Outreach**
  - **Assessments**
- **Future Work**

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Grande Ronde & Imnaha River Subbasin Atlas Partners

Funding & Technical Support

Implementation

NPCC Fish & Wildlife Program

BPA

Trout Unlimited

NRCS

BOR

Nez Perce Tribes

CTUIR

ODFW Research

CTUIR Research

OWEB

GRMW

NPT Research

NMFS

US Forest Service

ODFW Habitat

CRITFC

USFWS

Union SWCD

NOAA Science Center

Regulatory & Cost Share

Research & Monitoring

History of Oregon's "Model Watershed"

Grande Ronde & Imnaha Basins

- 1991 - Northwest Power & Conservation Council (Formed by the Power Act) recommended a **locally led** effort to habitat restoration
  - Model Watersheds in OR, ID, WA
- 1992 - designated 'Model Watershed' by Governor Barbara Roberts and NPCC
- 1992 - Union and Wallowa County Commissioners appointed GRMW Board of Directors and hired an executive director.
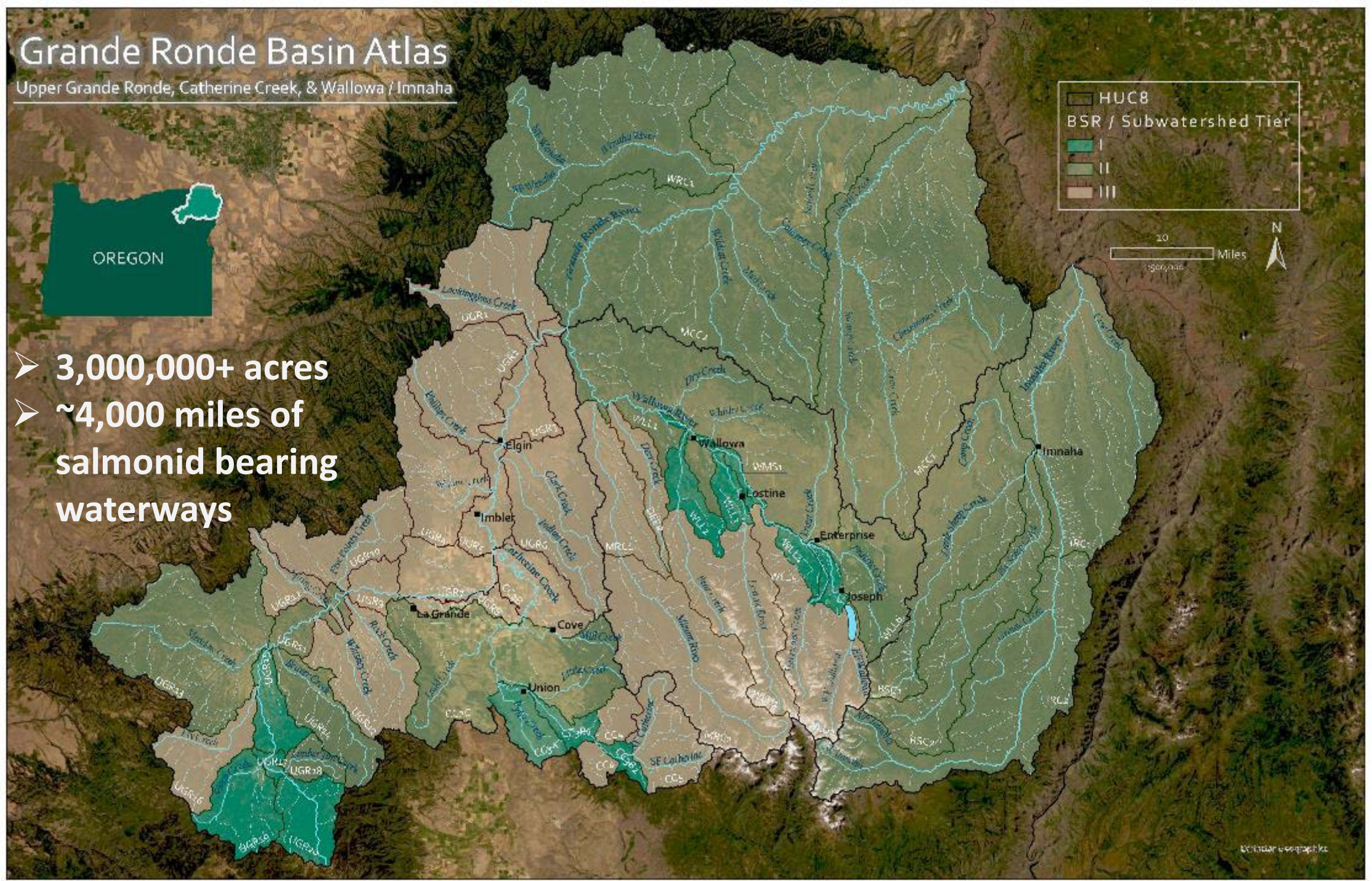
Grande Ronde Basin Atlas

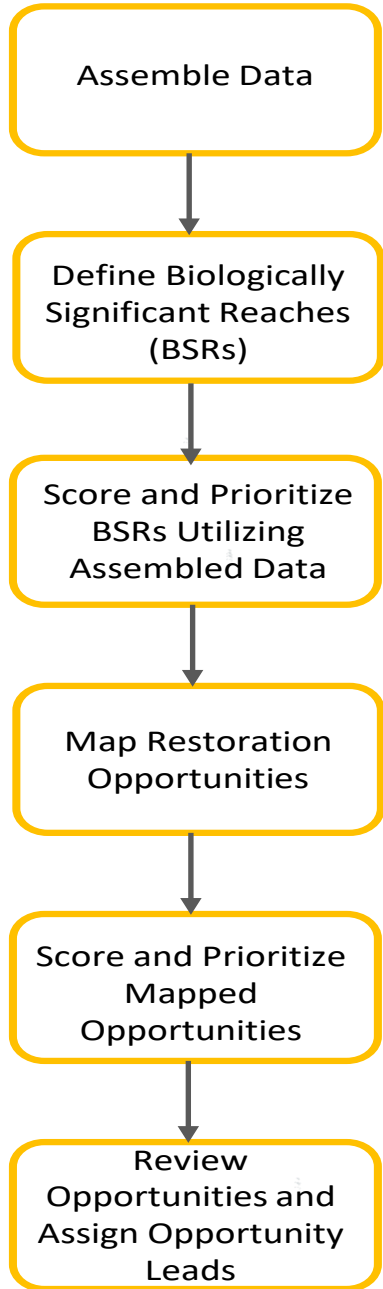Upper Grande Ronde, Catherine Creek, & Wallowa / Imnaha

OREGON

➢ 3,000,000+ acres
➢ ~4,000 miles of salmonid bearing waterways

The Atlas Structure
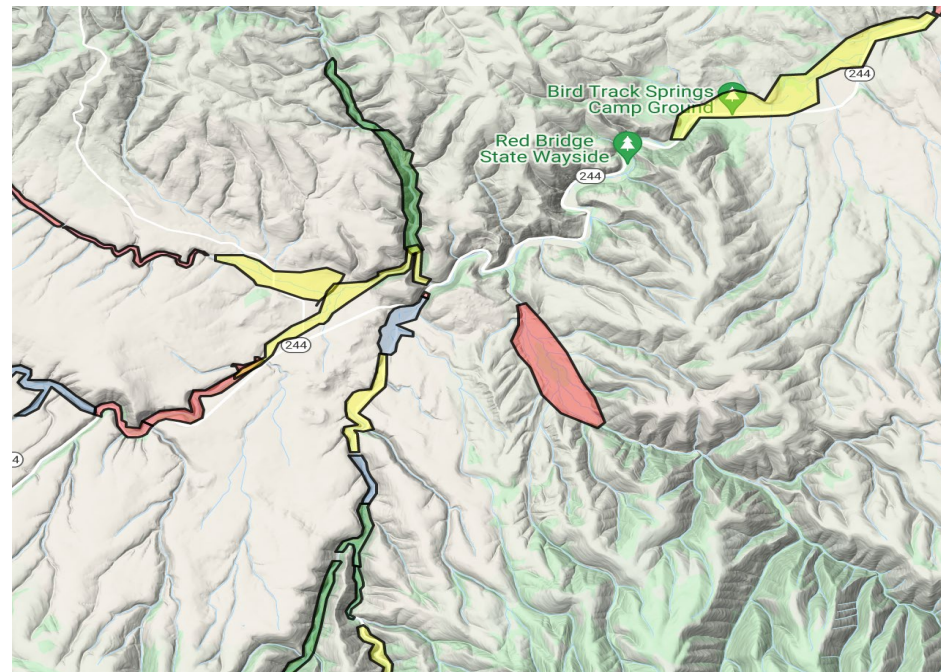
- Assemble Data
- Define Biologically Significant Reaches (BSRs)
- Score and Prioritize BSRs Utilizing Assembled Data
- Map Restoration Opportunities
- Score and Prioritize Mapped Opportunities
- Review Opportunities and Assign Opportunity Leads

BSR Name	Condition	Geomorphic	Periodicity	Fish use	Total Score
UGR 17	25	3	22	24	99
UGR-20	25	5	25	21	101
UGR-15	25	0	22	24	96
UGR-19	25	0	23	25	98

The Stepwise Process

- Create Prospectus with Implementation Team
- Review Prospectus

IT Feedback

- Proposal Phase – Submit Draft Proposal
- Site Visit & Technical Review
- Proposal Phase – Revise & Submit Final Proposal

Board Decision

- Approval for Funding (Yes/No)
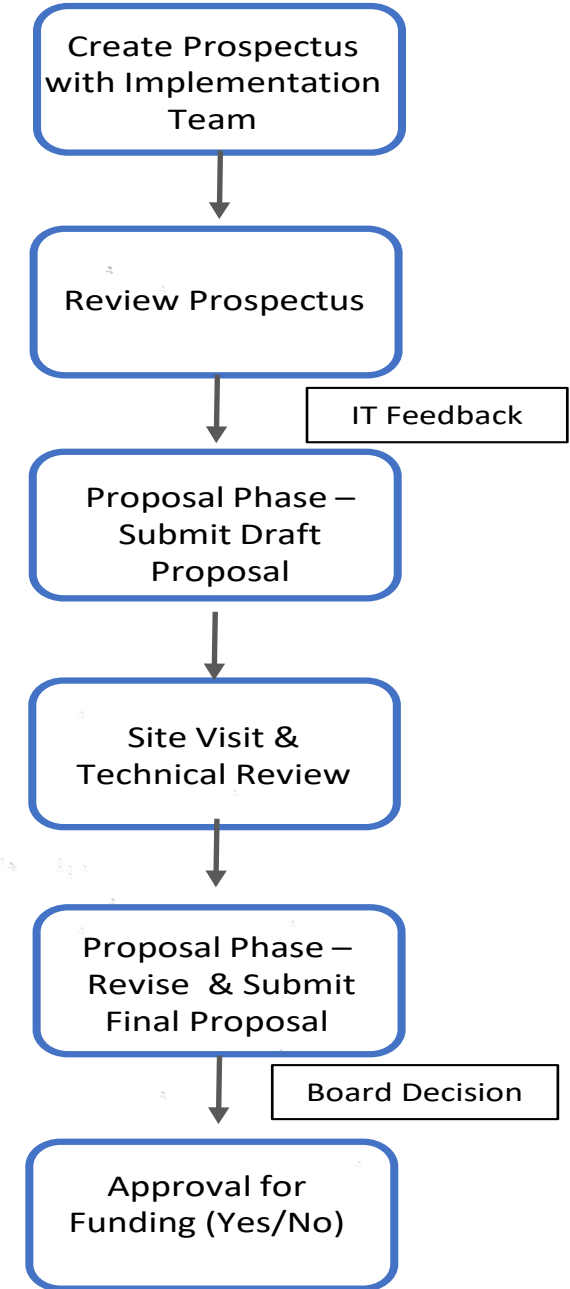
GRANDE RONDE
MODEL WATERSHED
PROJECTS COMPLETED
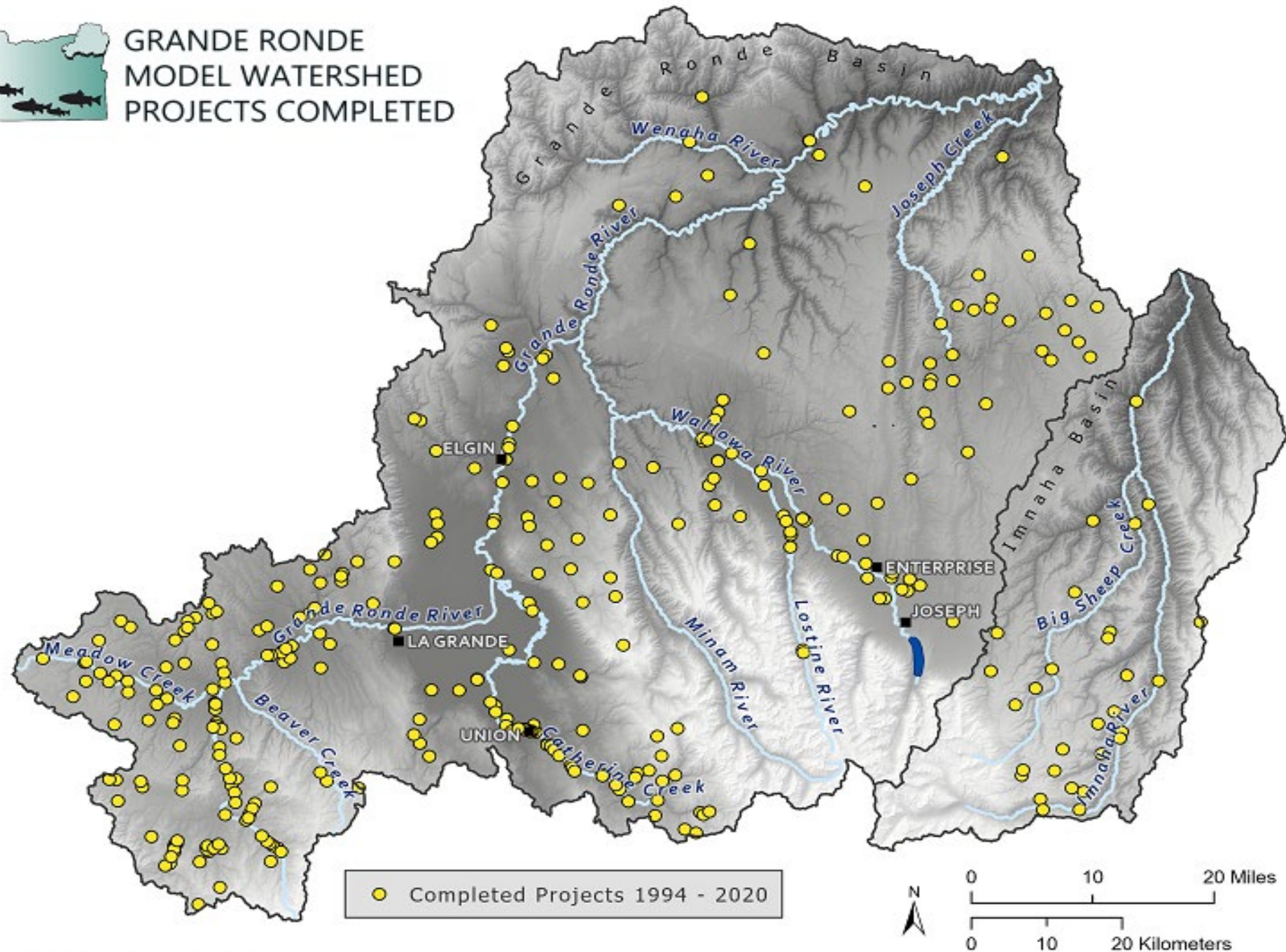
Grande   Ronde   Basin

Wenaha River

Joseph Creek

Grande Ronde River

ELGIN

Wallowa River

Grande Ronde River

LA GRANDE

ENTERPRISE

JOSEPH

Imnaha Basin

Big Sheep Creek

Meadow Creek

Beaver Creek

Minam River

Lostine River

UNION

Catherine Creek

Imnaha River

Completed Projects 1994 - 2020

N

0   10   20 Miles

0   10   20 Kilometers

WGS 1984 UTM ZONE 11N - 1:675,000
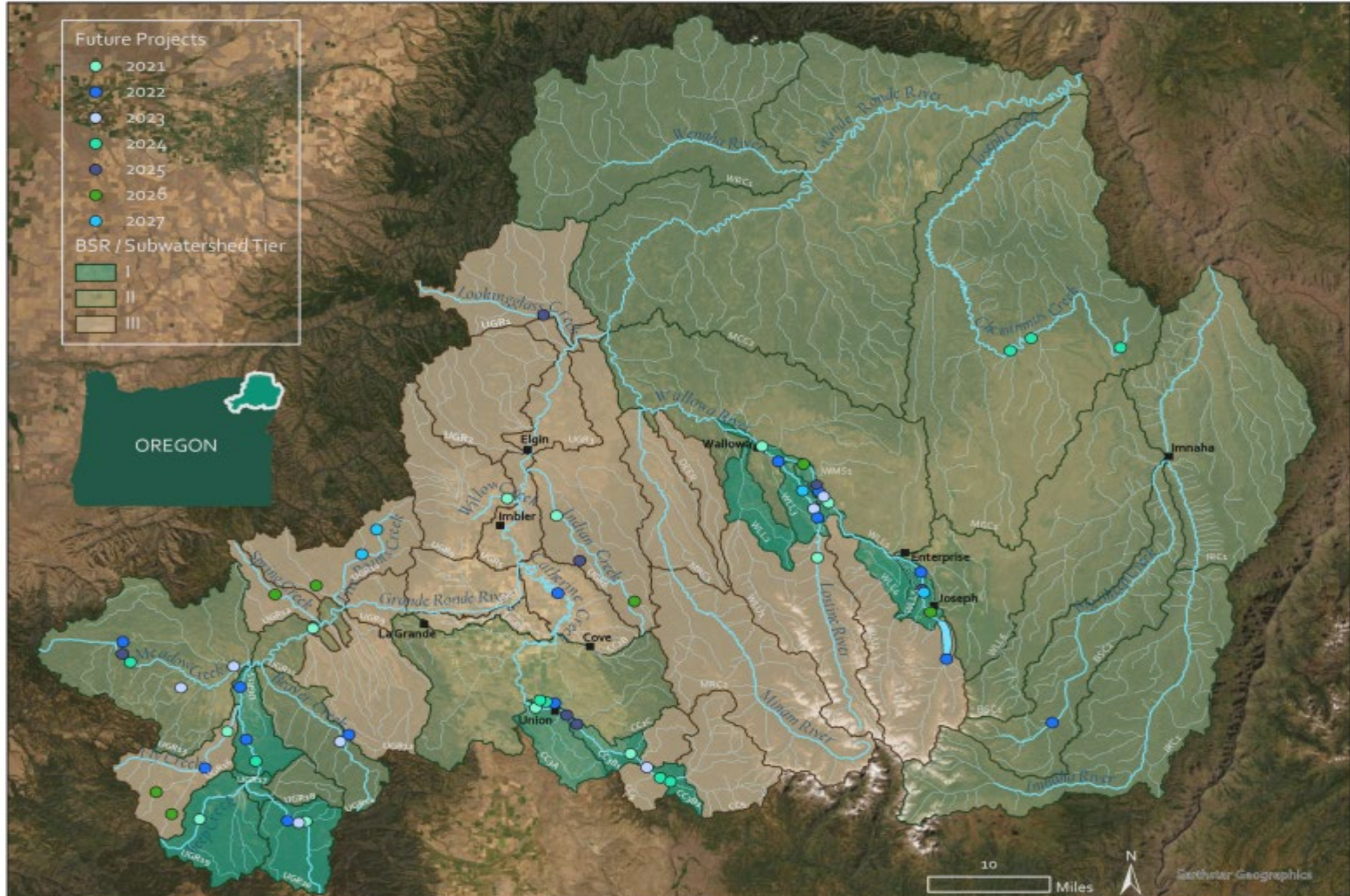
Upper Grande Ronde Woodlee Project Evaluation 2019

Metric	Calculated from	Before	After	Δ%
Floodplain area (m^2)	Floodprone width	181,665	209,410	+15%
Floodplain inundation index	Floodprone width	82.63	96.80	+17%
Number of side channels	Bankfull width	8	13	+63%
Side channel length (m)	Bankfull width	1393	2082	+49%
Side channel area (m^2)	Bankfull width	10,225	16,951	+66%
Residual pool depth (m)	Thalweg profile	0.47	0.54	+15%
Sinuosity	Thalweg profile	1.37	1.42	+4%
River complexity index	Bankfull width	1.06	1.57	+49%
Bankfull width to depth ratio	Bankfull width	8.71	6.31	-28%
Morphological quality index	Bankfull width	0.84	0.86	+2%
Pool area (m^2)	Bankfull width	2,590	2,893	+12%
Percent pool	Bankfull width	11%	17%	+55%
Shannon diversity index	Bankfull width	0.64	0.73	+14%

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Upper Grande Ronde River Bowman Project and Middle Upper Grande Ronde River Restoration 2023

1990s

2016

Sheep Creek Restoration 2013-2023

FOREST SERVICE
U S
DEPARTMENT OF AGRICULTURE

TROUT UNLIMITED

2013

2019

BONNEVILLE
POWER ADMINISTRATION

OREGON WATERSHED ENHANCEMENT BOARD
OWEB

Wallowa River Wilson-Haun Restoration Project 2021

2020-10-29

2022-9-21

BONNEVILLE POWER ADMINISTRATION

TROUT UNLIMITED

GRANDE RONDE MODEL WATERSHED
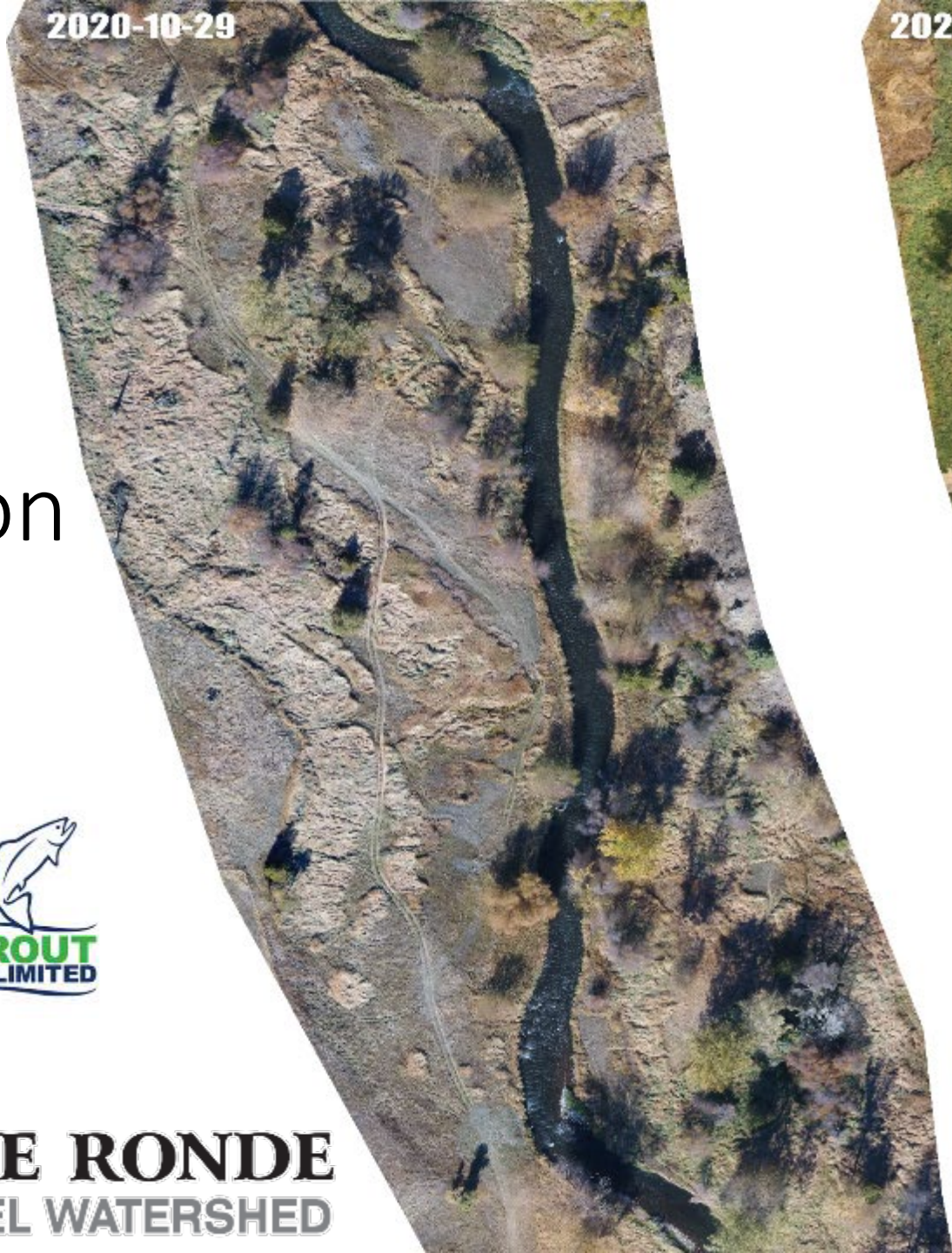
Wallowa River Wilson-Haun Restoration Project 06/13/2023

Technical Assessments – Fish Predation in the Grande Ronde Valley

Length Distribution — ridgeline plot of length distribution (Length in mm, bins from 0-49 to 500-549) for: Yellow Perch, White Crappie, Smallmouth Bass, Redside Shinner, Pumpkinseed, Northern Pikeminnow, Largescale Sucker, Largemouth Bass, Common Carp, Chiselmouth, Brown Bullhead, Bridgelip Sucker.

MOUNT HOOD ENVIRONMENTAL

Grande Ronde Valley Water Quality Assessment
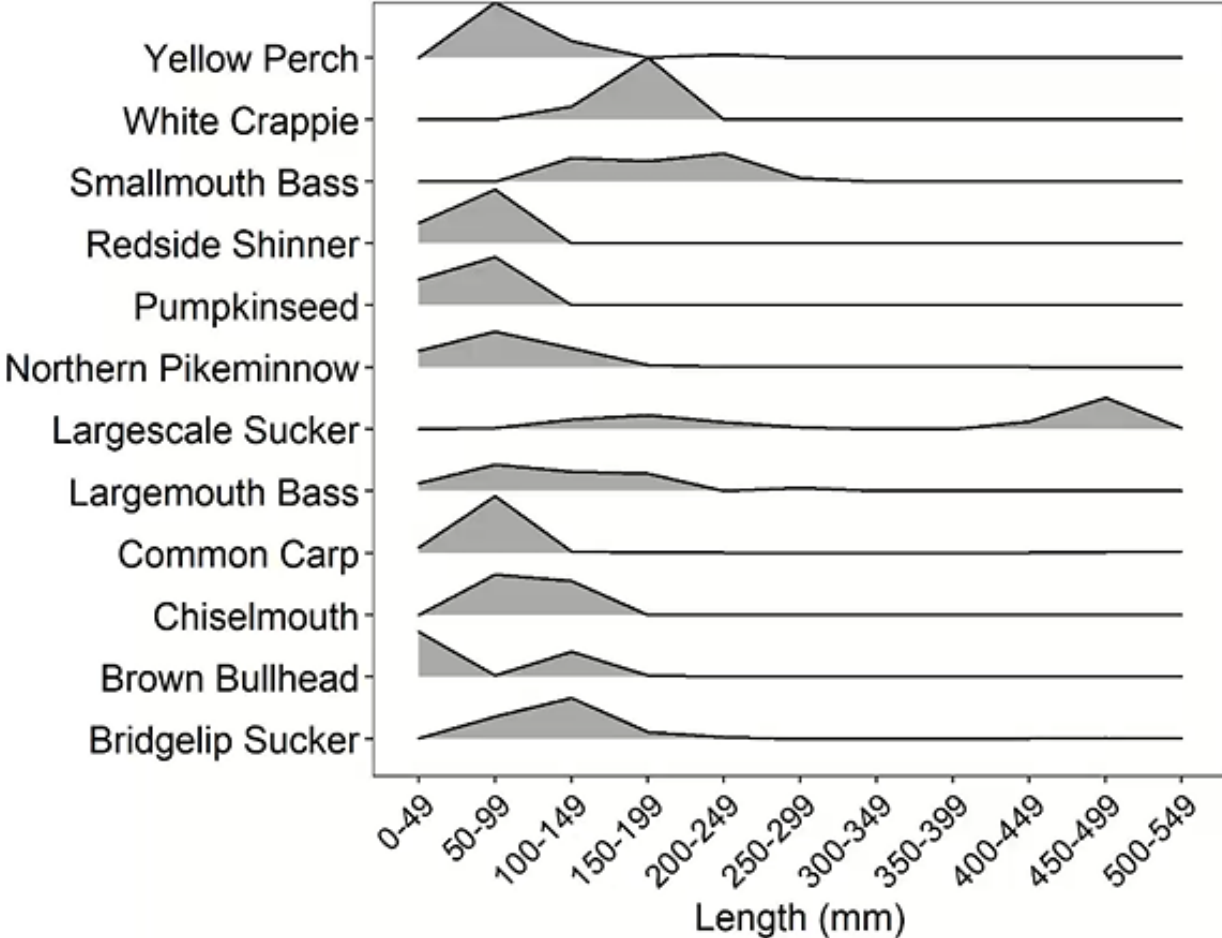
Site	Site Description	Sampling Dates	WQ Exceedances
2	Catherine Creek below the Union Wastewater Treatment Plant (WWTP) Outfall (CCUB)	11/6/2020	copper = 14.6
		1/13/2021	
		3/9/2021	
		4/25/2021	
		8/2/2021	
4	Ladd Creek at Peach Lane (LCPL)	11/6/2020	dissolved oxygen
		1/13/2021	
		3/9/2021	copper = 33.7
		4/25/2021	dissolved oxygen
		8/2/2021	
5	Grande Ronde River in Island City (GRIC)	11/6/2020	
		1/13/2021	copper = 22.2
		3/9/2021	
		4/25/2021	
		8/2/2021	
6	Grande Ronde River at Market Lane (GRML)	3/9/2021	
		4/25/2021	
		8/2/2021	copper
7	Catherine Creek Market Lane Bridge (CCML)	3/9/2021	
		4/25/2021	
		8/2/2021	dissolved oxygen
10	Grande Ronde River near confluence with Fly Creek (GRFC)	3/9/2021	copper = 7.2
		4/25/2021	
		8/2/2021	

- 2 year contract with Anderson Perry & Associates due to end in 2022

- 10 sample site locations; 5 samples per year at predefined intervals

- The copper exceedances listed in the table are at the acute level
  - >5.5 = acute
  - >4.1 = chronic level

UGR Sediment Budget Summary

UGR Implementation Team Meeting – July 21, 2022

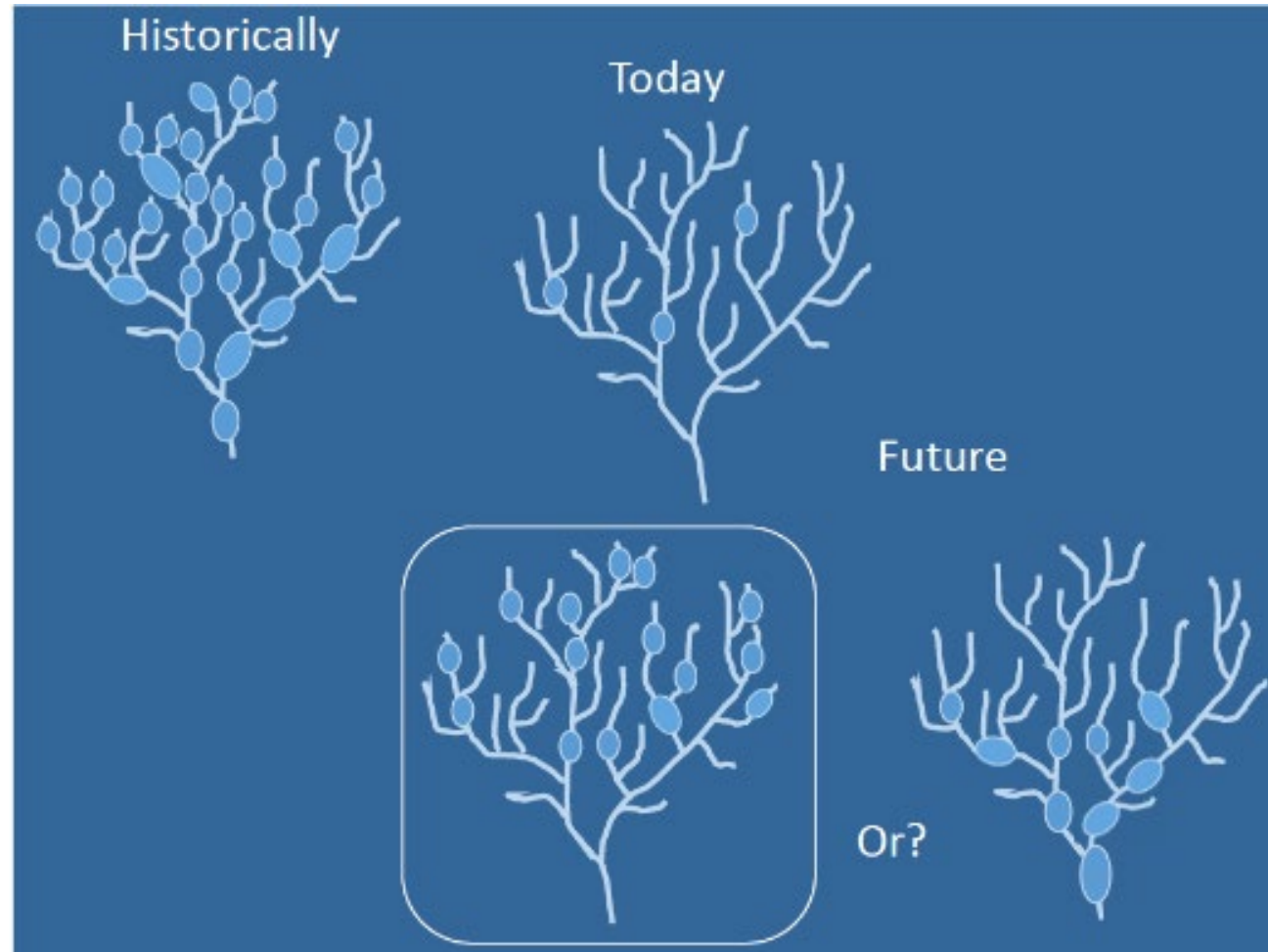Luke Russell, GIT, Nick Legg, RG, Colin Thorne, PhD (Wolf Water Resources)
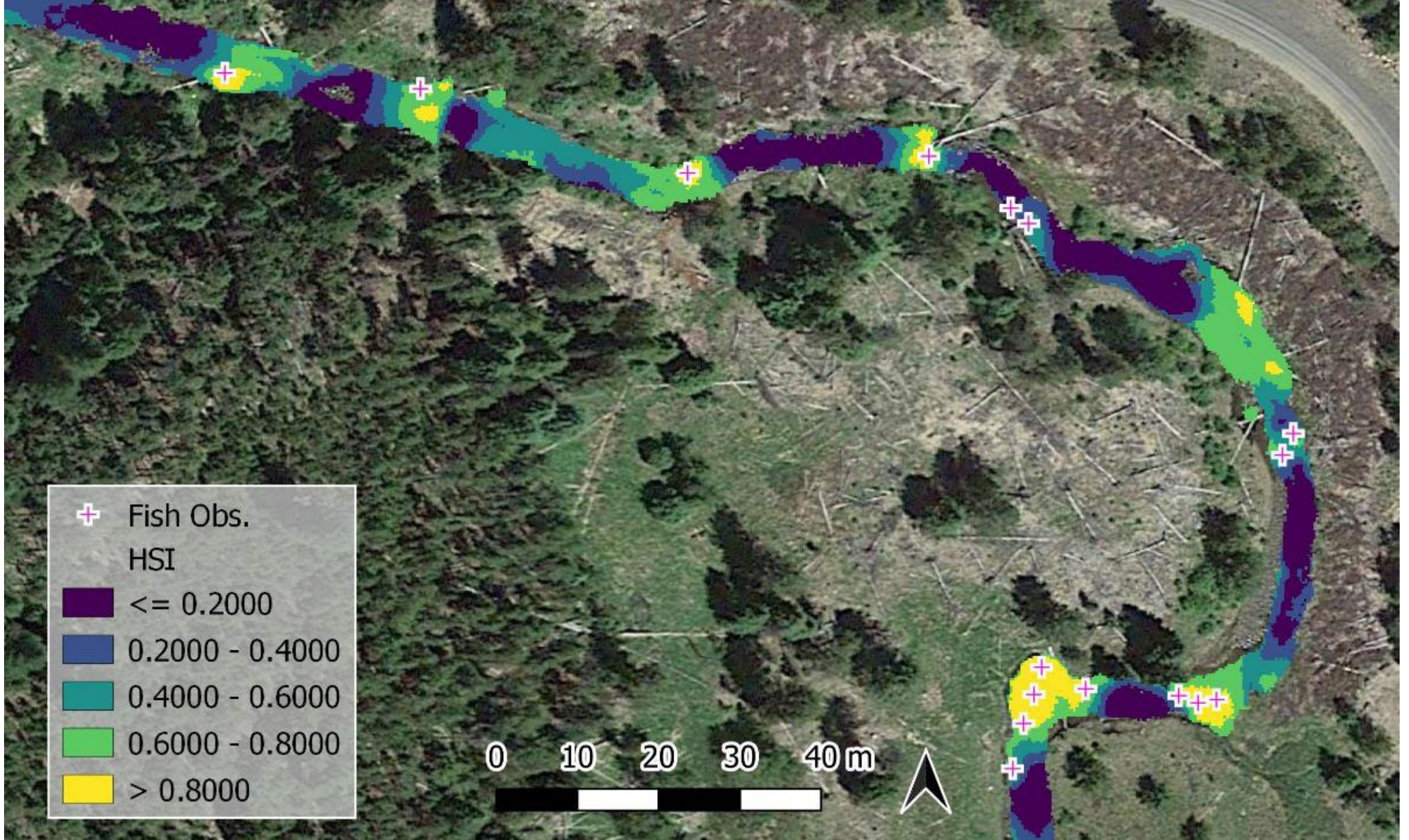
Sean Welch, PE (BPA)

Study Goal/Methods

Understand sediment sources, sinks, and transfer to inform process-based restoration strategies and recovery timescales

Apply SIAM tool as analytical, planning-level tool to understand these processes from watershed to reach scale

Fish Obs.
HSI

	<= 0.2000
	0.2000 - 0.4000
	0.4000 - 0.6000
	0.6000 - 0.8000
	> 0.8000

0   10   20   30   40 m

Future assessments aimed at identifying causes of high mortality for juvenile Chinook salmon during the out-migration through the Grande Ronde Valley.
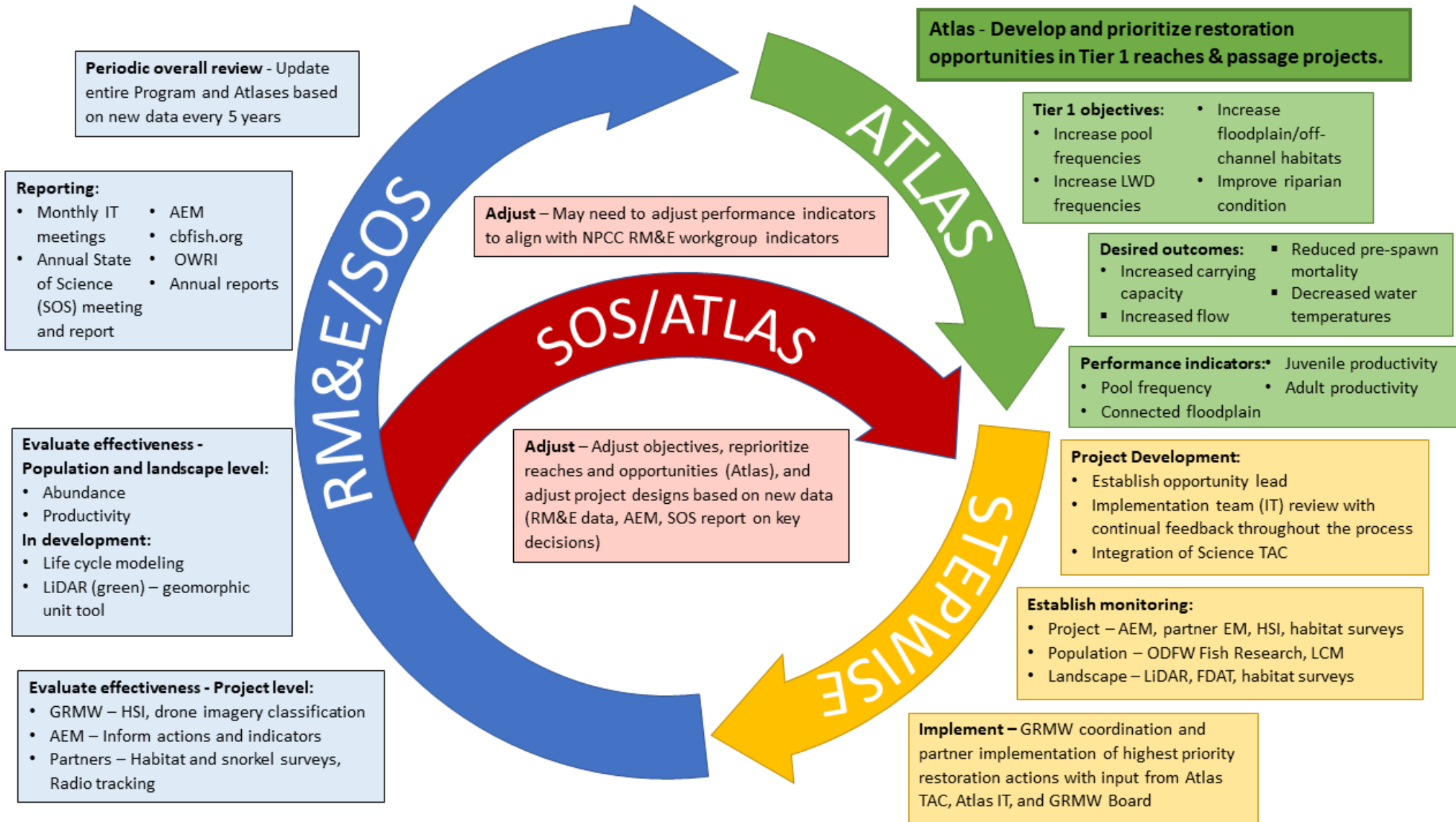
- Avian predation – 20%+ of smolts succumbing to avian predation in valley?
- Additional Non-native fish sampling w/ gastric lavage to identify rates of predation on Chinook salmon and steelhead.
- Water quality Phase 2

Questions

GRMW will lead the AM process in the Grande Ronde

Metric	Calculation
Floodplain area	Floodprone area, which is determined using 2 times the average maximum bankfull depth
Floodplain inundation index	Floodprone area divided by the mainstem wetted centerline length
Side channel number, length, area, and ratio	Sum of the side channel wetted centerline lengths and areas Sum of the side channel bankfull centerline lengths areas Sum of all the side channel bankfull centerline lengths divided by the mainstem bankfull centerline length (Beechie et al. 2017)
Residual pool depth	Maximum pool depth minus the pool tail crest in pool habitats, averaged across a reach for pools that the thalweg runs through (Lisle 1987)
Sinuosity	Divide the thalweg line length by the straight-line distance between the start and end points (i.e., top of site and bottom of site) of the thalweg (Rosgen 1994, 1996)
RCI (River Complexity Index)	RCI = (S*(1 + J) / (reach length))*100, where S = sinuosity, J = # of side channel bankfull junctions, reach length = mainstem wetted centerline length (Brown 2002)
Bankfull width to depth ratio	For each bankfull transect, divide the bankfull width by the maximum bankfull depth and average this ratio across transects within a reach (Rosgen 1996)
MQI (Morphological Quality Index	Extensive calculation using field data: confinement, sinuosity, anastomosing index, braiding index, mean bed slope, mean channel width, dominant bed sediment, and others (Rinaldi et al. 2013, 2017)
Pool area and percentage	Sum of pool habitat area, total pool area divided by total wetted area
Shannon diversity index of habitat units	Shannon diversity index (H) of the channel units in the mainstem and side channels with habitat units delineated (Shannon 1948)
Large wood	Count of jams and individual pieces from aerial imagery (Beechie et al. 2017; Roni et al. 2020b)
Aggradation and degradation	Create a DEM of Difference (DoD) for the years of interest and calculate the areas of deposition and storage (Williams 2012)
Habitat Suitability Index (HSI)	Sum of weighted usable area (WUA) and normalized WUA by species and life stage based on hydraulic and HSI modeling
Change in fine-scale geomorphic units	Use geomorphic unit tool (GUT; Wheaton et al. 2015) to map fine-scale geomorphic units at bankfull depth and compare changes in units around design elements before and after restoration