Oregon
Tina Kotek, Governor

OREGON WATERSHED ENHANCEMENT BOARD

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MEMORANDUM

Date: April 21, 2023

To: Ways and Means Subcommittee on Natural Resources

From: Lisa Charpilloz Hanson, Executive Director

Subject: Supplemental responses to questions from agency budget presentation

Thank you for your thoughtful questions and engagement during OWEB's agency budget presentation on April 19, 2023. The following memo includes supplemental information in response to two questions raised during the budget presentation.

1. When you have open solicitation grant applications and you have competitive proposals based on local ecological priorities, what kind of lens do you use to establish where those are prioritized around the state? Is there a geographical lens where you try to have grants in each region, or is it based on what is perceived as a more emergency type or drastic situation that needs to be addressed? How do you compare how these are spent around the state? How do you compare from one region to the next?

OWEB's open solicitation grantmaking relies on priorities identified in state and federal agency plans and in local partner assessments and action plans. Examples of plans include the Oregon Conservation Strategy developed by the Oregon Department of Fish and Wildlife, Total Maximum Daily Loads (clean water plans) developed by the Department of Environmental Quality, and salmon recovery plans developed by state and federal agencies and tribes. OWEB's open solicitation grant applications include questions about projects' connection to these plans. Applications also ask applicants how they identified the specific project as a local priority.

For each funding cycle in OWEB's open solicitation grant programs, OWEB's six regional review teams review and evaluate all grant applications and vote to recommend applications and rank the projects. OWEB's regional review team members are familiar with federal, state and local plans that apply to their regions and consider the connections of each application with these plans.

After the review team conducts its technical review and evaluation of each application, OWEB staff prepare a writeup of each project's strengths and concerns. OWEB uses these strengths, concerns, and watershed benefits to compare the proposals from one region to the next and determine where to establish the funding line for groups of proposals from each region.

There is not a set formula to divide up the funding that is available for an open solicitation grant funding cycle between regions. Staff recommend the projects for board grant awards that provide the greatest watershed benefit for the investment. Due to the quality of the project applications that come in and

the watershed concerns that they address, all six regions include projects awarded funds during every solicitation cycle.

2. When you talk about monitoring of projects and the outcomes, is there a matrix that OWEB produces showing the outcomes of the state's investments through OWEB? Are there reports highlighting the successes or failures of investments?

OWEB and our partners have engaged in a number of endeavors looking to evaluate the outcomes of our investments. This has resulted in a variety of reports. Some of these reports look collectively at the outcomes of interagency collaboration and investments from the state, the federal government, and local and private partners. Others are focused specifically on OWEB-funded projects and the outcomes of those projects.

Below are several examples of reports that look at the outcomes of OWEB's investments at different scales.

- The most recent Progress Tracking Reports for the Willamette and Grande Ronde Focused Investment Partnerships (FIPs) are attached. The Willamette and Grande Ronde FIP partnerships both received FIP awards from OWEB in 2016. For each FIP awarded by OWEB, the recipient partnerships prepare Progress Tracking Reports every two years. The reports summarize the partnerships' progress toward the intended goals and outcomes of their FIP initiatives.
- An interagency report on water quality in the Tillamook Bay is attached. This report is the result of an interagency partnership called the Conservation Effectiveness Partnership. The participating agencies collaborate to look at collective investments in water quality improvements and the long-term outcomes of those investments.
- A summary report about a floodplain restoration project in Deer Creek in the southern Willamette Valley is attached. For Meacham Creek in the Umatilla River watershed, the Confederated Tribes of the Umatilla Indian Reservation created an online story map describing the project and results of the tribe's post-project monitoring. OWEB grants helped local partners evaluate data collected from these projects and prepare information about the project outcomes.
- The most recent Oregon Plan biennial report executive summary is attached. OWEB collaborates with other state agencies and the OWEB Board to prepare this report on investments and actions to implement the Oregon Plan for Salmon and Watersheds.

Attachments

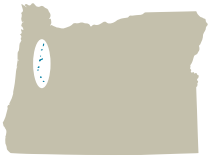
OWEB FOCUSED INVESTMENT PARTNERSHIP
PROGRESS REPORT / BIENNIA 2 & 3: 2017-2021

Willamette Mainstem
Anchor Habitat Working Group

Upper and Middle Willamette Mainstem Anchor Habitats

PHOTO Freshwaters Illustrated (Matt Blakeley-Smith)

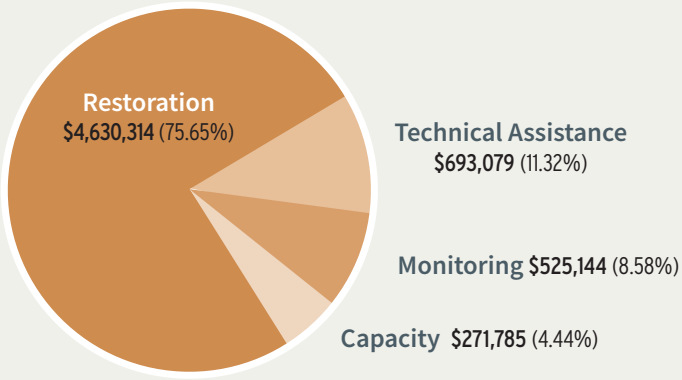
AQUATIC HABITAT FOR NATIVE FISH SPECIES



Willamette River Anchor Habitats range from the Middle Fork and Coast Fork confluence to habitats above Willamette Falls. Scientists have identified them as the locations with the highest value fish and wildlife habitat which offer the greatest return on restoration investments. Anchor Habitats represent a stepping-stone approach to providing essential habitat for species with wide ranges such as salmon, songbirds, and butterflies. Since the late 1800s, land use has dramatically altered the river. Development has resulted in over half of the river's 180-mile length being armored. Channels are straightened and dams block upstream fish passage. Runoff from adjacent farms and urban centers has degraded water quality and elevated stream temperatures, nutrients, and bacteria. Rare floodplain forests, which provide critical seasonal habitat for fish, have declined by more than 70%.

Funding

OWEB awarded $6,120,321 in funding with $4,100,833 in matching funds.



Benefits

- *Expanded floodplain habitat from removing levees and enhancing former gravel pits*
- *Increased number of side channels that support cooler water temperatures*
- *Enhanced riparian vegetation along sloughs and channels providing shade and habitat*
- *Reduced coverage of aquatic invasive species*
- *Improved fish passage by modifying artificial barriers*
- *Coordinated monitoring approach to measure progress and quantify outcomes*

ABOUT THIS REPORT

The Focused Investment Partnership (FIP) grant program is a bold, new conservation approach that supports high-performing partnerships to implement strategic restoration actions and measure ecological outcomes through coordinated monitoring. In January 2016, the Oregon Watershed Enhancement Board awarded a FIP grant to the Willamette Mainstem Anchor Habitat Working Group. This report documents projects for which funding was obligated in Biennia 2-3 (2017-2021) and cumulative progress since the FIP was initiated in 2016.

Work completed under the FIP grant program is part of a much larger, on-going collaborative effort of federal, state, and local agencies, private landowners and non-governmental organizations implementing restoration work guided by the Willamette Basin Planning Atlas. The restoration is backed by the funding partnership between Bonneville Power Administration, Meyer Memorial Trust and OWEB that supports large-scale and complex projects on the mainstem Willamette River.

PARTNERS

Benton Soil and Water Conservation District, Bonneville Environmental Foundation, Calapooia Watershed Council, Coast Fork Willamette Watershed Council, Clackamas Soil and Water Conservation District, Friends of Buford Park and Mt Pisgah, Greenbelt Land Trust, Long Tom Watershed Council, Luckiamute Watershed Council, McKenzie River Trust, The Nature Conservancy – Oregon Chapter, Oregon Department of Fish and Wildlife, Oregon Parks and Recreation Department, Willamette Riverkeeper, City of Eugene, City of Salem, Trust for Public Land, United States Geological Service

GOAL

Sustain and enhance seasonally important resources for native fish through increasing habitat complexity and quantity, improving floodplain connectivity, and restoring floodplain forests in the Upper and Middle Willamette Mainstem Anchor Habitats

STRATEGIES

- Remove revetments and levees in reaches likely to experience channel changes
- Construct lateral channels in areas with high likelihood of hyporheic flow
- Plant riparian vegetation along sloughs and side channels
- Control aquatic invasive weeds
- Increase and enhance floodplain plant communities
- Modify floodplain topography to increase the extent and duration of floodplain inundation
- Modify artificial barriers to aid fish passage and increase extent and duration of floodplain inundation
- Enhance former gravel pits by re-connecting pits, re-grading boundaries and filling ponds

IMPLEMENTATION (2017-2021)

Restoration

2.14 MILES OFF-CHANNEL FISH HABITAT

1282.6 ACRES OF FLOODPAIN FOREST RESTORED

4 BARRIERS MODIFIED FOR FLOODPLAIN CONNECTIVITY

251 ACRES OF AQUATIC INVASIVE SPECIES TREATED

Planning

5 TECHNICAL RESTORATION DESIGNS COMPLETED

Scientific Investigation

5 RIVER MILES + **300** ACRES

monitored over 3 years to assess changes in vegetation, inundation, stream temperature, geomorphology, and fisheries

1 PRESENTATION OF PRELIMINARY MONITORING FINDINGS TO PARTNERS

Outreach & Engagement

12 PRIVATE LANDOWNERS ENGAGED

1 COLLABORATIVE PROCESS facilitated with landowners and partners to inform restoration

3 RESTORATION AGREEMENTS with private landowners obtained

OUTCOMES

Expected Near Term 0-10+ YEARS

- River channel is re-connected to its historical floodplain
- Length of secondary channels is increased
- Native fish accessibility to the floodplain is increased
- Native riparian forest is enhanced
- Extent of invasive plant species is reduced

Expected Long Term 20+ YEARS

- Channel migration and sinuosity increases
- Canopy cover and near-bank shading increases
- Temperature and dissolved oxygen conditions improve
- Habitat connectivity and complexity increases
- Seasonally important habitat resources for native fish increase

FIP Initiative Progress, Biennia 1-3

Progress on metrics reflects implementation supported by OWEB funding, and does not represent all progress achieved via other funding sources.

OUTPUTS	PROGRESS	OBJECTIVE
Control aquatic invasive weed species	336 acres	500 acres
Implement large-scale floodplain forest restoration	20 projects	25 projects
Increase and enhance floodplain plant communities	2,613 acres	3,600 acres
Modify artificial barriers to aid fish passage and increase floodplain inundation	12 barriers	15 barriers
Reconnect and fill former gravel pits and regrade pond boundaries	2 sites	5 sites

Monitoring Approach

The partnership will measure and report progress by implementing *"A Proposed Framework for Willamette River Floodplain Implementation, Effectiveness and Status and Trends Monitoring"* a plan developed by members of the partnership that:

- Provides a framework to assess implementation and effectiveness of restoration projects
- Collects data to monitor changing water levels and river features that native fish need at different times of year
- Evaluates the impact of aquatic invasive species on water quality
- Tracks changes in vegetation and ecological responses to reforestation
- Conducts fish sampling to assess native fish habitat use

PHOTO Ann Kreager

Adaptive Management

Planning

CHALLENGES / OPPORTUNITIES	LESSONS LEARNED	ADAPTATIONS
The progress monitoring framework has been the bedrock of the partnership's project prioritization process and the formation of the project implementation pipeline	The agreed upon set of objectives and metrics of success allowed the partnership to easily articulate shared goals and make project prioritization decisions	The partnership will update its strategic action plan to tie efforts to other regional initiatives to build more robust partnerships that can leverage funding from a wider array of sources

Monitoring

CHALLENGES / OPPORTUNITIES	LESSONS LEARNED	ADAPTATIONS
There are many restoration partners and associated monitoring programs across the Willamette basin	Synthesizing all existing monitoring programs in the basin and telling a cohesive story about the effectiveness of specific restoration actions is challenging	Partnership members USGS, BEF and the Benton Soil and Water Conservation District developed "A Proposed Framework for Willamette River Floodplain Implementation, Effectiveness and Status and Trends Monitoring", a comprehensive monitoring framework. Implementing the Framework will require securing long-term dedicated funding.

Partnership Capacity

CHALLENGES / OPPORTUNITIES	LESSONS LEARNED	ADAPTATIONS
The covid pandemic prevented the partnership from meeting in person creating substantial challenges to collaborative decision making	Over the preceding years, the partnership has developed a high level of trust, an updated project prioritization framework, and a project pipeline with broad partnership buy-in	The partnership held meetings virtually and a new internal web portal allowed all members to easily access documents and decision-making tools
Several key staff members important to the partnership have moved on to other positions	Staff turnover has proved challenging to the health of the partnership and its ability to collaborate, and integration of new staff was challenged by the inability to meet in person and winddown of the FIP initiative Early development of creating robust partnership structures built on mutual trust were crucial to navigating staff transitions	These funds have supported project managers and contractors throughout the regions in numerous ways. The initiative has also supported a dedicated partnership coordinator and a monitoring team. With the sunsetting of the FIP initiative and Meyer Memorial Trust's Willamette River Initiative, it will be difficult to retain the talent and expertise in the organizations which have been a part of our partnership.

Engagement

CHALLENGES / OPPORTUNITIES	LESSONS LEARNED	ADAPTATIONS
Some outreach and engagement objectives were hampered due to the COVID-19 pandemic and the inability to host field days and public meetings	Because of the inability to meet in person the partnership developed a series of online tools and processes that enabled effective and efficient internal and external collaboration and communication	The partnership built an inward facing website designed to house all partnership documents and keep all partners abreast of all elements of the initiative's work and an outward facing story map to help all members of the partnership communicate effectively about accomplishments

Addressing Climate Change

From the outset of the FIP initiative the partnership focused on building climate resilience in the Willamette Basin. The anchor habitat stepping stones approach is focused on protecting and enhancing remnant locations along the mainstem Willamette River that can provide survivable habitats under changing climatic conditions. Altered flows and warming temperatures will continue to impact the ability of native fish to find suitable habitat in the Willamette. The partnership has been focused on ensuring that these relatively high-quality habitats are resilient in the face of climate change and fish are able to move up and down the river throughout the year.

Warm stream temperatures are a major limiting factor for the health of native fish. As summers become hotter and longer, some reaches of the Willamette may prove increasingly treacherous to fish species intolerant of water temperatures above a certain threshold. Some off-channel habitats currently dominated by invasive aquatic weeds are potentially too warm for Chinook salmon and steelhead even if aquatic invasive weeds are removed and habitat structure restored.

Thus, the partnership has been interrogating its approach to dealing with the issue of aquatic invasive weeds, however they have not formally updated their objectives.

The partnership's 2015 action plan included climate change considerations as a core factor in developing the initiative's strategies and actions. The FIP initiative and associated project pipeline was conceived to move the needle over a relatively short period of time (6 years). While all partners agree that climate change is going to influence ecosystem function, it is difficult to incorporate a clear understanding of what these changes will be, and more specifically, how they will impact individual projects. General trends associated with climate change (warming temperatures, decreased snowpack/summer flows) are understood and largely agreed upon amongst partners. However, partners are focused on implementing the current project pipeline in accordance with our existing theory of change and lack the capacity, expertise, or time to make substantial updates to the initiative as it relates to an increased understanding as to the local effects of climate change.

PHOTO Freshwaters Illustrated (Matt Blakeley-Smith)

For More Information About this Report:

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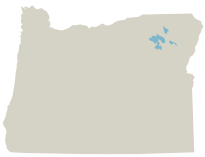
OWEB FOCUSED INVESTMENT PARTNERSHIP
PROGRESS REPORT / BIENNIA 2 & 3: 2017-2021

Grande Ronde
Restoration Partnership

Upper Grande Ronde Initiative

AQUATIC HABITAT FOR NATIVE FISH SPECIES

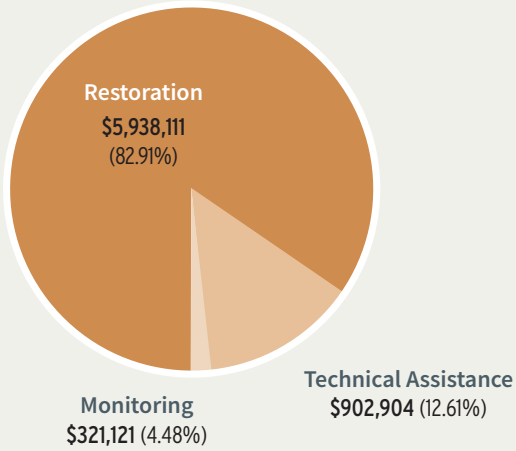


The Upper Grande Ronde Partnership is focusing restoration on 11 prioritized reaches of the upper Grande Ronde sub-basin, which includes sections of the Grande Ronde River, Catherine Creek, and several tributaries upstream of the confluence with the Wallowa River. Since the late 1800s, poorly-managed logging and grazing, road and railroad construction, urbanization, and irrigation withdrawals degraded streams and reduced fish habitat. These conditions threaten native fish species, including steelhead and salmon.

PHOTO Grande Ronde Restoration Partnership

Funding

OWEB awarded $7,162,136 in funding with $9,897,087 in matching funds.



Benefits

- *Improved understanding of how restoration actions impact steelhead and salmon in northeastern Oregon*
- *Organized approach among diverse partners to develop complex engineering designs*
- *Enhanced fish habitat through instream and floodplain projects*
- *Improved passage at diversion dams and culvert replacement that expands or improves access to habitats*
- *Coordinated monitoring approach to measure progress and quantify outcomes*
- *Engaged landowners, students and civic groups on the actions needed to restore habitat for native fish*

ABOUT THIS REPORT

The Focused Investment Partnership (FIP) grant program is a bold, new conservation approach that supports high-performing partnerships to implement strategic restoration actions and measure ecological outcomes through coordinated monitoring. In January 2016, the Oregon Watershed Enhancement Board awarded a FIP grant to the Upper Grande Ronde Partnership. This report documents projects for which funding was obligated in Biennia 2-3 (2017-2021) and cumulative progress since the FIP was initiated in 2016.

Work completed under the FIP grant program is part of a much larger on-going collaborative effort of Bonneville Power Administration, federal, state and local agencies, private landowners, and non-governmental organizations in the Grande Ronde River Basin. ***Accomplishments included in the report only reflect actions completed with OWEB FIP funding.***

PARTNERS

Core Partners: Union Soil and Water Conservation District, Grande Ronde Model Watershed, US Forest Service, Confederated Tribes of the Umatilla Indian Reservation, Oregon Department of Fish and Wildlife

Atlas Implementation Team Partners: Bonneville Power Administration, Bureau of Reclamation, National Oceanic and Atmospheric Administration, Trout Unlimited, Natural Resource Conservation Service

GOAL

Increased habitat quantity, quality, and diversity for all life stages of spring Chinook, summer steelhead, and other native species in Catherine Creek and the Upper Grande Ronde River

STRATEGIES

- Remove barriers and create additional aquatic habitat
- Restore natural habitat complexity and processes
- Reconnect floodplain habitats
- Conduct monitoring studies to fill knowledge gaps on juvenile salmon mortality and riparian restoration effectiveness
- Inform, educate, and engage relevant landowners and residents

IMPLEMENTATION ACTIONS FUNDED (2017-2021)

Restoration

183 POOLS CREATED OVER 11.8 MILES

83 STREAM MILES made accessible to juvenile and adult fish

2 FISH LADDERS INSTALLED providing passage at 2 diversion dams and 1 culvert with improved passage

851 LARGE WOODY DEBRIS STRUCTURES installed over 11.8 miles

103.4 RIPARIAN ACRES protected from livestock grazing

4.3 MILES OF NEW CHANNEL

141.2 ACRES OF NEW OR RECONNECTED FLOODPLAIN

Planning

4 TECHNICAL DESIGNS completed to support restoration project implementation

Scientific Investigation

7.5 MILES + **5,315** ACRES monitored for riparian recovery

45.7 MILES monitored for habitat quality and quantity

2 CHINOOK SALMON + **1** STEELHEAD populations monitored with PIT tag arrays

Engagement

1 EDUCATIONAL FILM PRODUCED

1 COMMUNITY SCIENCE PROGRAM ESTABLISHED

9 QUARTERLY NEWSLETTERS highlighting work and partners in the Grande Ronde Basin

11 LANDOWNERS ENGAGED resulting in 8 restoration projects

(The metrics shown reflect actions that have been completed or for which funding has been obligated in Biennia 2 and 3.)

OUTCOMES

Expected Near Term 0-10+ YEARS

- Access to aquatic habitats is increased
- Floodplain is reconnected to stream system
- Increased instream complexity

Expected Long Term 20+ YEARS

- Distribution of salmon increases in watershed
- Improved channel structure and processes to maintain habitat
- Spawning habitat and streamside plantings improve
- Summer stream temperatures decrease
- Productivity of salmonid species improves

FIP Initiative Progress, Biennia 1-3

Progress on metrics reflects implementation supported by OWEB funding, and does not represent all progress achieved via other funding sources.

OUTPUTS	PROGRESS	OBJECTIVE
Remove or replace barriers	6 barriers	8 barriers
Construct new main and side channels	8.29 miles	2.56 miles
Create new floodplain or wetland habitat	178 acres	15 acres
Construct high-quality pools along 20 stream miles	328 pools	70 pools
Install structures to enhance habitat complexity along 33 stream miles	17.7 miles	33 miles

Monitoring Approach

- Evaluates restoration techniques to make future projects more effective through adaptive management
- Improves knowledge of factors affecting salmon survival rates to prioritize projects
- Collects data on a consistent set of ecological metrics paired with snorkel surveys to measure restoration outcomes

For More Information About this Report:

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PHOTO David Herasimtschuk

Adaptive Management

Restoration

CHALLENGES / OPPORTUNITIES	LESSONS LEARNED	ADAPTATIONS
Changing project feasibility	Changing feasibility of originally targeted actions required some flexibility in the strategic action plan elements and progress tracking metrics Maintain flexibility and expect that plans will change	The partnership added new actions that were similar to those removed and adjusted implementation metrics
Past project effectiveness	Some early projects were not as successful in restarting natural processes (sediment transport, pool formation, floodplain engagement, riparian recovery) as expected Actions need to be more intense and cover a larger geographic area to achieve the desired outcomes	Over the last decade, the partnership revisited several restoration sites to implement additional restoration actions
Appropriate geography scope and scale	If the geographic area is too small it can be hard to replace projects that may no longer be feasible; if it is too large it can be hard to measure change over a six-year period	Maintain a landscape scale restoration approach

Partnership Capacity

CHALLENGES / OPPORTUNITIES	LESSONS LEARNED	ADAPTATIONS
Partnership composition and expansion	The FIP had hoped to add an additional partner to the Initiative in the first biennium to assist with flow restoration projects. Unfortunately, the partnership could not come to consensus on adding a partner and the objective of restoring flow by leasing water rights was not achieved.	Maintaining a small partnership has allowed the FIP to be very agile and adjust efficiently over the three biennia as plans changed.
Predictability of FIP funding	FIP funding eased the competitive nature of applying for restoration funding and allowed the partnership to focus on working collaboratively	Continue to seek long-term high funding sources that provide funding certainty
Evolution of staff roles	The part time FIP-supported position has evolved during the Initiative	The role initially focused on outreach and was shifted towards monitoring coordination
Partnership dynamics	A well-functioning partnership depends on personalities that show a willingness to compromise, express opinions respectfully, and an ability to rely on others when help is required	Continue to build and maintain partnership capacity and collaborative skills

Funding

CHALLENGES / OPPORTUNITIES	LESSONS LEARNED	ADAPTATIONS
FIP funding alignment with other sources	Aligning FIP support with other funding sources increased the partnership's ability to implement additional floodplain, habitat complexity, and fish passage projects	The partnership updated its progress tracking reporting to reflect unplanned actions The partnership plans to revisit the Atlas soon and it will likely result in a geographic shift of our restoration efforts as many of our goals and objectives have been achieved over the last six years
Leveraging multiple funding sources	A strategic plan allows partnerships to compete for multiple funding sources	Using the same strategic plan, the partnership leveraged Bonneville Power Administration, McNary Mitigation, Gray Family Foundation and US Forest Service grants

Adaptive Management, continued

Engagement

CHALLENGES / OPPORTUNITIES	LESSONS LEARNED	ADAPTATIONS
Landowner willingness to support or participate in restoration activities	Reduced trust has led to a shift in the public's support of salmon habitat restoration	The partnership shifted public outreach efforts from presenting to civic groups and schools to creating a community science project that gets kids, teachers and community members involved in collecting meaningful data. The partnership is planning to engage with social science experts to explore ways to better connect with the communities

Monitoring

CHALLENGES / OPPORTUNITIES	LESSONS LEARNED	ADAPTATIONS
Utility of the Progress Monitoring Framework	The results chain/theory of change has helped track progress and, along with the action plan, served as a reference and reminder of what the FIP expected to accomplish and monitor	The partnership's monitoring approach continues to track fish productivity metrics and survey habitat on a 10-year rotation The partnership will continue to utilize existing modelling efforts from our partners, i.e., the Life Cycle Model to evaluate result chain assumptions
Evolving field of aquatic habitat restoration and monitoring	The partnership endeavors to adapt to new and emerging monitoring techniques and approaches but these changes challenge the utility and management of long-term data sets	The partnership continues to develop monitoring program crosswalks to maximize the potential utility of varied monitoring approaches and programs
Research and monitoring efforts have informed strategies	The Meadow Creek ungulate grazing has improved understanding of impacts by cattle versus deer and elk and practices to guide how to manage those impacts The salmon carcass study helped confirm some knowledge and provided new information to guide management associated with adding marine derived nutrients to aquatic systems PIT Tag arrays have provided long term data on fish populations in Catherine Creek and the upper Grande Ronde, specifically abundance and productivity	Continue to prioritize monitoring and research to inform and refine strategies and actions

Addressing Climate Change

The partnership is fortunate to have robust data sets to support the prioritization of actions and locations to best address expected changes in water temperature due to climate change. The Columbia River Intertribal Fish Commission has produced both a heat source model and a riparian restoration prioritization plan for the upper Grande Ronde River. These data have helped the larger partnership in the Grande Ronde to focus on riparian recovery in the highest priority areas and also focus restoration efforts on floodplain connection and restoration of proper stream channel dimensions.

Addressing climate change presents similar constraints to those that affect the partnership's ability to implement projects in general. For example, one of the highest priority areas to implement restoration for both fish recovery and to counter climate change is located on private property where the landowner is not interested in participating. Additionally, our datasets in the Grande Ronde are based on 40- and 80-year climate projections and therefore present a high level of uncertainty. It may be challenging to tease out exactly how our restoration will have helped to reduce climate change impacts.

CONSERVATION
effectiveness partnership

OREGON DEPARTMENT OF AGRICULTURE | OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY | USDA NATURAL RESOURCES CONSERVATION SERVICE, OREGON | OREGON WATERSHED ENHANCEMENT BOARD

Conservation Effectiveness Partnership

PULLING TOGETHER TO IMPROVE NATURAL RESOURCE INVESTMENTS IN OREGON

Dive In! Tillamook's Wilson River now Clean Enough for Swimming

Tillamook, Ore.—The water in Wilson River is now clean enough for the general public to enjoy swimming or wading thanks to water quality improvement efforts and monitoring measures by cooperating public natural resource agencies, nonprofits and landowners.

Wilson River is the largest watershed feeding Tillamook Bay, a major water body on Oregon's northern coast. While the upper portion of the river is flanked by forestland, the lower 8.5 miles flows through dairy land and is affected by development pressures from the City of Tillamook.

THE PROBLEM

In 1997, the lower 8.5-mile segment of the Wilson River was found to have dangerously high bacteria levels, which moved the state's Department of Environmental Quality (DEQ) to place the river on the 303(d) list of impaired waterways. That listing meant that recreational use was not advised.

Oregon's recreational use water quality standard has two requirements: first, that for 30 days water does not show a median of 126 or more *E. coli* organisms per 100 milliliters (mL) of water and second, that no single sample exceed 406 *E. coli* organisms per 100 mL. The Wilson River exceeded those limits.

COLLABORATION WAS KEY

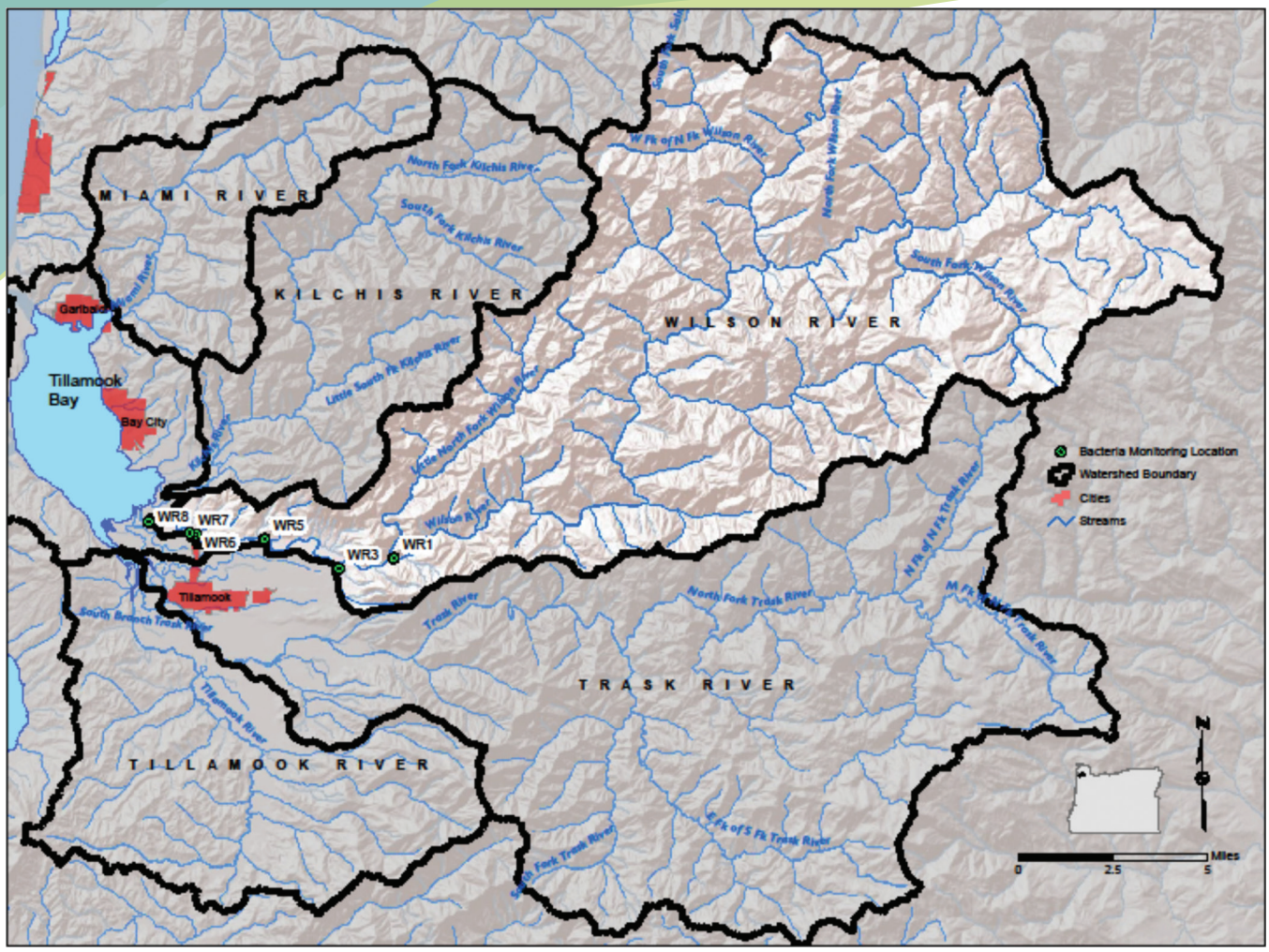
Work began toward finding a solution to Wilson River's water woes by local citizens, dairy farms, nonprofits and natural resource agencies including the Tillamook Estuary Partnership, Oregon Watershed Enhancement Board (OWEB), Oregon State University, USDA Natural Resources Conservation Service (NRCS), USDA Farm Service Agency, DEQ, Oregon Department of Agriculture (ODA), and the Tillamook Soil and Water Conservation District, which leveraged their investments in multiple conservation projects and water quality data monitoring intended to improve and measure the watershed's health.

MULTI-PRONGED EFFORT

Partners spent millions of dollars to restore and protect Tillamook Bay and its watershed. Projects included 20 riparian enhancements on private land that fostered planting, fencing and invasive species removal to stabilize streambanks and to keep livestock off a buffer of land along the river's edge; purchase of three wetland parcels and improvements to Tillamook County Creamery Association wastewater treatment system that discharges to the river. Farmers invested in additional improvements as well. They built covered manure-storage areas and improved the efficiency of sprinkler systems and fertilization programs to prevent runoff from entering waterways.

SCIENTIFIC MONITORING SHOWS SUCCESS OF INPUTS

Scientific monitoring gives water quality managers a starting point and a scientific, progressive measurement of success or failure in water quality improvement efforts. In the Wilson River, monitoring of pollutants began in 1997. At that time, *E. coli* organisms were present at nearly triple the levels considered safe for swimming and wading.



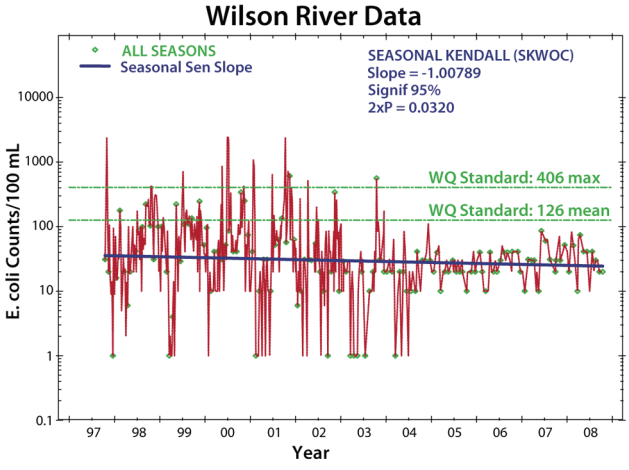
Wilson River water is checked regularly for bacteria at six monitoring locations along the lower 8.5 miles of the river.

Special equipment measured water quality in the Wilson River over the long term. Six bacteria monitoring stations set up along the 8.5 mile stretch of Wilson River monitored the presence of *E. coli*. Data collected from those stations from 1997 through 2009 show that bacteria levels have steadily declined since 1997 and now consistently meet the recreational use water quality standard. The data is collected by The Tillamook Estuary Partnership and DEQ collect and review the data.

Monitoring has been in place long enough now for scientists to see patterns of improvement. They predict with confidence that conditions will continue to improve over the next 25 years. And that can only be good news for the Wilson River and to those who depend on and enjoy using it.

KEEPING THE WATCH

The Conservation Effectiveness Partnership (CEP) is a new collaboration of natural resource agencies that gives direction to conservation in Oregon. Partners include Oregon Watershed Enhancement Board, USDA Natural Resources Conservation Service, Oregon Department of Environmental Quality and the Oregon Department of Agriculture. The CEP works collectively to understand, optimize and communicate the benefit of conservation funding investments in the Wilson River and other focused areas around Oregon.



Bacteria levels from each location are plotted on a graph.

USDA NRCS United States Department of Agriculture Natural Resources Conservation Service

DEQ State of Oregon Department of Environmental Quality

Oregon Department of Agriculture

OWEB

Deer Creek: A Stage 0 Approach to River Restoration

NATIONAL FISH AND WILDLIFE FOUNDATION

OREGON WATERSHED ENHANCEMENT BOARD
OWEB

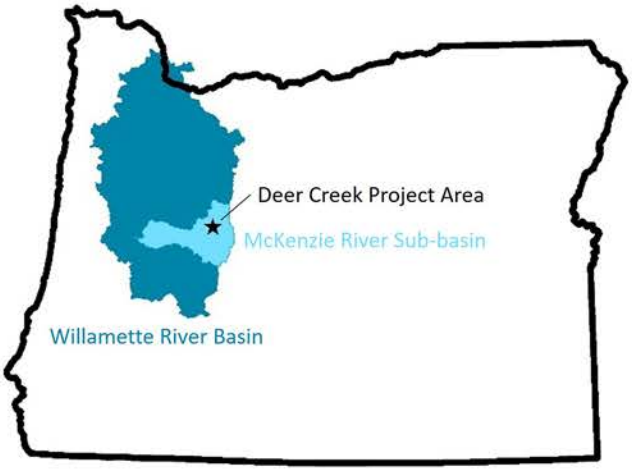
FOREST SERVICE
US
DEPARTMENT OF AGRICULTURE

EWEB

WESTERN NATIVE TROUT INITIATIVE

McKenzie Watershed Council

Background



Deer Creek is a tributary of McKenzie River located in western Oregon in the Cascade Mountains. The creek is 8.2 miles long and drains nearly 15,000 acres. Ownership within the Deer Creek watershed is almost entirely public lands managed by the US Forest Service (USFS).

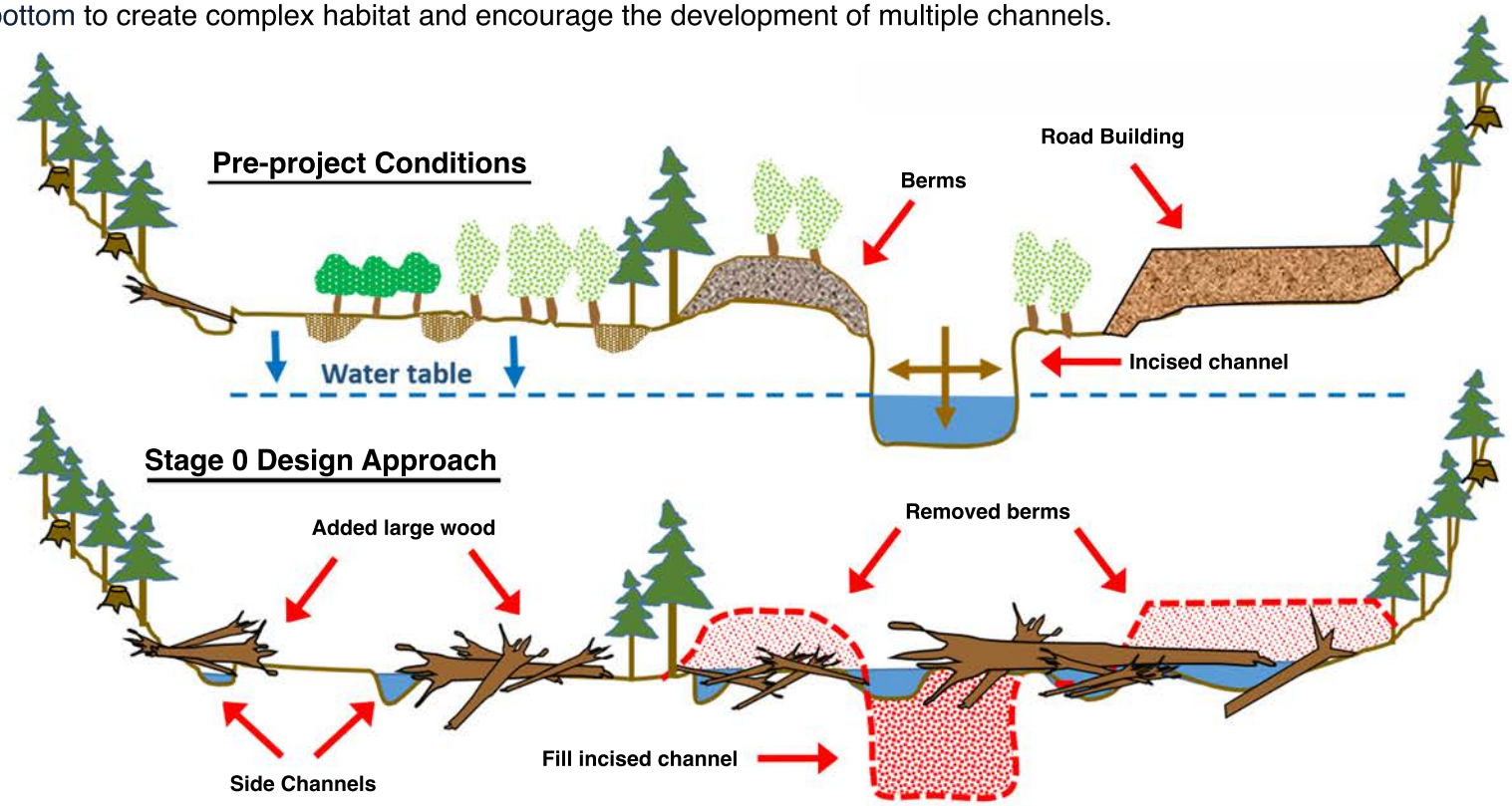
Historically, Deer Creek was a complex stream with a gravel-rich bottom. The lower portion of the creek flowed through a wide valley bottom as a braided system of channels that would move and change during periodic flooding. Fallen trees from the surrounding forest trapped sediment providing diverse habitat for native fish and wildlife including Chinook salmon, bull trout, and rainbow trout.

Deer Creek has been significantly altered by human activities since the late 1800s. Logging and the removal of large wood from the creek simplified and narrowed the channel. Stream-side berms were constructed after the historic 1964 flood to keep the stream in a single channel disconnecting it from its natural valley bottom. These changes had a dramatic impact on the physical environment of the creek and drastically changed the habitat on which salmon and other native fish and wildlife depend.


Cobble substrate - too large for spawning

Design

In 2016, the USFS and the McKenzie Watershed Council (MWC) began a project to restore habitat conditions on Deer Creek. The project followed a new design approach since termed “Stage 0”, to restore natural processes that form and maintain complex in-stream and valley bottom habitat. The Stage 0 design approach removes berms or old roads that are preventing valley bottom connectivity. This material is then placed within incised portions of the stream channel to connect flows to side channels and large areas of the valley bottom. Large wood is then placed throughout the creek and valley bottom to create complex habitat and encourage the development of multiple channels.



Implementation

The Deer Creek Floodplain Enhancement Project was designed to restore habitat for native fish and wildlife in the lower 1.1 miles and 42 acres of Deer Creek. Work started in the summer of 2016 and was completed by two Oregon contractors, Haley Construction (Sweet Home) and Blue Ridge Timber Cutting (Coos Bay).

Decked logs prior to transport to project site

Diversion channel

Berm removal and channel fill

Large wood placement

Whole trees positioned in Deer Creek

Rewatered floodplain

The first step of the Project was to divert sections of Deer Creek so that berm removal, channel fill, and large wood placement could take place in dry conditions. A bulldozer and large excavator were used to construct small dams on Deer Creek, temporarily diverting stream flow into side channels. Small teams collected stranded fish from the dewatered channel and relocated them outside of the project area. Streamside berms were then removed and the material placed within incised portions of Deer Creek. Over 450 pieces of large wood were then distributed throughout the project area in various-sized log jams. The diversion dams were then removed allowing the creek to flow freely over the newly reconnected valley bottom and around the placed log jams, forming complex pools and braided channels.

Reconnected floodplain and log jams

Project Cost

The project cost was $466,000 and was funded by a variety of state, federal, and private foundation sources., including the USFS, Oregon Watershed Enhancement Board (OWEB), National Fish and Wildlife Foundation's Bring Back the Natives Program (NFWF), and the Western Native Trout Initiative (WNTI). Both the Eugene Water & Electric Board (EWEB) and the USFS provided personnel and material support. The project was managed by the MWC and Willamette National Forest McKenzie River Ranger District.

Funders	Amount
USFS	$241,000
OWEB	$142,000
NFWF	$60,000
WNTI	$17,000
EWEB	$6,000
Total	**$466,000**

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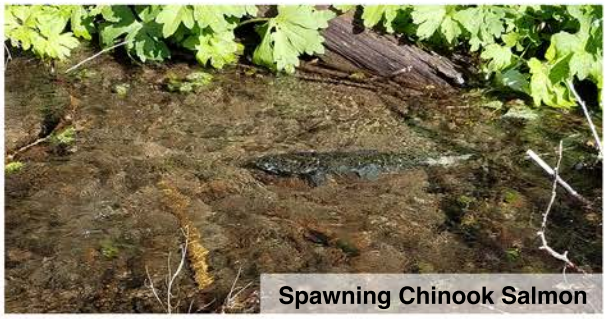
Post-Project Results

Early results of the restoration are encouraging. Deer Creek changed from less than 30 pieces of large wood per mile to over 300. The previously constrained channel now connects to its valley bottom. Pre- and post-project photos show a dramatic difference in how the creek meanders through the valley bottom. Water flowing downstream is now slowed and redirected by complex log jams and islands, creating a diversity of habitats. As water flows over logs and a wider channel, it slows down allowing gravels to deposit and accumulate, creating spawning habitat. Before, a narrower channel with fast-flowing water would have carried those gravels downstream.

Pre-Project

Post-Project



Spawning Chinook Salmon

In 2017, biologists observed spring Chinook salmon spawning in Deer Creek, the first documented spawning since 1993! A summer snorkel survey also documented the presence of juvenile bull trout.

Aquatic insects are a critical part of the food web and an important monitoring tool. Analysis of macroinvertebrate samples collected in 2019 shows that the number of species present and their total biomass is significantly greater within the project area when compared to untreated sections of Deer Creek.

Newly deposited gravel

Project managers recognize the need for formal monitoring to measure the changes in Deer Creek over time. The USFS and MWC are currently working with a variety of scientists to design a monitoring program that will capture physical habitat changes and biological responses over time. Due to the large project area, partners are exploring the use of aerial imagery in combination with transect surveys across the valley bottom to efficiently track habitat complexity. This data will be assessed along with annual fish spawning and macroinvertebrate sampling.

2019-2021 Biennial Report Executive Summary

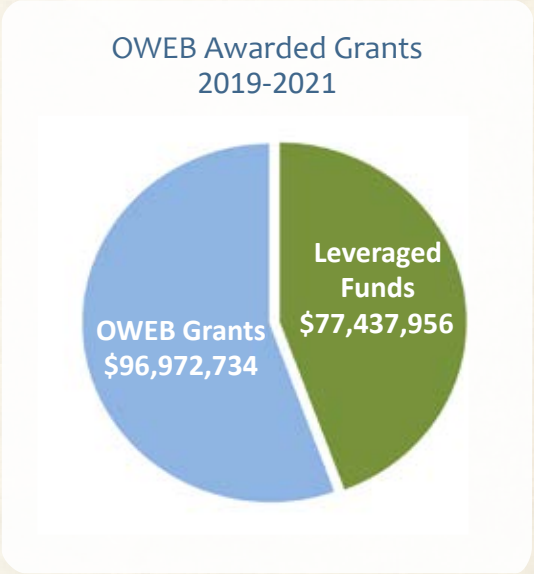
The *Oregon Plan* for Salmon and Watersheds

Since 1997, the Oregon Plan for Salmon and Watersheds has provided a framework for grass-roots stewardship enhancing water quality and restoring habitat for the state's native fish and wildlife. The Oregon Plan supports diverse local economies and enriches communities through local, voluntary restoration.

The Oregon Plan Biennial Report describes activities implemented under the plan for the 2019-2021 biennium (per Oregon Revised Statute 541.972). This Executive Summary highlights key investments and accomplishments; coordinated actions among Oregon Plan partners; and recommendations from the Oregon Watershed Enhancement Board (OWEB). The full report can be found online https://www.oregon.gov/oweb/Documents/OPSW-BR-2019-21.aspx.

2019-2021 Investments and Accomplishments

During the 2019-2021 biennium, OWEB invested over $97 million for watershed enhancement projects throughout the state. This total includes funding from the Oregon Lottery, Pacific Coastal Salmon Recovery Fund, salmon license plate revenues, and other sources. These dollars leverage significant funding that is provided by other agencies and partner organizations, increasing the impact of OWEB funding. Oregon Plan partners include landowners, non-profit organizations, local businesses, tribes, and all levels of government.



Grants awarded by OWEB and the amount of leveraged funds contributed by grant participants. Data provided from OWEB Grant Management System from 7/1/2019 through 6/30/2021.

Watershed Metrics	Oregon Watershed Restoration Inventory (OWRI)	OWRI compared w/ 2017-19 biennium	BLM	USFS	Total
Riparian Miles (e.g., Streamside Plantings)	206 miles	85 ↓	--	5	211
Instream Habitat Miles (e.g., Wood Placement)	111 miles	22 ↑	45	111	267
Miles of Fish Habitat Made Accessible (Stream Crossing Improvements)	142 miles	56 ↑	43	85	270
Stream Crossings Improved for Fish Passage	94 crossings	32 ↑	11	45	150
Push-up Dams Retired to Improve Fish Passage	6 dams	2 ↑	8	--	14
Fish Screens Installed on Water Diversions	17 screens	20 ↓	--	3	20
Upland Acres (e.g., Juniper Thinning, Seeding)	72,484 acres	1,288 ↑	240,777	7,262	320,523
Wetland Acres (e.g., Wetland Habitat Created)	1,514 acres	189 ↑	6,080	--	7,594
Miles of Road Closure and Decommissioning	6 miles	5 ↓	5	177	188
Miles of Road Improvements (e.g., Erosion Control)	31 miles	36 ↓	--	27	58
Miles of Riparian Invasive Treatments	299 miles	7 ↑	--	--	299

Metrics for watershed restoration activities completed and reported from 1/1/2019 to 12/31/2020 as reported by state and voluntary sources (OWEB's Oregon Watershed Restoration Inventory). Where comparable data standards were applied, metric data is provided from the Bureau of Land Management [BLM] and U.S. Forest Service [USFS]. Federal information excludes projects already reported to OWRI. BLM upland habitat reflects significant east-side hazard fuels reduction. USFS metric does not include full total of actual upland acres treated by USFS.

Coordinated Agency Actions

Collaboration is the heart of the Oregon Plan, and coordinated efforts continued throughout the 2019-2021 biennium. Highlights include:

- Responding to the 2020 wildfires to promote restoration and recovery
- Continued work on the Oregon 100- Year Water Vision
- Updating Oregon's climate change adaptation framework, and the issuance of Governor Brown's Executive Order on Climate Action 20-04
- Addressing challenges with tide gates along the coast

OWEB Board Recommendations

In the 2019-2021 biennium, the OWEB Board developed a robust committee structure to help the agency in addressing complex issues impacting Oregon's watersheds. The board approved the following committee-developed themes as recommendations for enhancing the effectiveness of the Oregon Plan for Salmon and Watersheds:

- The impacts of climate change are being felt across Oregon. OWEB is integrating climate mitigation and climate-smart adaptation into the agency's operations and grant-making.
- Large-scale conservation efforts implemented by high performing partnerships are vital to addressing the various environmental challenges impacting our watersheds. OWEB's Focused Investment Partnership program is unique in state granting programs, as it funds restoration at a landscape-scale.
- Cool, clean water and healthy forests, wetlands, riparian areas, streams, and estuaries provide essential natural processes that maintain and enhance water quality for fish and wildlife. These systems are fundamental to OWEB's mission and the well-being of Oregonians. OWEB will continue the agency's work in furthering the statewide natural resource strategy and strategic allocation of resources for water related initiatives.
- Collaborative monitoring and shared learning continue to inform watershed restoration. Climate change and wildfires pose new challenges and opportunities for those that study the science behind these issues, and for the restoration practitioners implementing projects in a changing world. It is critical for experts to share and translate knowledge in a manner that benefits all communities, as they work to address both long-standing restoration needs and emerging issues that face watershed restoration.
- Diversity, Equity, and Inclusion will be integrated throughout OWEB's operations and grant programs. Board and staff members will model diversity, equity, and inclusion while ensuring that interested parties and all potential partners are heard and engaged. OWEB will reach diverse audiences so that they are aware of the agency's grant programs, how they can participate, and to increase OWEB's understanding of the barriers to their participation. OWEB will incorporate diversity, equity, inclusion, and environmental justice into how and where the agency provides grant funding.