# HABITAT IMPROVEMENT PROGRAM
# HIP4
## 2023 ANNUAL MONITORING REPORT

Bonneville
POWER ADMINISTRATION

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## SUMMARY

This is the 4th annual monitoring report required under the new Habitat Improvement Program 4 Biological Opinions (HIP4) (NMFS No# WCRO-2020-00102, USFWS 01E0FWOO-19FY-0710). This report summarizes activities completed in calendar year 2023 and summarizes reports on the incidental take resulting from those activities and compares them with previous years.

Annually, Bonneville Power Administration (Bonneville) and partners (sponsors) implement substantial habitat enhancement work in the Columbia River basin to improve tributary habitat as "offsite" mitigation for the impacts the federal hydrosystem and to help meet the Agencies' obligations under the Endangered Species Act (ESA) by fulfilling commitments begun under the 2008 NMFS Federal Columbia River Power System BiOp (as supplemented in 2010 and 2014) (2008 BiOp) and ongoing commitments under the 2020 NMFS Columbia River System BiOp (2020 CRS BiOp). The 2008 BiOp called for identifying tributary habitat restoration projects and the 2020 CRS BiOp largely continues the tributary habitat restoration program.

Actions funded by Bonneville are implemented through BPAs Habitat Strategy, which seeks to facilitate watershed-scale prioritization and planning efforts to identify priority work for fish habitat restoration. The program is one of the largest and most complex of its kind in the world and includes collaborative work with states, tribes, federal agencies, local governments and non-profit organizations to implement the most biologically beneficial actions in the highest priority areas for ESA-listed salmonids. The HIP is the primary means by which this habitat enhancement work gets reviewed, refined, and then covered under the ESA.

In 2023 Bonneville has been successful in meeting incidental take criteria. Juvenile take was less than most years with only one turbidity exceedance at Desolation Creek. Juvenile presence within restoration sites remains highly stochastic, however in any case sponsors have demonstrated consistency in handling and moving ESA-listed fish with little to no injury or mortality.

In addition to a diverse portfolio of projects, project quality assurance and quality control remain a priority. BPA continues to improve internal capacity to deliver high quality projects through optimizing and refining the HIP Review Process. After nearly 9 years of experience, the HIP Review process has become streamlined and standardized based upon receiving feedback, re-evaluating failures, and capitalizing upon successes.

Engineering Technical Services (ETS) continues to provide a thorough and detailed technical review of all medium and high-risk projects. BPA EC leads are well trained in performing a separate functional review. NMFS habitat biologists continue to provide comments to high risk and medium risk projects. Through these multi layered detailed project reviews, BPA can now exercise a higher level of discretionary authority on the type and quality of projects that it funds and shape their outcome. The HIP4 Handbook continues to be refined and has been used as a

tool to provide much needed clarifications, guidance and strives to reflect the current state of science on restoration standards and practice.

Figure 1: 2023004(Tucannon PA-26) LW Structure1

Figure 2: 2023004(Tucannon PA-26) LW Structure2

## HIP4 PROJECTS AUTHORIZED

The HIP4 BOs authorized 95 projects, of which 15 were withdrawn, leading to a total of 80 projects being implemented in 2023 (Table 1, 2, & 3) (FIGURE 1&2). Each project had multiple activity categories (Work Elements). Work Elements are the most discrete unit of action that BPA may undertake, with a contract typically consisting of multiple work elements.

In alignment with Bonneville's contracting rules, projects are mainly reported on the contract level, occasionally multiple contracts may be lumped together if they share the same sponsor & location. A majority were low risk (37), 32 were medium risk, and 11 were high risk. Each medium and high risk underwent the HIP Review process which included a thorough technical review by BPA Engineering Technical Services (ETS), and if high risk, Interagency review by the Service Habitat Biologists.

### TABLE 1: HIP4 PROJECT AUTHORIZATIONS (37 LOW RISK) 2023

| HIP_NO# | PROJECT |
|---|---|
| **2023001** | ODFW Willamette Valley O & M |
| **2023013** | Oregon Fish Screen Projects - O&M |
| **2023014** | Upper Salmon Fish Screen O & M |
| **2023015** | Isquuulktpe Watershed Project |
| **2023020** | Asotin Creek Enhancement and Restoration: 2021-25 Planting |
| **2023021** | Yakima Basin Side Channels –Pott Rd Invasive Crack Willow Removal and. House Demo |
| **2023022** | Trout Creek Watershed Noxious Weed Program (JCSWCD) |
| **2023023** | Trout Creek Watershed Noxious Weed Program (ODFW) |
| **2023024** | Hellsgate Big Game Winter Range O&M 2023-24 |
| **2023025** | Shillapoo Wildlife Area |
| **2023026** | Neal Creek Phase 2 Planting |
| **2023028** | NE Coyote Creek Wet Prairie Restoration |
| **2023029** | East Fork of South Fork Salmon River Restoration |
| **2023031** | Asotin Creek Wildlife Area O&M |
| **2023035** | Southern Territories Habitat Project – Plant and Maintain Vegetation |
| **2023037** | NE Oregon Precious Lands Wildlife Area |
| **2023039** | Rainwater Wildlife Area |
| **2023040** | Upper Salmon Basin Fish Screens |
| **2023041** | M2 Alder Creek Floodplain 2017-191 |
| **2023044** | Upper John Day Conservation |
| **2023047** | Pine Creek Conservation Area Operation and Management |
| **2023048** | Oregon Fish Screens Project |
| **2023054** | Umatilla Passage O&M |
| **2023056** | Lower Yakima Valley Riparian Wetlands Restoration |
| **2023061** | Corral Creek West Meadow Extension Veg Planting |

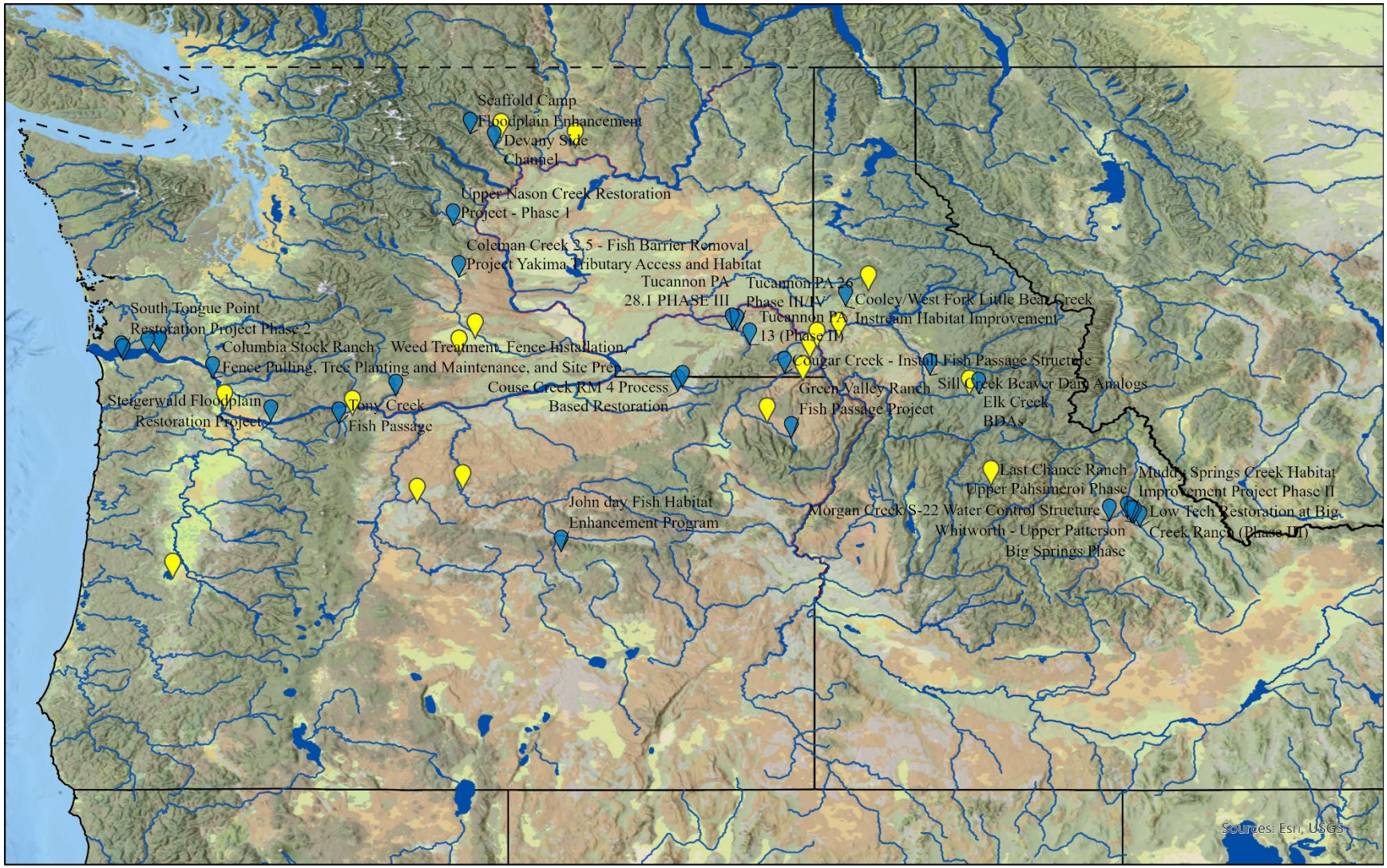
| | |
|---|---|
| **2023063** | Upper Salmon Restoration Weed Treatment and Hydroseeding |
| **2023064** | Grande Ronde Subbasin Restoration Invasive Weed Treatments |
| **2023066** | Crooked River Salmon Carcass Placement |
| **2023073** | Hungry Horse Mitigation/Flathead Lake Restoration |
| **2023086** | Middle Fork John Day Plant Propagation |
| **2023087** | Quant Ranch Juniper Removal |
| **2023088** | Protect and Restore the Lapwai Creek Watershed |
| **2023090** | Oregon Fish Screens Project |
| **2023091** | Yakima VSP: Satus Creek PIT Tag Array |
| **2023092** | Lostine Side Channel and Wetland Complex |
| **2023093** | Asotin County Conservation District Habitat Enhancement and Restoration |
| **2023097** | Wind River Riparian Vegetation Management |

Figure 3: 2023088(Lapwai Creek)BDA Install

## TABLE 2: HIP4 PROJECT AUTHORIZATIONS (32 MEDIUM RISK) 2023

| HIP_NO# | PROJECT |
|---|---|
| **2023003** | Muddy Springs Creek Habitat Improvement Project Phase II |
| **2023004** | Tucannon PA 26 Phase III/IV |
| **2023005** | South Tongue Point Restoration Project Phase 2 |
| **2023006** | Green Valley Ranch Fish Passage Project |
| **2023010** | West Sand Island Habitat Restoration Phase 3 – Vegetation Improvements |
| **2023011** | Columbia Stock Ranch – Weed Treatment, Fence Installation, Fence Pulling, Tree Planting and Maintenance, and Site Prep. |
| **2023016** | Upper Nason Creek Restoration Project - Phase 1 |
| **2023017** | Steigerwald Floodplain Restoration Project |
| **2023018** | Lower Elochoman Restoration Phase III |
| **2023019** | Lower Elochoman Restoration Phase II |
| **2023027** | Last Chance Ranch Upper Pahsimeroi Phase |
| **2023032** | Low Tech Restoration at Big Creek Ranch (Phase III) |
| **2023033** | Southern Territories Habitat Project – Tepee and Swale LTPBR Implementation |
| **2023034** | Southern Territories Habitat Project – Rattlesnake Gulch Creek, Swale Creek Tributary, Fish Passage and Habitat Complexity |
| **2023036** | Aldrich Point Restoration |
| **2023038** | Couse Creek RM 4 Process Based Restoration |
| **2023043** | Tucannon PA 13 (Phase II) |
| **2023046** | Scaffold Camp Floodplain Enhancement |
| **2023049** | John day Fish Habitat Enhancement Program |
| **2023051** | Whitworth - Upper Patterson Big Springs Phase |
| **2023059** | Devany Side Channel |
| **2023060** | Elk Creek BDAs |
| **2023065** | Cougar Creek - Install Fish Passage Structure |
| **2023067** | Cooley/West Fork Little Bear Creek Instream Habitat Improvement |
| **2023075** | Morgan Creek/S-22 Water Control Structure |
| **2023079** | Sill Creek Beaver Dam Analogs |
| **2023081** | Tucannon PA 28.1 PHASE III |
| **2023082** | Tony Creek Fish Passage |
| **2023084** | Muddy Spring/Barg G culvert replacement |
| **2023085** | Wahtum Creek Bridge |
| **2023094** | Coleman Creek 2.5 - Fish Barrier Removal Project Yakima Tributary Access and Habitat |
| **2023096** | Walla Walla River Forks Adaptive Management |

## MAP 1: 2023 MED-LOW RISK HIP4 PROJECT LOCATIONS



## MAP 2: 2023 HIGH RISK PROJECT LOCATIONS

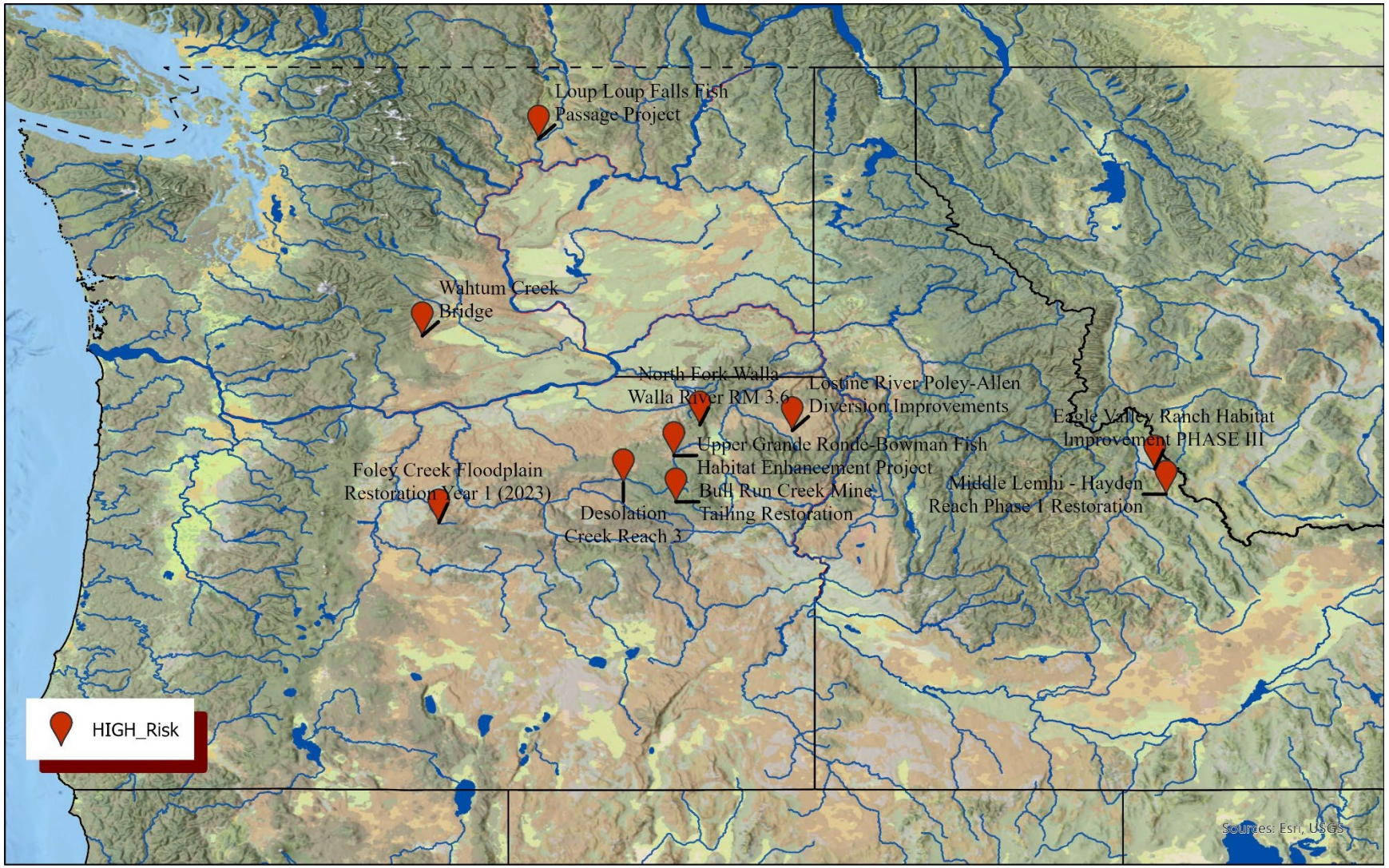



Figure 4: 2023094(YTAHP)Coleman Creek Before

Figure 5: 2023094(YTAHP)Coleman Creek After

## HIGH RISK PROJECT SHOWCASE:

These projects are BPA's most significant achievements towards salmon restoration in 2023 (Table 3). Most of them are a continuation of previous year's contracts that were designed and approved in previous years. These are complex projects that require extensive collaboration, funding, design and planning. Locations of these projects are shown in Figure 3. All these projects were considered high risk and involved both USFWS and NMFS interagency review and final approval. While BPA was the funding entity and provided extensive technical assistance, the project sponsors were essential in creating and maintaining landowner relationships and negotiations.

### TABLE 3: HIGH RISK PROJECTS (11)

| HIP_NO# | PROJECT |
|---|---|
| **2023007** | Upper Grande Ronde-Bowman Fish Habitat Enhancement Project |
| **2023008** | Bull Run Creek Mine Tailing Restoration |
| **2023009** | Lostine River Poley-Allen Diversion Improvements |
| **2023055** | Palensky Wildlife Area - Ludwigia Herbicide Treatment (Year 2) |
| **2023062** | Loup Loup Falls Fish Passage Project |
| **2023068** | Middle Lemhi - Hayden Reach Phase 1 Restoration |
| **2023070** | Eagle Valley Ranch Habitat Improvement PHASE III |
| **2023071** | Foley Creek Floodplain Restoration Year 1 (2023) |
| **2023072** | Desolation Creek Reach 3 |
| **2023074** | North Fork Walla Walla River RM 3.6 |
| **2023077** | Wilson Hawn Wallowa River Project |

### TABLE 4: Upper Grande Ronde-Bowman Fish Habitat Enhancement Project

| HIP4 NO# | SPONSOR | LOCATION | HIP CATEGORIES |
|---|---|---|---|
| 2023007 | **Oregon Department of Fish and Wildlife** | **Grand Ronde Union County, OR** | • **Improve 2ndary Channel and Wetland Habitats**<br>• **Set back of berms, dikes, levees**<br>• **Install habitat forming structures**<br>• **Riparian Vegetation Planting**<br>• **Channel Reconstruction**<br>• **Install habitat forming materials**<br>• **Decommission roads**<br>• **Fencing construction for livestock control** |
| Fish Capture | **0 captured<br>0 mortalities** | | |

Figure 6:2023007(Bowman)Channel

Figure 7:2023007(Bowman)LargeWood

Figure 8:2023007(Bowman)LargeWood Heli

## Description:

Restoration actions for this project targeted critical salmonid life stages and limiting factors, and included: pool development, floodplain reconnection, side channel and off-channel habitat restoration, riparian fencing, LWD placement, and channel reconstruction. This project will provide immediate benefits to ESA listed salmon and steelhead by improving and expanding migration, spawning, incubation and emergence, and summer and overwinter rearing habitats.

## Primary project features:

- Increase future shade potential by reducing average channel width at baseflow, by narrowing the low flow channel where possible. Also reducing the average baseflow wetted width within the project reach by 25%.
- Planted 8 acres of native species including woody shrubs and trees and seeded 10 acres with native grasses and wetland species such as sedges and rushes.
- Continued riparian management plan or cattle and native ungulate management plan to increase likelihood of successful riparian development.
- Replace existing 3.5 miles of high tensile riparian fencing, with 4 strand barbed wire fencing to further exclude livestock.

## Lessons Learned:

One thing to note related to the implementation of this project was the discovery of a post-settlement trash pit while constructing a side channel. While hopefully not something that those in restoration deal with on a regular basis, it is important for practitioners to realize that it may

occur and to have some sort of contingency plan in place. While the permitting process utilizes protocols to deal with such instances, solutions most likely will cost money and time. It was also beneficial to learn that our county transfer station would take such material for disposal as it included a lot of soil and couldn't be completely sorted.

### TABLE 5: Bull Run Creek Mine Tailing Restoration

| HIP4 NO# | SPONSOR | LOCATION | HIP CATEGORIES |
|---|---|---|---|
| 2023008<br><br>Fish Capture | **Confederated Tribes of the Umatilla Indian Reservation**<br><br>**4 captured 0 mortalities** | **Bull Run Creek Grant County, OR** | • **Improve 2ndary Channel and Wetland Habitats**<br>• **Set back of berms, dikes, levees**<br>• **Install habitat forming structures**<br>• **Riparian Vegetation Planting**<br>• **Channel Reconstruction** |

## Description:

Placer mining turned over much of the site by the early 1940s and since then small placer mining operations on the Blue Sky Mine continue. Given the level of disturbance relative to stream size and Bull Run Creek's limited effect upon tailings over the last eighty plus years, the scale of restoration and selected treatments reflect our intent to restore physical and biologic process given technical and fiscal realities. The selected treatments include creation of an inset floodplain through the site's lower half with a target width of 100' although maximized where 100' is not practical. Within the inset floodplain a new meandering channel was created using the existing channel where appropriate. Large wood structures were placed at key points. Wetlands were created within the inset floodplain and native hardwoods planted throughout. New channel will not be connected to the current channel immediately to allow for 'seasoning' of the site. Activities upstream of the inset floodplain in the site's upper half consisted of wood soft placed within the stream channel. Two to three years after the inset floodplain and associated features are created new channels previously developed will become connected and portions of the existing channel filled. Additional wood was placed within the stream channel and on the floodplain to increase complexity during high flows.

## Primary project features:

Phase 1 of this restoration project occurred in 2023 and resulted in:

- Floodplain: Tailing removal (9.75 acres) to create an inset floodplain, new stream channel, 0.64 acres of wetland excavation, large wood scattered across floodplain to increase complexity, 48 tons of bio-char tooth-raked into the graded floodplain, and ~500 willow cuttings and ~650 Torrent sedge plugs planted.
- Channel: Treatments include 2,875' of new channel to be activated in 2025, 243 large wood structures developed, and ~3,000 willow cuttings and Torrent sedge plugs planted along the channel.

## Lessons Learned:

- Phasing these efforts. Although the work was completed in a single year two requests for an extension of the instream work window were required.

- Based on previous mine tailing projects there were expected difficulties due to tailing consistency and composition such as large expanses of well graded sand throughout much of the site. This project's phasing has been fortuitous in this regard in that there is a year between Phase 1 and 2 to adjust the design and address persistent sand. Thus, more efforts will be needed to understand tailing composition and to phase projects to accommodate time for site stabilization/vegetative recovery and efficiently address site complexities, potentially, over multiple implementation periods.
- The number of trees upon excavated tailings were estimated and not fully accounted for in the design or in sequencing. A better job of accounting for site resources, sequencing their removal, and use in the design will need to occur in the future.

Figure 9: (2023008) Excavated Channel after wood installation

Figure 10: (2023008)Development of large wood features

## TABLE 6: Lostine River Poley-Allen Diversion Improvements

| HIP4 NO# | SPONSOR | LOCATION | HIP CATEGORIES |
|---|---|---|---|
| 2023009<br><br>Fish Capture | Nez Perce Tribe<br><br>633 captured<br>42 mortalities | Lostine River<br>Wallowa County, OR | • Dams, Water Control or Legacy Structure removal<br>• Consolidate or Replace Existing Irrigation Diversions<br>• Grade Stabilization<br>• Improve 2ndary Channel and Wetland Habitats<br>• Install habitat forming structures<br>• Riparian Vegetation Planting |

## Description:

The Nez Perce Tribe proposed to improve the conditions at the Poley-Allen diversion in order to maximize year-round fish passage for migratory and resident fish species, including ESA-listed Chinook salmon, steelhead, and bull trout. The Tribe modified the existing diversion structure by removing roughly two feet of concrete from the top of the sill. The right bank would then be re-graded to a natural channel shape and slope. The stream channel above and below the diversion would then be roughened with the addition of boulders and engineered streambed material. The existing trash rack and concrete forebay for the irrigation ditch would remain in-place. The

lowered structure height and improved roughness of the channel would allow for more consistent fish passage at all flow levels of the river.

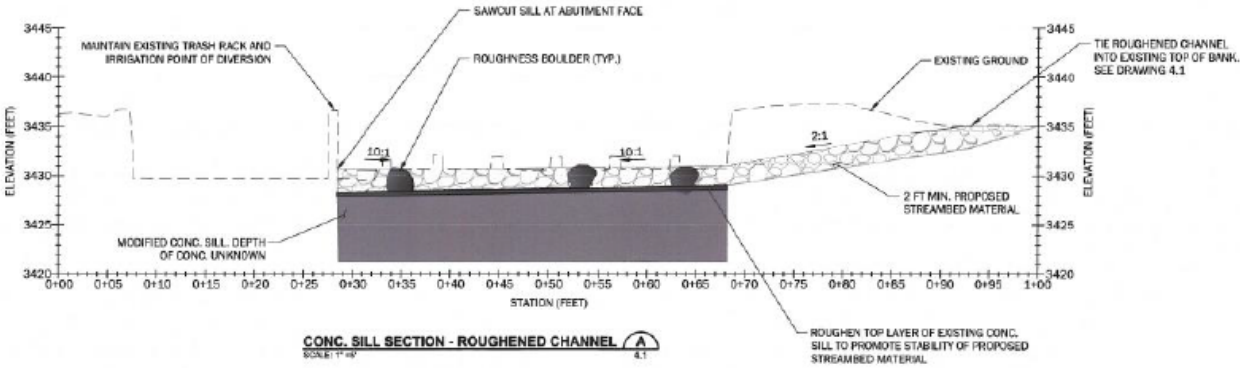



Figure 11: 2023009: Existing Structure

Figure 12: 2023009: New Structure and pump

Figure 13: 2023009: Lowered weir

## Primary project features:

The original plan set called for partial removal/saw cutting of the top of the concrete sill and complete elimination of the river right concrete abutment. Due to push back from the irrigators, these features were modified to maximize fish passage while maintaining the vertical sill stanchions which enable irrigators to insert boards to convey low-flow irrigation water towards the headgate. Although the elevation of the engineered roughened riffle crest is sufficient to backwater the pool for irrigation water withdrawal, this was a necessary design adjustment mandated by the Poley-Allen ditch irrigators. Additionally, the river right (eastern) concrete abutment was sawcut to match the elevation of the top of the board slots on the sill to reduce flow constriction and increase stream stability. Final diversion construction will result in maximized fish passage through the year for all life history stages of Bull Trout, steelhead, and Chinook salmon, while maintaining access to irrigation water for current water rights holders.

## Lessons Learned:

There was a total of 42 salmonid mortalities over the course of the three separate fish salvage efforts required for project implementation. 15 of these mortalities occurred on the second day of salvage in the mainstem Lostine River. These losses were primarily due to the difficulty in safely

removing juvenile fish from the crevices between the large angular boulders downstream of the sill prior to construction. 20 of these mortalities occurred while salvaging the side channel due to the difficulty in safely netting fish out of the shallow conditions present in the side channel following rewatering the mainstem.

### TABLE 7: Palensky Wildlife Area - Ludwigia Herbicide Treatment (Year 2)

| HIP4 NO# | SPONSOR | LOCATION | HIP CATEGORIES |
|---|---|---|---|
| 2023055<br><br>Fish Capture | **Oregon Department of Fish and Wildlife**<br><br>**0 captured**<br>**0 mortalities** | **Columbia River (Mulnomah Channel) Multnomah County, OR** | • **In-water application of herbicides** |

### Description:

The J.R. Palensky Wildlife Area is located along the southern shoreline of the Multnomah Channel downstream from its confluence with the Willamette River. In the summer of 2021, invasive creeping primrose (ludwigia) was first detected in Horseshoe Lake on the wildlife area. By late 2021, more than 9 acres of the lake was fully infested. ODFW applied aquatic herbicide between June and October to control the growth of ludwigia at the site.

### Primary project features:

- Herbicide treatment of ludwigia as required to fully eliminate the infestation.

### TABLE 8: Loup Loup Falls Fish Passage Project

| HIP4 NO# | SPONSOR | LOCATION | HIP CATEGORIES |
|---|---|---|---|
| 2023062<br><br>Fish Capture | **Colville Tribes**<br><br>**473 captured**<br>**0 mortalities** | **Loup Loup Creek (Tributary to Okanogan)** | • **Install habitat forming structures** |

### Description:

Fish passage on Loup Loup Creek was blocked by a velocity barrier at Loup Loup Falls. The project improved passage by installing instream rocks/boulders to create pool habitat that reduced the velocity and allowed fish to move upstream.

### Primary project features:

- Installation: Heavy equipment was used to establish a subgrade stream bed gradient ranging from 8-11% in three separate sites. Step pools were then constructed on top of

the subgrade utilizing large boulders and wood. Finally, the floodplain was built up with a layer of void-filled riprap, topped with native alluvium.

- Planting: Four acres of riparian and upland planting was completed to enhance the restoration site, and restore the access roads

## Lessons Learned:

- Larger boulders made each pool faster to construct and will provide more resistance to movement under high flow conditions.
- Increasing the percent of fines in all fill helped to prevent piping and seal each pool.

Figure 14: Loup Loup Falls (Passage Barrier)

Figure 15: Loup Loup Falls (Step Pools)

Figure 16: Loup Loup Falls (Step Pools2)

## TABLE 9: Middle Lemhi - Hayden Reach Phase 1 Restoration

| HIP4 NO# | SPONSOR | LOCATION | HIP CATEGORIES |
|---|---|---|---|
| 2023068<br><br>Fish Capture | Lemhi Soil and Water Conservation District<br><br>0 captured<br>0 mortalities | Lemhi River<br>Lemhi County, ID | • Improve 2ndary Channel and Wetland Habitats<br>• Bioengineering Methods<br>• Install habitat forming structures<br>• Riparian Vegetation Planting<br>• Channel Reconstruction |

## Description:

This project is the first phase of a larger restoration project just upstream of the confluence of Hayden Creek. Phase 1 involves off-channel channel and floodplain excavation, new driveway alignment construction, and large wood placement in newly excavated channels and on the floodplain. All excavation was done in the dry and the current Lemhi River alignment will continue to convey flows until flows are introduced into the new channel network during phase 2 of the project.

Figure 17: 2023068: Upstream of project

Figure 18: 2023068: Downstream of Project

## Primary project features:

- The channel network was excavated and most of the floodplains have been regraded with topsoil and reseeded. Phase 1 wood structures are all installed.
- The plugs were left in place between the new river alignment and the existing alignment and will be removed as part of phase 2.
- The old bridge was removed, the old driveway alignment was then obliterated, on-site topsoil was added to the remaining floodplain which was then regraded and reseeded.

## Lessons Learned:

Working during the winter has its pros: lesser machinery impact/footprint on frozen ground, but also has some drawbacks such as machinery temperature thresholds, which ultimately slowed the project down.

## TABLE 10: Eagle Valley Ranch Habitat Improvement PHASE III

| HIP4 NO# | SPONSOR | LOCATION | HIP CATEGORIES |
|---|---|---|---|
| 2023070<br><br>Fish Capture | **Idaho Department of Fish and Game**<br><br>**71 captured**<br>**0 mortalities** | **Lemhi River**<br>**Lemhi County, ID** | • **Consolidate, or Replace Existing Irrigation Diversions**<br>• **Grade Stabilization**<br>• **Improve 2ndary Channel and Wetland Habitats**<br>• **Set-back or Removal or Existing Berms, Dikes, and Levees**<br>• **Bioengineering Methods**<br>• **Install habitat forming structures**<br>• **Riparian Vegetation Planting**<br>• **Channel Reconstruction** |

### Description:

The Eagle Valley Ranch Habitat Improvement Project is located on the lower Lemhi River between river miles (RM) 11.0 and 12.25. The goal of this project is to develop more natural floodplain processes along a 1.25-mile river segment that will include multiple side channels, a more sinuous mainstem river, lateral movement of floodwater, more complex instream habitat, and a more functional riparian zone. Due to the scale and complexity of the project, we have partitioned it into 4 project phases.

### Primary project features:

- Raising the river grade through a series of engineered riffles, constructing channels, and reducing elevations to develop a substantially wider and more active floodplain.
- Excavation of more than 80,000 cubic yards of material
- Main channel and side channel alignments were established
- Floodplain roughness structures were installed to provide complexity within lateral riparian areas. A total of 10 types of in-channel habitat structures were constructed throughout the constructed channels.

Figure 19:2023070: Construction of Idaho Complex and relic beaver dams

Figure 20:2023070: Example of beaver dam mimiced

Figure 21: 2023070(Eagle Valley)Coffer Dam


Figure 22: 2023070(Eagle Valley)LWD Placement

Figure 23: 2023070(Eagle Valley)Complex

Figure 24: 2023070: Channel Activation

## TABLE 11: Foley Creek Floodplain Restoration Year 1

| HIP4 NO# | SPONSOR | LOCATION | HIP CATEGORIES |
|---|---|---|---|
| 2023071<br><br>Fish Capture | **Oregon Department of Fish and Wildlife**<br><br>**0 captured**<br>**0 mortalities** | **Foley Creek**<br>**Jefferson County, OR** | • **Bridge and Culvert Removal or Replacement**<br>• **Improve 2ndary Channel and Wetland Habitats**<br>• **Bioengineering Methods**<br>• **Install habitat forming structures**<br>• **Riparian Vegetation Planting**<br>• **Channel Reconstruction**<br>• **Decommission Roads** |

### Description:

The project proposed to improve spawning and rearing habitat for ESA-listed steelhead trout in southwestern Jefferson County, Oregon by relocating a private dirt road, replacing two culverts with a bridge, and re-contouring the floodplain of Foley Creek. The total project area was roughly 20 acres encompassing a little less than one mile of the Foley Creek channel. Most of the project area is a narrow valley through which Foley Creek runs from the south to the north. Two smaller tributaries – Dutchman Creek and Big Log Creek – joined with Foley Creek near the southern end of the project site. 2nd phase of the project shall have the floodplain features.

### Primary project features:

- Removed the two Dutchman Creek and Foley Creek culverts
- Realigned the Dutchman Creek channel with its historical location
- Installed a new bridge over Dutchman Creek to replace the old culverts.

Figure 25: 2023071: Culvert removal and bridge placement

## TABLE 12: Desolation Creek Reach 3

| HIP4 NO# | SPONSOR | LOCATION | HIP CATEGORIES |
|---|---|---|---|
| 2023072<br><br>Fish Capture | Confederated Tribes of the Umatilla Indian Reservation<br><br>1262 captured<br>15 mortalities<br><br>Bull Trout:<br>1 captured<br>0 mortalities | Desolation Creek<br>Grant County, OR | • Consolidate or Replace Existing Irrigation Diversions<br>• Grade Stabilization<br>• Improve 2ndary Channel and Wetland Habitats<br>• Set-back or Removal of Existing Berms, Dikes, and Levees<br>• Bioengineered Streambanks<br>• Install habitat forming structures<br>• Riparian Vegetation Planting<br>• Fish Screens |

### Description:

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) proposed restoration of Desolation Creek Reach 3 from River Miles 2.6-4.4. This is a large-scale, in-channel and floodplain restoration effort intended to enhance fisheries and aquatic habitat and ecology.

On 1 July 2023, Desolation Creek in water work started after an extension to the in-water work window was received. In total, 3,480' of existing channel was filled to varying depths, 135 large wood structures were constructed in Desolation Creek, and four new high flows channels (2,500') containing 70 large wood structures were constructed as part of floodplain grading. As a means of controlling stream gradient, two above grade riffles and three below grade riffles were constructed within Desolation Creek. In Desolation Creek and graded floodplain 60 and 109 loose large wood pieces were respectively placed to improve complexity.

### Primary project features:

Proposed work for the entire project, both outside and within waters or wetlands will potentially disturb approximately 20 acres and includes:

- Road obliteration, setback, and tributary culvert replacements
- Small-medium sized LWD jams to encourage overbank flows, provide cover and instream complexity, and promote sediment deposition (typically between 1-8 pieces)
- Floodplain log placement to enhance off-channel habitat
- Beaver Dam Analogues to increase complexity and elevate water levels in side channels.
- Large-scale channel-spanning jams to obstruct the mainstem and promote floodplain engagement
- Localized in-channel riffle construction, berm removal and floodplain grading to recreate floodplain connections abandoned by incision
- "Stage-0" style floodplain grading and associated channel filling to reverse effects of incision, engage the floodplain, promote sediment deposition, increase instream bed and channel form complexity, and raise water tables.

## Lessons Learned:

Fill qualities throughout the site were quite variable, typically heavy with topsoil, and light on sandy soil types with discrete areas containing large amounts of alluvial fill. Well mixed finer materials with larger alluvial fill throughout the site would have made mixing, sorting, and finding creative channel solutions easier. With such large fill quantities, representative test pits would provide better insight into channel fill quality. The problem with this as a blanket statement is that geostatistical methods can get extremely expensive and could miss pockets of alluvial materials so alternative measures may be required.

The larger component of fine material excavated for channel fill proved difficult for turbidity management during fill and upon channel activation. This was further complicated by a need to keep mussels in water during channel fill. More resources were put to turbidity management than expected and methods adjusted as needed. The most effective tactic beyond wasting turbid waters upon the floodplain was pumping groundwater reentering the channel just upstream of fill areas. Channel reactivation was adjusted because of turbidity concerns ending in multiple three/four-hour pulses of turbid water followed with a significant rest period with flows in bypass, in conjunction with pumping. Given the amount of fine materials in the fill and relatively low streamflow in August we believe this was more effective than progressive rewatering would have been.

Figure 26: 2023072(Desolation Creek)Riffle_Construction

Figure 27: 2023072: Leave pool, rock and margin deflector jam

## TABLE 13: North Fork Walla Walla River RM 3.6

| HIP4 NO# | SPONSOR | LOCATION | HIP CATEGORIES |
|---|---|---|---|
| 2023074 | Walla Walla Basin Watershed Council | North Fork Walla Walla River Umatilla County, OR | • Grade Stabilization<br>• Improve 2ndary Channel and Wetland Habitats<br>• Set-back or Removal of Existing Berms, Dikes, and Levees<br>• Bioengineering Methods<br>• Install habitat forming structures<br>• Riparian Vegetation Planting<br>• Channel Reconstruction<br>• Install habitat forming materials |
| Fish Capture | 0 captured<br>0 mortalities | | |

### Description:

The purpose of the project is to improve floodplain function and riverine habitat suitability to benefit of ESA Salmonid recovery status using heavy equipment to implement holistic restoration strategies. During 2023, riverine deficiencies in the main stem RM 3.6-4.4 reach of the NFWWR were addressed as an anthropogenic, flumed channel was converted to a complex network of braided channels as 0.6 miles of complex side channels were created. Beaver dams began to appear in the newly established braided channel network as a pair of beavers established a den as well.

### Primary project features:

- Added hundreds of 3' boulders and 35' whole trees with root wads to improve the physical habitat complexity for target fish species,
- restored 125 acres of floodplain,
- reduced dominant substrate size by reducing stream slope,
- increased undercoat and overhead cover metrics,
- significant improvement to habitat complexity as the number of habitat units and edge effect habitats improved dramatically.

Figure 28: 2023074: Post Construction at 82CFS

Figure 29: 2023074: Post Construction root wads into created pools

Figure 30: 2023074: Straight Scour pool with wood

## TABLE 14: Wilson Hawn Wallowa River Project Phase II

| HIP4 NO# | SPONSOR | LOCATION | HIP CATEGORIES |
|---|---|---|---|
| 2023077<br><br>Fish Capture | Trout Unlimited<br><br>0 captured<br>0 mortalities | Wallowa River<br>Wallowa County, OR | • Improve 2ndary Channel and Wetland Habitats<br>• Install habitat forming structures<br>• Riparian Vegetation Planting<br>• Install habitat forming materials<br>• Herbicides |

### Description:

The project goals are to restore floodplain hydrology and ecological function using restoration treatments that improve or encourage habitat for ESA-listed salmonids, including floodplain grading/channel fill, large wood placements, boulder placements, low-tech process-based restoration (LTPBR) techniques, and riparian vegetation enhancement. The restoration treatments were applied along the Wallowa River from river mile 31-31.7.

### Primary project features:

Low Tech continuation of a high-risk project: placement of low-tech structures across previous constructed floodplain from 2022.

Figure 31:2023077 Apex Jam

Figure 32: 2023077 Floodplain Habitat

## ACTIVITY CATEGORIES

Within each individual project there are a variable amount of activity categories. BPA generally lumps each set of activity categories by contract which typically share location, project and project sponsor, with the exception of herbicides, fish screens, surveys, and O&M activities which could have multiple locations lumped by program. The activity categories in red represent deviations from the mean, in these cases significant increases or decreases.

### TABLE 16: ACTIVITY CATEGORY SUMMARY

| Category | Subcategory | 3-year Average | | 2023 Totals |
|---|---|---|---|---|
| **1. Fish Passage Restoration** | | | | |
| | a. Dams, Water Control or Legacy Structure Removal. | 7 | | 5 |
| | b. Consolidate, or Replace Existing Irrigation Diversions. | 5 | | 5 |
| | c. Headcut and Grade Stabilization. | 8 | | 6 |
| | d. Low Flow Consolidation. | 0 | | 0 |
| | e. Providing Fish Passage at an Existing Facility. | 4 | | 4 |
| | f. Bridge and Culvert Removal or Replacement. | 9 | | 7 |
| | g. Bridge and Culvert Maintenance. | 2 | | 0 |
| | h. Installation of Fords. | 2 | | 1 |
| **2. River, Stream, Floodplain, and Wetland Restoration.** | | | | |
| | a. Improve Secondary Channel and Wetland Habitats. | 25 | | 23 |
| | b. Set-back or Removal of Existing, Berms, Dikes, and Levees. | 11 | | 11 |
| | c. Protect Streambanks Using Bioengineering Methods. | 10 | | 7 |
| | d. Install Habitat-Forming Instream Structures (Large Small Wood, Boulders | 39 | | 32 |

| Category | Subcategory | 3-year Average | | 2023 Totals |
|---|---|---|---|---|
| | e. Riparian Vegetation Planting. | 51 | | 47 |
| | f. Channel Reconstruction. | 11 | | 12 |
| | g. Sediment and Gravel. | 5 | | 6 |
| **3. Invasive and Non-Native Plant Control.** | | | | |
| | a. Manage Vegetation using Physical Controls. | 34 | | 29 |
| | b. Manage Vegetation using Herbicides (Riverine) | 36 | | 22 |
| | c. Manage Vegetation using Herbicides (Estuary) | 5 | | 5 |
| | d. Manage Vegetation using Herbicides (Willamette) | 0 | | 1 |
| | e. Juniper Burning | 1 | | 1 |
| | f. Prescribed Burning | 4 | | 4 |
| **4. Piling Removal.** | | | | |
| | Pile Removal | 0 | | 1 |
| **5. Road and Trail Erosion Control, Maintenance, and Decommissioning.** | | | | |
| | a. Maintain Roads. | 7 | | 7 |
| | b. Decommission Roads. | 1 | | 3 |
| **6. In-channel Nutrient Enhancement.** | | | | |
| | Nutrient Enhancement. | 0 | | 1 |
| **7. Irrigation and Water Delivery/Management Actions.** | | | | |
| | a. Convert Delivery System to Drip or Sprinkler Irrigation. | 1 | | 0 |
| | b. Convert Water Conveyance from Open Ditch to Pipeline or Line Leaking | 2 | | 1 |
| | c. Convert from Instream Diversions to Groundwater Wells for Primary Water | 0 | | 1 |
| | d. Install or Replace Return Flow Cooling Systems. | 0 | | 0 |
| | e. Install Irrigation Water Siphon Beneath Waterway. | 1 | | 0 |
| | f. Livestock Watering Facilities. | 2 | | 0 |
| | g. Install New or Upgrade/Maintain Existing Fish Screens. | 1446 | | 1625 |
| **8. Fisheries, Hydrologic, and Geomorphologic Surveys.** | | | | |
| | Surveys | 6 | | 3 |
| **9. Special Actions (for Terrestrial Species).** | | | | |
| | a. Install/develop Wildlife Structures. | 3 | | 3 |
| | b. Fencing construction for Livestock Control | 13 | | 14 |
| | c. Plant Vegetation. | 14 | | 16 |
| | d. Tree Removal for LW Projects. | 14 | | 5 |
| | e. Willamette Valley Prairie Restoration | 8 | | 7 |

## INCIDENTAL TAKE REPORTING

In the HIP4 the NMFS and USFWS HIP4 BOs defined four categories of incidental take based on the likelihood of adverse effects to ESA-listed species.

### 1. Capture of juvenile and adult fish during in-water work area isolation.

NMFS anticipates the capture of 7,500 juveniles (6000 juveniles in the Interior Recovery Domain, 1500 juveniles from the Willamette/Lower Columbia Recovery Domain), and the capture of up to 4 adults (3 from the Interior Columbia Recovery Domain and one from the Willamette/Lower Columbia Recovery Domain of the salmon and steelhead species considered in this consultation.

USFWS anticipates no more than 350 bull trout will be captured in a single year, and no more than 5 percent of the total number captured will be killed (up to 18 in a single year).

### TABLE 17: INCIDENTAL TAKE DUE TO FISH HANDLING (NMFS)

| Pacific Salmon and Steelhead | | |
|---|---|---|
| | Capture | Mortality |
| **2014** | 3593 | 8 |
| **2015** | 3541 | 59 |
| **2016** | 2435 | 130 |
| **2017** | 2446 | 78 |
| **2018** | 3282 | 189 |
| **2019** | 1174 | 33 |
| **2020** | **3504** | **84** |
| **2021** | **6640** | **329** |
| **2022** | **7452** | **92** |
| **2023** | **4285** | **65** |

## TABLE 18: INCIDENTAL TAKE DUE TO FISH HANDLING (USFWS)

| Bull Trout | | |
|---|---|---|
| | Capture | Mortality |
| **2014** | 14 | 0 |
| **2015** | 29 | 0 |
| **2016** | 5 | 0 |
| **2017** | 0 | 0 |
| **2018** | 4 | 0 |
| **2019** | 0 | 0 |
| **2020** | **95** | **0** |
| **2021** | **11** | **5** |
| **2022** | **7** | **0** |
| **2023** | **8** | **0** |

### 2. Harm due to habitat-related effects.

NMFS anticipates a maximum of 150 projects to be implemented each year. USFWS anticipates no more than 90 of these projects requiring near or in-water work (IWW). NMFS estimates that each action may modify up to 300 linear feet of riparian and shallow-water habitat; therefore, the extent of take for construction-related disturbance of streambank and channel areas in 45,000 linear stream feet (8.5 miles) per year partitioned between recovery domains.

USFWS anticipates no more than 4 active Marbled Murrelet (MAMU) nests will be disturbed/displaced per year (2 in Oregon, 2 in WA). No MAMU nests have been reported disturbed this year.

USFWS anticipates no more than 1,100 acres of potential Streak Horned Lark (SHL) habitat may be treated in a single year. Project activities have occurred in areas near managed SHL habitat. This occurred in the Willamette Valley Wildlife Management Areas (Herbert Farm and Coyote Creek).

## TABLE 19: INCIDENTAL TAKE DUE TO HABITAT RELATED EFFECTS

| | Average | 2023 | Feet |
|---|---|---|---|
| IWW | 46 | 42 | 12,600 |
| Total | 96 | 80 | |
| | | | |

| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| IWW | 35 | 45 | 41 | 40 | 43 | 43 | 52 | 56 | 57 | 47 |
| Total | 86 | 96 | 86 | 95 | 92 | 113 | 99 | 96 | 112 | 83 |
| | | | | | | | | | | |

### Harm due to construction related disturbance (Turbidity).

The extent of take will be exceeded if the turbidity plume generated by construction activities is visible above background levels, about a 10 percent increase in natural stream turbidity, downstream from the project area source to be measured/observed every four hours, and take is exceeded when activities continue to result in visible suspended sediment beyond two consecutive monitoring intervals.

There was one case of turbidity exceedance (2023072) at Desolation Creek. Due to a large amount of fine material within the channel fill, groundwater intruding into the dewatered stream channel, presence of mussels, and brief intense rains made controlling turbidity during channel activation challenging. Once the channel was activated all equipment was pulled from the channel and work stopped, the sponsor left the creek to sort itself out as there wasn't a way to pulse turbid flows within the active channel. None the less, a turbidity plume was evident in the North Fork John Day until ~12/18hrs later. NMFS (Rebecca Viray) was notified on August 10th, 2023.

## 4. Application of herbicides to control invasive and non-native plant species

The best available indicator for the extent of take due to the proposed invasive plant control is the annual limitation on the extent of treated riparian acres. To limit the potential negative effects from herbicide use while still allowing use of herbicides in this restoration program, NMFS limits BPA's take to 1,500 riparian acres of treatment each year.

### TABLE 20: ACRES TREATED WITH HERBICIDE

| | RIPARIAN | UPLAND |
|---|---|---|
| 2013 | 409 | 2482 |
| 2014 | 449 | 8282 |
| 2015 | 715 | 7399 |
| 2016 | 836 | 8940 |
| 2017 | 831 | 5561 |
| 2018 | 533 | 2127 |
| 2019 | 1020 | 2976 |
| 2020 | 929 | 4612 |
| 2021 | 1336 | 4356 |
| 2022 | 991 | 3433 |
| 2023 | **908** | **2714** |

## NON COMPLIANCE

In 2023 there were 2 recorded instances of non-compliance with the HIP. Both came from sponsors not reporting data (project completion forms). In both cases (2023084 – Trout Unlimited, 2023091 – Yakama Confederated Tribes) the sponsor has worked on several projects with BPA for years and this has never been an issue in the past. With that history of compliance from both sponsors we're hoping that these were isolated incidents and won't be an issue moving forward.

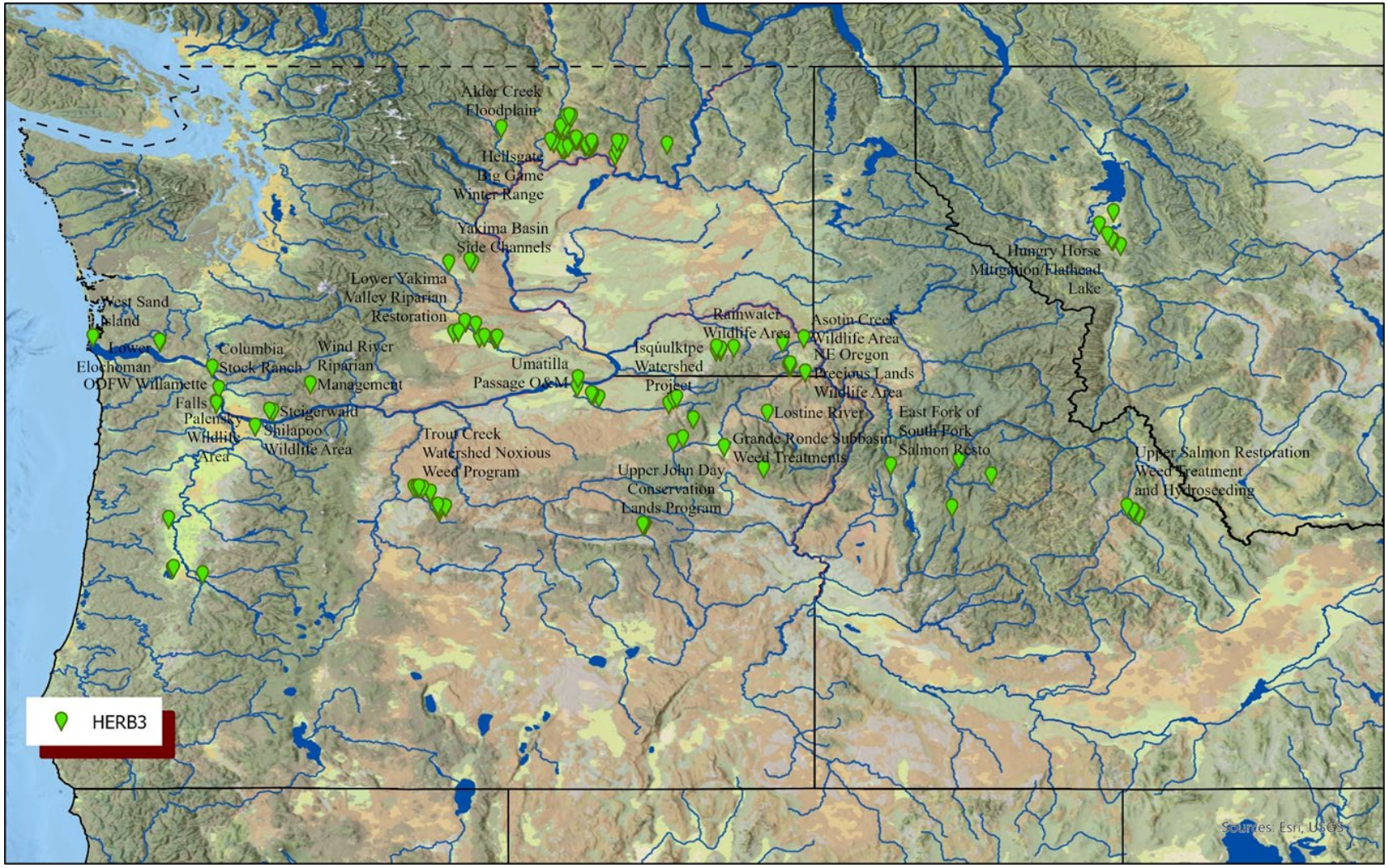
### TABLE 21: REPORTED NONCOMPLIANCE EVENTS

| 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| NA | 6 | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 2 |

## HERBICIDE USE

Herbicide use continues to be the most widely used project activity category under the HIP4. This is due to the numerous wildlife mitigation areas that BPA purchases and are managed under contract by various entities.

## MAP 3: HERBICIDE APPLICATION



## RIVERINE HERBICIDE APPLICATIONS

The analysis in the BOs affirm that application of chemical herbicides will result in short-term degradation of water quality which will cause injury to fish in the form of sublethal adverse physiological effects. Up to 1,500 total riparian acres may be treated in a calendar year under this programmatic consultation. There are no limits to upland acreage.

The addition of herbicide treatment in the Estuary and the Willamette is expected to increase the amounts of annual herbicide applied in the upcoming years.

### TABLE 22: PROJECTS WITH HERBICIDE USAGE

| HIP4 NO# | PROJECT | RIPARIAN | UPLAND |
|---|---|---|---|
| **2023001** | ODFW Willamette Valley O & M | 4.45 | 188.24 |
| **2023010** | West Sand Island Habitat Restoration Phase 3 – Vegetation Improvements | 80.57 | 0 |
| **2023011** | Columbia Stock Ranch – Weed Treatment, Fence Installation, Fence Pulling, Tree Planting and Maintenance, and Site Prep. | 0 | 51 |
| **2023015** | Isquuulktpe Watershed Project | 0.7 | 61.9 |
| **2023017** | Steigerwald Floodplain Restoration Project | 44 | 76 |
| **2023018** | Lower Elochoman Restoration Phase III | 191 | 0 |
| **2023019** | Lower Elochoman Restoration Phase II | 62 | 0 |
| **2023021** | Yakima Basin Side Channels – 2023 Maintain Habitat Parcels, Manage Habitat Projects, Fortune Habitat Protection, Pott Rd Invasive Crack Willow Removal, and Pott Rd. House Demo | 0 | 8 |
| **2023022** | Trout Creek Watershed Noxious Weed Program (JCSWCD) | 8.85 | 26.65 |
| **2023024** | Hellsgate Big Game Winter Range O&M 2023-24 | 62.118 | 123.24 |
| **2023025** | Shillapoo Wildlife Area | 20 | 390 |
| **2023029** | East Fork of South Fork Salmon River Restoration | 17.6 | 16.2 |
| **2023031** | Asotin Creek Wildlife Area O&M | 0 | 514.5 |
| **2023037** | NE Oregon Precious Lands Wildlife Area | 20 | 237 |
| **2023039** | Rainwater Wildlife Area | 0 | 20 |
| **2023041** | M2 Alder Creek Floodplain 2017-191 | 12 | 0 |
| **2023044** | Upper John Day Conservation | 5 | 33 |
| **2023054** | Umatilla Passage O&M | 5 | 5 |
| **2023056** | Lower Yakima Valley Riparian Wetlands Restoration | 89 | 597 |
| **2023063** | Upper Salmon Restoration Weed Treatment and Hydroseeding | 240.28 | 136.12 |
| **2023064** | Grande Ronde Subbasin Restoration Invasive Weed Treatments | 25.39 | 0 |
| **2023073** | Hungry Horse Mitigation/Flathead Lake Restoration | 18 | 230 |
| **2023092** | Lostine Side Channel and Wetland Complex | 3 | 0 |

| | | | |
|---|---|---|---|
| **2023097** | Wind River Riparian Vegetation Management | 19.7 | 0 |

## ESTUARINE HERBICIDE APPLICATIONS

2023 is the fourth official year of estuarine herbicide application. This process began in the spring of 2019, through technical assistance from Dr. Scott Hecht and Dr. Nancy Munn of NMFS to explore options for herbicide application within the Estuary using proposed HIP4 conservation measures and methodologies as a baseline action and then refining the treatment with respect to the various estuarine zones (high marsh, low marsh and tidal flat/aquatic bed). Specific guidance with respect to type of herbicide applied, method of application, rate of application, frequency of treatment, timing of treatments, and the location and acreage of treatment area.

During the exchange, information needs were relayed to evaluate the action and direct communication was opened with the sponsors CREST and Columbia Land Trust. Additional information was provided via site visits and several herbicide application memos (HAM)s were drafted. The HAM contained aerial site maps showing proposed activities and a Light Detection and Ranging (LIDAR) or another type of topographic map depicting site elevations.

This process is still being refined and will likely undergo changes in the future depending on workload and lessons learned.

The following six projects were evaluated:

### 1. West Sand Island Habitat Restoration Phase 3 (HIP No# 2023010)

CREST continued the use of herbicide application on yellow-flag iris in the estuarine high marsh and on gorse and scotch broom in the interior depressional wetlands and upland/riparian areas. The use of herbicide application is part of a multi-action approach to treat targeted invasive species and is vital to planting success and will help prevent weed infestations from regaining ground and migrating into the interior of the island through the proposed excavated tidal connections post-restoration.

### 2. Steigerwald Floodplain Restoration (HIP No# 2023017)

LCEP continued to use herbicides to successfully implement the project. Because the Steigerwald Project site, including Gibbons Creek and adjacent floodplains, have been connected directly to the Columbia River, all herbicide treatment were in accordance with the requirements for estuarine systems. In 2023, 44 acres of High Marsh was spot treated to control the growth of invasive reed canarygrass.

### 3. Columbia Stock Ranch – Weed Treatment (HIP No# 2023011)

Project activities for 2023 included weed control, planting, native plant maintenance, and future planting site preparation. These actions are all paramount to project success in terms of managing the property in order to recover ecological integrity and function to support Columbian white-tailed deer (*Odocoileus virginianus leucurus*) (CWTD), as well as broader ecosystem function. The site contains two treatment areas consisting of a high marsh area and an upland area.

Target species include Himalayan blackberry (*Rubus bifrons*), Canada thistle (*Cirsium arvense*), reed canarygrass (*Phalaris arundinacea*), tansy ragwort (*Jacobaea vulgaris*) and other priority species.

### 4. Elochoman 3 Restoration – Weed Treatment (HIP No# 2023018)

Weed control work in 2023 targeted re-sprouting blackberry, priority broadleaf species (knotweed), and continued site prep for planting. The vegetation control work is paramount to project success in terms of recovering ecological integrity and function supporting Columbian white-tailed deer (Odocoileus virginianus leucurus) (CWTD), salmonids, and broader ecosystem function.

Target species include Himalayan blackberry (Rubus bifrons), reed canarygrass (Phalaris arundinacea), and knotweed species (Fallopia spp.). Control of these species was completed with backpack sprayers and/or vehicle-mounted boom or wand sprayers using approved methods and herbicides as outlined in the HIP.

### 5. Elochoman 2 Restoration - Weed Treatment (HIP No# 2023019)

Similar to project 2023018, weed control work in 2023 targeted re-sprouting blackberry, priority broadleaf species (knotweed), and continued site prep for planting. The vegetation control work is paramount to project success in terms of recovering ecological integrity and function supporting Columbian white-tailed deer (Odocoileus virginianus leucurus) (CWTD), salmonids, and broader ecosystem function.

Target species include Himalayan blackberry (*Rubus bifrons*), reed canarygrass (*Phalaris arundinacea*), and knotweed species (*Fallopia* spp.). Control of these species was completed with backpack sprayers and/or vehicle-mounted boom or wand sprayers using approved methods and herbicides as outlined in the HIP.

### 6. Palensky Wildlife Area Ludwigia Herbicide Treatment (HIP No# 2023055)

The project included application of aquatic herbicide to control invasive creeping water primrose (*ludwigia*) at the J.R. Palensky Wildlife Area in Multnomah County, Oregon beginning in the summer of 2023. Specifically, ODFW applied the herbicide Glyphosate (Agri-Dex®) in Horseshoe Pond, which discharges into the Multnomah Channel.

## HIP REVIEW PROCESS (Engineering Technical Services)

Through the HIP Review process, BPA has been conducting thorough technical reviews of all medium and high-risk projects. These technical reviews are conducted by a licensed PE and sometimes involve several iterations of back-and-forth review junctures between the project sponsors. Functional review is done by BPA staff (EC Lead) who review the project for adherence to HIP4 criteria and coordinate information sharing and collaboration amongst project partners. Both reviews together constitute the HIP Review Process.

Project sponsors and other federal partners are actively engaged in the HIP Review process and are submitting projects early. BPA is receiving and reviewing projects that are to be implemented in 2023 and beyond.

### TABLE 23: HIP REVIEW WORKLOAD

| | CY13 | CY14 | CY15 | CY16 | CY17 | CY18 | CY19 | CY20 | CY21 | CY22 | CY23 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Medium Risk | 4 | 14 | 24 | 24 | 23 | 37 | 26 | 64 | 43 | 31 | 32 |
| High Risk | 2 | 6 | 2 | 3 | 5 | 14 | 6 | 25 | 11 | 10 | 11 |

Figure 33:2023040 Upper Salmon Fish Screens

## FISH SCREENS

BPA now funds several state fish screen programs: for O&M actions within the John Day River, Grande Ronde, Imnaha River, Walla Walla, Umatilla River, Deschutes, Willamette, and Hood river subbasins in Oregon, and as well as in the Upper Salmon and Little Salmon River Basins in Idaho.

BPA collected PNFs and PCFs with the following number of actions for both ODFW and IDFG fish screen programs. These included activities performed by ODFW & IDFG screen tenders such as the following:

- Replacement of gearboxes, gear motors, and bearings.
- Replacement of solar batteries and timers and installation of circuit breakers.
- Replacement of side and bottom seals.
- Repairs to paddlewheels.
- Removal of debris and sediment from structures.
- Debris and sediment piles removed or leveled.
- Installation of new weir boards.
- Repair pump screens as necessary
- Replacement of dam boards on fish passage structures.
- Replacement of complete system components within the current concrete structure including screens (screen cradle, stainless steel perforated plate, shaft, bearings, seals), gantries, walkways, handrails, trash racks, paddlewheels, drivelines, and gearboxes.

These activities were easily isolated from the water with no impacts to the stream.

### TABLE 24: FISH SCREENS

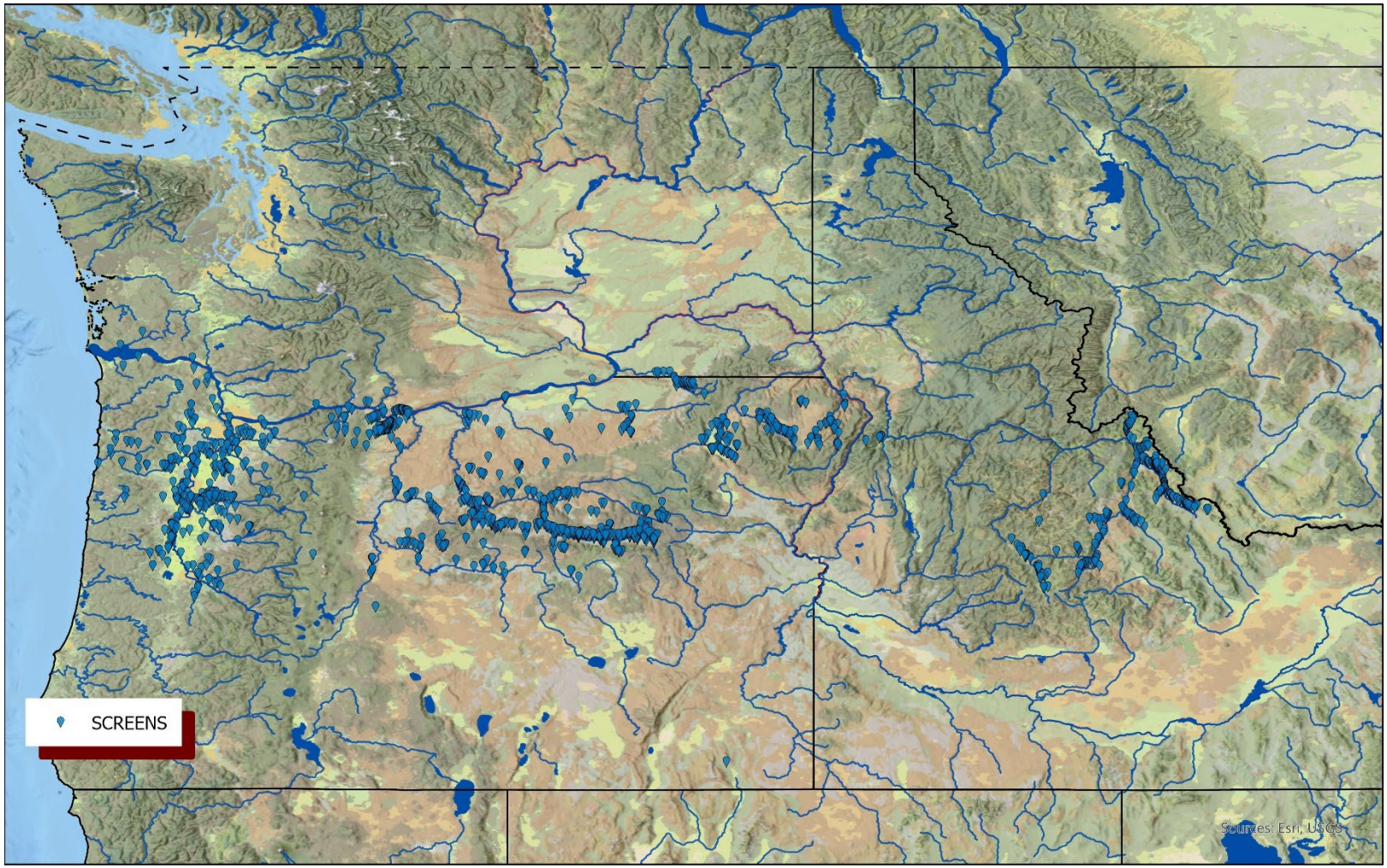
| HIP4 NO# | Project Title | No# of Actions |
|---|---|---|
| 2023013 | Oregon Fish Screens Project - Low risk I | 1428 |
| 2023014 | Upper Salmon Fish Screen O & M | 166 |
| 2023040 | Upper Salmon Basin Fish Screens | 4 |
| 2023048 | Oregon Fish Screens Project | 16 |
| 2023054 | Umatilla Passage O&M | 6 |
| 2023090 | Oregon Fish Screens Project | 3 |

2023 was the sixth full year that the HIP4 was used to cover all actions associated with State Fish Screen Programs. BPA worked closely with State Fish Screen Programs to explore how they track the O&M actions throughout the basin. Initially, it was difficult to predict what specific actions were being taken and the potential impacts to listed species as a result; however, BPA established reporting requirements that included a list of typical actions taken, a list of specific action locations where maintenance was anticipated to occur, and a field form for specific actions that caused reportable impacts (turbidity exceedances and take of listed species).

Figure 34: 2023040(Upper Salmon Fish Screen)

Figure 35:2023040(Upper Salmon Fish Screen)

## MAP 4: 2023 HIP4 FISH SCREEN O&M LOCATIONS



## WILLAMETTE VALLEY WILDLIFE MITIGATION

Category 9e is a new activity category under the HIP 4, exclusively for the ODFW Willamette Wildlife Mitigation Program (WWMP). Operations, maintenance, and restoration activities on nine wildlife management areas (WMAs) is conducted by ODFW in the Willamette Valley. Most actions taken under this contract are for routine management and operations of the wildlife areas. The following project was covered under this activity category (**HIP No: 2023001**).

Previously these projects were covered by PROJECTS, however since BPA is the primary funding agency, ESA coverage was transferred over to the HIP. Since the program was already negotiated under PROJECTS, all conservation measures remained intact to ensure consistency and efficiency.

### TABLE 25: WILLAMETTE VALLEY ACTIONS

| WMA | ESA-Listed Species USFWS | ESA-listed Species NMFS | HIP Activity Categories |
|---|---|---|---|
| **Coyote Creek South (CCS)** | Marbled murrelet<br>Northern spotted owl<br>Streaked horned lark<br>Fender's blue butterfly<br>Taylor's checkerspot<br>Kincaid's lupine<br>Willamette daisy | NA | Remove Vegetation Using Physical Controls (3a)<br>Remove Vegetation Using Herbicides (3b) Prescribed Burning (3f)<br>Plant Vegetation (9c) |
| **Coyote Creek Northeast (CCNE)** | Marbled murrelet<br>Northern spotted owl<br>Streaked horned lark<br>Fender's blue butterfly<br>Taylor'scheckerspot butterfly<br>Kincaid's lupine<br>Willamette daisy | NA | Remove Vegetation UsingPhysical Controls (3a) Remove Vegetation Using Herbicides (3b)<br>Plant Vegetation (9c) |
| **Flight's End (FE)** | Columbian white-tailed deer<br>Northern spotted owl<br>Streaked horned lark<br>Yellow-billed cuckoo<br>Bull trout<br>Nelson's checker-mallow | Steelhead<br>Chinook<br>Coho salmon | Remove Vegetation UsingPhysical Controls (3a) Remove Vegetation Using Herbicides (3b)<br>Maintain Roads (5a)<br>Install Wildlife Structures (9a)<br>Plant Vegetation (9c) |
| **Gail Achterman Wildlife Area (GAWA)** | Marbled murrelet<br>Northern spotted owl<br>Streaked horned lark<br>Yellow-billed cuckoo<br>Fender's bluebutterfly<br>Kincaid's lupine<br>Nelson's checker-mallow<br>Willamette daisy | Steelhead<br>Chinook<br>Coho salmon | Remove Vegetation UsingPhysical Controls (3a) Remove Vegetation Using Herbicides (3b)<br>Plant Vegetation (9c) |
| **Herbert Farm and** | Marbled murrelet<br>Northern spotted owl | Steelhead<br>Chinook | Remove Vegetation Using Physical Controls (3a)<br>Remove Vegetation Using |

| | | | |
|---|---|---|---|
| **Natural Area (HFNA)** | Streaked horned lark<br>Yellow-billed cuckoo<br>Fender's blue butterfly<br>Taylor's checkspot butterfly<br>Kincaid's lupine<br>Nelson's checkermallow<br>Willamette daisy | Coho salmon | Herbicides (3b)<br>Prescribed Burning (3f)<br>Plant Vegetation (9c) |
| **Palensky Wildlife Area (PWA)** | Columbian white-tailed deer<br>Northern spotted owl<br>Streaked horned lark<br>Yellow-billedcuckoo<br>Bull trout<br>Nelson's checker-mallow | Steelhead<br>Chinook<br>Coho salmon | Remove Vegetation Using Physical Controls(3a)<br>Remove Vegetation Using Herbicides(3b) Maintain Roads(5a)<br>Install Wildlife Structures (9a)<br>Plant Vegetation (9c) |
| **Sorenson Meadows (SOR)** | Northern spotted owl<br>Streaked horned lark<br>Fender's blue butterfly<br>Taylor'scheckerspot butterfly<br>Nelson's checker-mallow | Steelhead<br>Chinook<br>salmon | Remove Vegetation Using Physical Controls(3a)<br>Remove Vegetation Using Herbicides (3b)<br>Decommission Road (5b)<br>Plant Vegetation (9c) |

## Description of Activities

**Vegetation Management Using Physical Controls (3a):** Vegetation removal would be conducted on all WMAs using various mechanical and manual control methods, including mowing, weed whacking, disking, hand pulling, and cutting. Vegetation removal would be focused on controlling the growth of noxious and invasive weed species, particularly reed canarygrass, Himalayan blackberry, English ivy, and knotweed.

**Vegetation Management Using Herbicides (3b):** Vegetation removal would also be conducted on all WMAs using herbicides. Herbicides would be applied by either boom spraying or spot spraying with backpack applicators as appropriate.

**Prescribed Burning (3f):** Annual prescribed burning programs at HFNA and CCS would be continued. These are ongoing, phased programs to conduct controlled burns to clear noxious and invasive weed species and mimic natural prairie wildfire cycles. All burns would be conducted outside of bird nesting season and comport with local regulations.

**Maintain Roads (5a):** Existing roads, trails, and infrastructure (gates, signs, etc.) would be maintained on various WMAs. All road work would be limited to the existing road prisms and include activities such as adding gravel and re -grading to fill potholes, clearing snow and ice during winter months, and removing encroaching vegetation. On WMAs which are publicly accessible, parking lots would be maintained using similar methods. Signs, gates, fences, and other access control. Infrastructure would also be maintained, replaced, and repaired as necessary.

**Decommission Road (5b):** A neighboring landowner at SOR established an illegal road through a portion of the WMA by trampling and removing vegetation to create a dirt path without the

knowledge or consent of ODFW. ODFW would remove this road by removing the debris left by the trespassers, destroying the pathway, and replanting vegetation in the area. More aggressive exclusion methods (fencing, etc.) to deter the trespassers from accessing the WMA would also be considered for implementation in the future if problems persist.

**Install/Maintain Wildlife Structures (9a):** Turtle nesting mounds would be established at FEand PWA. These mounds would be constructed of loose soil piled a few feet deep to provide locations for turtles to create nests for their eggs. Wooden basking structures would also be installed to provide space for turtles to rest near the nesting mounds. Existing habitat structures (bird and bat nesting boxes, woody debris habitat structures, etc.) would also be maintained.

**Plant Vegetation (9c):** ODFW would plant native vegetation in all areas treated for invasive and noxious weeds. This planting would be both seeding using hand or broadcast seeders and hand or mechanical planting of nursey-grown plants, as appropriate for each location. All planting sites would be monitored for regrowth of invasive species, as well as to monitor survival rates of new plantings, which would be fertilized, watered, and mulch as needed.

## MAP 5: 2023 HIP4 WILLAMETTE VALLEY ACTIONS