

NORTH UMPQUA HYDROELECTRIC PROJECT

FERC No. P-1927

Protection, Mitigation, and Enhancement Measures



2020 Annual Report



June 2021

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On the cover: Slide Creek waterfall in spring (Photo by Rich Grost)

1.0 INTRODUCTION

Located on the west side of the Cascade mountain range in southern Oregon, the North Umpqua Hydroelectric Project (FERC No. P-1927; Project) consists of eight dams and power plants that have a combined capacity to generate 194 megawatts of power. The project was constructed between 1947 and 1956.

In the early 1990s, as the expiration of the first Federal Energy Regulatory Commission (FERC) license approached, PacifiCorp initiated the relicensing process with FERC. In June 2001, the relicensing process resulted in the development and signing of the North Umpqua Hydroelectric Project Settlement Agreement (Settlement Agreement, SA). The Settlement Agreement identifies annual reporting requirements ranging from fiduciary reporting to narrative descriptions of actions. This annual report documents a calendar year (January 2020 through December 2020) and fulfills reporting requirements of the following Settlement Agreement sections:

- SA Section 7.2.3 (amended) Gravel Augmentation Program Funding and Accounting—Written annual report describing the amounts deposited and disbursed;
- SA Section 8.3.5 (amended) North Umpqua River Habitat Restoration/Creation Project Funding and Accounting—Written annual report describing the amounts deposited and disbursed;
- SA Section 19.1.1.3 Tributary Enhancement Program Funding and Accounting—Written annual report describing the amounts deposited and disbursed;
- SA Section 19.3.1 Mitigation Fund Annual Reporting—Written annual report describing the amounts deposited and disbursed; and
- SA Section 21.4.2 Environmental Coordinator Reports—Written annual report on the activities of the RCC and on the implementation of the PM&E Measures.

1.1 Background

On June 13, 2001, PacifiCorp filed a Settlement Agreement pursuant to FERC Rule 602 (Title 18 Code of Federal Regulations § 385.602) to resolve issues concerning the relicensing of the North Umpqua Hydroelectric Project. Parties to the Settlement Agreement include PacifiCorp, the USDA Forest Service (USDA-FS), the USDI Fish and Wildlife Service (USFWS), the USDI Bureau of Land Management (BLM), the National Marine Fisheries Service (NMFS; now known as National Oceanic and Atmospheric Administration (NOAA) Fisheries), the Oregon Department of Environmental Quality (ODEQ), the Oregon Department of Fish and Wildlife (ODFW), and the Oregon Water Resources Department (OWRD), collectively referred to as the “Parties.” As required by statute, FERC conducted a National Environmental Policy Act (NEPA) process that concluded with a Final Environmental Impact Statement (FEIS) issued in March 2003. Based on the findings of the FEIS, FERC developed new license articles for the Project. FERC formally issued the new license on November 18, 2003, designating a license term of 35 years.

Under the provisions of the Settlement Agreement, the license is not final until all administrative and judicial appeals are exhausted. The license was appealed to the Ninth U.S. Circuit Court of Appeals on May 21, 2004. On September 1, 2005, the Court ruled the case in favor of FERC, USDA-FS, and PacifiCorp. The license was considered final on October 18, 2005.

Copies of the Settlement Agreement and the FERC license are available from FERC upon request or on the PacifiCorp Web site at: <https://www.pacificorp.com/energy/hydro/north-umpqua-river.html>.

1.2 Resource Coordination Committee

SA Section 21 establishes a process to facilitate coordination and decision-making concerning implementation of Settlement Agreement measures. To accomplish this objective, SA Section 21.1 provides for the creation of the Resource Coordination Committee (RCC) consisting of representatives from the signing Parties. The purposes of the RCC, discussed in detail in SA Section 2.0, are to: (1) facilitate coordination and consultation on plans developed by PacifiCorp for the implementation of protection, mitigation, and enhancement measures (PM&E Measures); (2) coordinate the implementation of PM&E Measures and ongoing monitoring requirements by PacifiCorp; (3) establish appropriate procedures for conducting activities; and (4) establish subcommittees to accomplish these objectives.

1.3 Report Organization and Review

The 2020 North Umpqua Hydroelectric Project Annual Report provides information on RCC roles, responsibilities, members, and meetings; PM&E Measure implementation; FERC license actions; and fiduciary reporting.

2.0 RESOURCE COORDINATION COMMITTEE

This section provides an overview of RCC roles and responsibilities according to the Settlement Agreement and as subsequently implemented. It also presents a summary of RCC meetings held during the reporting period, including major discussion points, decisions, and action items associated with each meeting.

2.1 RCC Roles and Responsibilities

The purpose and role of the RCC, as defined in SA Section 21.1, is to facilitate coordination and implementation of PM&E Measures. The RCC also looks at implementation requirements, and through collaboration and sharing of information, works to achieve desired results. Specifically excluded from RCC responsibility and authority is the administration of SA Section 19.1 Tributary Enhancement Program and SA Section 19.3 Mitigation Fund, administered by ODFW and USDA-FS, respectively. However, responsible Parties may consult with the RCC concerning measures conducted pursuant to the program and fund.

The structure and process of the RCC is intended to provide a forum to address time-sensitive matters, give early warning of problems, and coordinate member organization actions, schedules, and decisions to save time and expense. As described in the Settlement Agreement, the RCC must endeavor to conduct its business by consensus. However, in the event of disagreements, the Parties may refer disagreements to appropriate policy-level decision-makers. Decisions of the RCC may not usurp the authority of individual Parties or specific governmental agencies identified in the Settlement Agreement as having approval authority regarding specific PM&E Measures.

The RCC is responsible for the following measures pursuant to the Settlement Agreement:

- coordinating implementation of the Resource Coordination Plan (RCP), including ongoing operations and maintenance (SA Section 21.1);
- coordinating implementation of PM&E Measures and ongoing monitoring requirements by PacifiCorp (SA Section 21.1);
- coordinating responses and evaluations specifically assigned to the RCC (SA Sections 8.2.2, 8.3.3, 12.2, 14.3.3, 14.5, 17.8, 19.2.1 and 22.5.2, and SA Amendment Section 7.2);
- coordinating and consulting on plans developed by PacifiCorp (SA Section 21.1);
- reviewing and commenting on the draft annual report of RCC activities and implementation of PM&E Measures (SA Section 21.4.2); and
- serving as a common point of contact for public information regarding Settlement Agreement implementation.

The following measures are specifically excluded from RCC responsibility:

- administration of the Tributary Enhancement Program through ODFW's Memorandum of Understanding (SA Section 19.1);
- administration of the Mitigation Fund through USDA-FS (SA Section 19.3); and
- approval of plans and actions regarding specific PM&E Measures assigned to individual organizations for resource protection (SA Section 21.2).

The RCC defined discrete goals and functional responsibilities to enhance its effectiveness, including the following:

- interpreting the Settlement Agreement through provisions to on-the-ground planning and implementation;
- monitoring implementation of the Settlement Agreement as a whole to provide a wider view than one agency's perspective;
- avoiding surprises and errors through effective communication;
- tracking progress as the interface for the Parties during implementation;
- identifying policy issues by working collectively to define and clarify the issues and options for transmittal to the executive members of the Parties;
- providing public information as a source of information regarding Settlement Agreement implementation with a collective voice;
- promoting efficiency through sharing of information among organizations; communicating changes in policy, procedure, or regulation; consulting before decision-making; and sharing technical resources;
- implementing the Settlement Agreement collaboratively to ensure that all Parties' interests continue to be valued throughout the new license term; and
- communicating its progress through the development of a website at: <https://www.pacificorp.com/energy/hydro/north-umpqua-river.html>.

2.2 RCC Members

The Parties have each appointed a member and an alternate to the RCC. The members are shown in Table 1. The RCC members work with a designated caucus within their respective organizations.

Table 1. 2020 Resource Coordination Committee Members

RCC Member	Organization
Pam Sichting	USDA Forest Service, Umpqua National Forest, Roseburg, Oregon
Jim Thrailkill	USDI Fish and Wildlife Service, Roseburg, Oregon
Michael Korn	USDI Bureau of Land Management - Roseburg District, Roseburg, Oregon
Jim B. Muck	NOAA Fisheries West Coast Region, Roseburg, Oregon
Jason Brandt	Oregon Department of Fish and Wildlife, Roseburg, Oregon
Chris Stine	Oregon Department of Environmental Quality, Eugene, Oregon
Craig Kohanek	Oregon Water Resources Department, Salem, Oregon
Steve Albertelli	PacifiCorp, Medford, Oregon

2.3 RCC Meetings

During the reporting period, the RCC conducted four meetings to review work plans, discuss implementation objectives for current and future PM&E Measures, and facilitate the overall Settlement Agreement implementation. The formal ground rules established and adopted by the RCC provide the functional framework for this collaborative approach. These ground rules are provided on the PacifiCorp website at:

<https://www.pacificorp.com/energy/hydro/north-umpqua-river.html>

Meeting summaries are drafted and distributed to the RCC members for review and comment. After corrections have been made as appropriate, the RCC approves the summaries by consensus. Meetings are open to the public for comment, and any comments received are added to the meeting summaries.

This section provides highlights of items discussed at RCC meetings during the reporting period. Detailed meeting summaries are provided on the PacifiCorp website at: <https://www.pacificorp.com/energy/hydro/north-umpqua-river.html>.

- The RCC approved the following expenditures, funding proposals, and other requests:
 - TWG (Technical Working Group) recommendation to spend the remaining funds in both the SA 7.2 and SA 8.3 accounts on fish habitat and gravel augmentation this year.
 - USDA-FS request to divert up to one cubic foot per second (cfs) from Fish Creek to Fish Creek Forebay to maintain the forebay water surface elevation for a source of water to suppress wildfire during the CY2020 fire season.



Figure 1. Sam Moyers (ODFW) supervising repositioning of boulders to maintain Soda Springs spawning habitat creation project.

3.0 PROTECTION, MITIGATION, AND ENHANCEMENT MEASURES

This section presents a progress report of PM&E Measures defined in the North Umpqua Settlement Agreement and FERC License implemented during calendar year 2020. A summary and status report of all License and Settlement Agreement related documents submitted to FERC is also presented.

3.1 Implementation of PM&E Measures

The implementation schedule for remaining PM&E Measures is presented in Table 2. PM&E measures that are not ongoing and/or were completed in prior years have been removed from the table. The current status of the PM&E Measures is presented in Table 3.

During 2020, Settlement Agreement and license actions focused on implementing management and monitoring plans and operating and maintaining existing PM&E Measures. All Parties have worked cooperatively toward meeting Settlement Agreement schedule commitments. PM&E implementation and RCC coordination this year were complicated by the COVID-19 pandemic and the Archie Creek Wildfire, which burned approximately 20 miles of the Transmission Lines 39 and 46 rights-of-way, ODFW's Rock Creek Fish Hatchery, and other infrastructure in the North Umpqua Basin from Glide to Steamboat Creek in September 2020.

Table 2. PM&E Measures Implementation Schedule

		Key											
		Due Date											
		Complete											
		YEAR											
SA Section	PM&E	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023 +
6.0 RAMPING													
6.2.1	Slide Creek Ramping Monitoring Plan Implementation		•	•	•	•	•	•	•	•			
6.4	Wild & Scenic Ramping Restrictions	•	•	•	•	•	•	•	•	•			
6.5	Bypass Reach Ramping Restrictions	•	•	•	•	•	•	•	•	•			
6.6	Project Maintenance - Appendix D Schedule	•	•	•	•	•	•	•	•	•			
6.7	Emergency Shutdown Ramp Restrictions	•	•	•	•	•	•	•	•	•			
7.0 RESTORATION OF FLUVIAL PROCESSES													
7.2	Gravel Augmentation Program	•	•	•	•	•	•	•	•	•			
7.3	Passage of Woody Debris	•	•	•	•	•	•	•	•	•			
7.4	Passage of Sediment (if high flows present)	•	•	•	•	•	•	•	•	•			
8.0 MAINSTEM HABITAT ENHANCEMENT													
8.3.5	Soda Springs Funding and Accounting	•	•	•	•	•	•	•	•	•			
9.0 RESERVOIR AND FOREBAY MANAGEMENT													
9.1	Stocking of Rainbow Trout Funding	•	•	•	•	•	•	•	•	•			
9.3	Management of Lemolo Lake Reservoir	•	•	•	•	•	•	•	•	•			
9.5	Fish Salvage during Shutdowns	•	•	•	•	•	•	•	•	•			
12.0 VEGETATION MANAGEMENT													
12.1	Vegetation Management Plan Development and Implementation	•	•	•	•	•	•	•	•	•			
12.2	Noxious Weed Control	•	•	•	•	•	•	•	•	•			
13.0 AVIAN PROTECTION													
13.4	Records & Database Management System	•	•	•	•	•	•	•	•	•			
14.0 EROSION & SEDIMENT CONTROL													
14.5	Erosion Monitoring	•	•	•	•	•	•	•	•	•			
15.0 TRANSPORTATION													
15.1	Transportation Management Plan Implementation	•	•	•	•	•	•	•	•	•			
15.2	PPL Roads to USDA-FS Standards	•	•	•	•	•	•	•	•	•			
15.3	Cost Sharing for Joint Roads and Maintenance	•	•	•	•	•	•	•	•	•			
15.5	Bridges - Inspections/Maintenance	•	•	•	•	•	•	•	•	•			
15.5.1	Bridge Maintenance Cost Sharing	•	•	•	•	•	•	•	•	•			
15.6	Culvert Maintenance - PPL Use Roads	•	•	•	•	•	•	•	•	•			

Key	
	Due Date
•	Complete

		YEAR											
SA Section	PM&E	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023 +
16.0 AESTHETICS													
16.1	Aesthetics Management Plan Implementation	•	•	•	•	•	•	•	•	•			
17.0 RECREATION													
17.2	Recreation O&M Funding	•	•	•	•	•	•	•	•	•			
17.7	Law Enforcement Funding	•	•	•	•	•	•	•	•	•			
17.8	Recreation - Capital Improvements	•	•	•	•	•	•	•	•	•			
17.9	Public Information Funding	•	•	•	•	•	•	•	•	•			
17.10	Annual Monitoring Funding	•	•	•	•	•	•	•	•	•			
18.0 CULTURAL													
18.1	Historic Properties Management Plan Implementation	•	•	•	•	•	•	•	•	•			
18.3/18.6	Site Discovery/Monitoring	•	•	•	•	•	•	•	•	•			
18.4	Protection, Restoration, and Recovery	•	•	•	•	•	•	•	•	•			
19.0 MITIGATION													
19.1.1	Tributary Enhancement Account - Use of Funds	•	•	•	•	•	•	•	•	•			
19.2	Long-Term Monitoring/Predator Control Funding	•	•	•	•	•	•	•	•	•			
19.2.1	Long-Term Monitoring/Predator Control Disbursements	•	•	•	•	•	•	•	•	•			
19.3.3	Federal Mitigation Funding	•	•	•	•	•	•	•	•	•			
19.4.1	Monitoring and Oversight	•	•	•	•	•	•	•	•	•			
21.0 COORDINATION & DECISION-MAKING													
21.1	Resource Coordination Committee	•	•	•	•	•	•	•	•	•			
21.1	Resource Coordination Plan - Developed and Implemented	•	•	•	•	•	•	•	•	•			
21.4.2	Annual Report	•	•	•	•	•	•	•	•	•			
21.5	Site Specific Plan Development	•	•	•	•	•	•	•	•	•			

Table 3. PM&E Measures Status

SA Section	PM&E Measure	Due Date	Current Status
4.1	Fish Passage at Soda Springs Dam Operations and Maintenance	2012-2038	The fish passage facilities were operated as designed and intended. The annual O&M report was reviewed by the agencies and filed with FERC. Fish passage continued to be monitored and reported annually as part of the SA 19.2 Long-term Monitoring Program and the associated annual report.
5.1	Instream Flow Increases in Project Bypass Reaches	2005-2038	License-required minimum flows continued to be provided and managed within required ramp rate allowances to the greatest extent possible.
5.5	Instream Flow Monitoring	2002-2038	Monitoring and reporting continued as required in the Flow Monitoring Plan, with the USGS contracted to manage the stream gages and related data. Water year reports were produced and provided based on the provision of publication-grade data from the USGS to PacifiCorp.
6.2.1	Slide Creek Ramping Monitoring Plan Implementation	2013-2020	A final monitoring report was produced by the TWG and will be filed with the FERC in 2021. The report indicated that salmon and steelhead do use the Slide Creek Full-flow Reach of the North Umpqua River for spawning, hence any resumption of daily load shaping operations will follow the flow regulation of changing load no more than 510 cfs per hour (equivalent to one-unit flow at Toketee powerhouse) as specified within the Settlement Agreement. If PacifiCorp resumes daily load-shaping releases PacifiCorp will consult with the TWG to monitor the effects of ramping on fish use within the Full-flow Reach.
6.4	Wild and Scenic Ramping Restrictions	2001-2038	Ramping restrictions and reporting requirements were followed per the Flow Monitoring Plan.
6.5-6.6	Bypass Reach Ramping Restrictions	2001-2038	Ramping restrictions and reporting requirements were followed per the Flow Monitoring Plan.
7.2 (and SA Amendment No. 1)	Gravel Augmentation Program	2002-2038	Monitoring and maintenance of augmentation sites continued per the Gravel Augmentation Plan, with reports provided on 5-year intervals.
7.3	Passage of Woody Debris at Soda Springs and Slide Creek Dams	2002-2038	Passage of woody debris continued according to the Plan.

SA Section	PM&E Measure	Due Date	Current Status
8.2.1-8.2.2	Slide Creek Bypass Reach Habitat Project Implementation/ Monitoring	2002-2038	Monitoring continued according to the Plan, with reports provided on 5-year intervals.
8.3.2-8.3.3	North Umpqua River Habitat Restoration/ Creation Implementation/ Monitoring	2004-2038	Annual monitoring occurred according to the Plan, with an annual report submitted to the RCC. Maintenance, including structural improvements and gravel augmentation, was completed in August 2020.
9.1	Funding for Production of Rainbow Trout for Stocking	2004-2038	PacifiCorp provided \$21,580 to ODFW in 2020 for the production of rainbow trout.
9.3	Lemolo Reservoir Management Plan and Limits on Drawdown Rate and Elevations	2001-2038	Reservoir management, consultation, and reporting occurred according to the Lemolo Reservoir Management Plan. Water levels and drawdown rates were managed and monitored according to the Flow Monitoring Plan.
9.5	Salvage of Fish During Maintenance Shutdowns	2001-2038	Advance notice of planned maintenance shutdowns was made to the appropriate agencies, and the salvage and liberation of fish was permitted and implemented as required.
12.1	Vegetation Management Plan Implementation	2004-2038	The Vegetation Management Plan (VMP) continues to undergo implementation. Noxious weed treatments were conducted on USDA-FS lands in 2020. Noxious weed training occurred per the Plan, and implementation of the horticultural invasive species program continued as necessary to satisfy VMP requirements. The 5-year rolling action plan (RAP) was developed in consultation with the USDA-FS and BLM in December 2020.
13.1	Power Pole Modification	2001-2038	Eighty-eight transmission structures were damaged by the Archie Creek Wildfire and replaced with avian-safe construction on transmission lines within the FERC boundary in 2020.
13.4	Records Database Management System	2001-2038	The database for management of birds on power lines was maintained. An annual report summarizing avian-power line interactions occurring within the Project area was submitted to the USDA-FS in January 2020.
14.2	Canal Shutoff and Drainage Systems (CSDS) Operation and Maintenance	2007-2038	The CSDS on the Clearwater 2, Fish Creek, and Lemolo 2 waterways continue to be operated and maintained consistent with SA requirements.

SA Section	PM&E Measure	Due Date	Current Status
14.5	Erosion Control Monitoring	2001-2038	Erosion sites were monitored, and an annual report was produced and distributed to the agencies in September 2020.
15.1–15.4	Transportation Management Plan Implementation Cost Sharing	2004-2038 2007-2038	The Transportation Management Plan continues to undergo implementation. The 5-year RAP was developed in consultation with the USDA-FS and BLM. The total cost of road maintenance on roads jointly-maintained by the USDA-FS and PacifiCorp in 2020 was \$28,173, of which PacifiCorp's share was \$6,148.
15.5, 15.5.1	Bridge Inspections, Maintenance Cost Sharing	Annual & Biennial Inspections 2005-2038	Cost-sharing continued or commenced for bridges on jointly-maintained hydro roads following completion of non-critical, deferred maintenance. Fracture critical bridges are inspected annually as part of the annual inspection program. Biennial bridge inspection is planned for 34 bridges in 2021.
16.1, 16.3, 16.4	Visual Resources (Aesthetics) Management Plan	2005-2038	The Aesthetics Management Plan continued to undergo implementation. The 5-year RAP was provided to the USDA-FS and BLM in December 2020
17.1	Recreation Resources Management Plan Implementation	2004-2038	The Recreation Resources Management Plan continued to undergo implementation. The 5-year RAP was developed and updated in consultation with the USDA-FS. Identified actions were completed.
17.2	Campground Operations and Maintenance	2004-2038	PacifiCorp provided \$103,130 to the USDA-FS in 2020 for campground operations and maintenance.
17.7	Law Enforcement	2004-2038	PacifiCorp provided \$11,510 to the USDA-FS in 2020 for law enforcement service.
17.8	Capital Improvements	2002-2015; future years' funding will be monitoring-dependent	No funding was provided to the USDA-FS in 2020 for capital improvements to recreation facilities.
17.9	Public Information	2004-2038	PacifiCorp provided \$9,668 to the USDA-FS in 2020 for public information projects.
17.10	Recreation Monitoring Recreation Monitoring (Periodic Surveys)	2004-2038 2007, 2012, 2017, 2022, 2027, and 2032	PacifiCorp provided \$9,668 to the USDA-FS in 2020 for routine recreation monitoring.

SA Section	PM&E Measure	Due Date	Current Status
18.1	Cultural Resources (Historic Properties) Management Plan Implementation	2006-2038	The Historic Properties Management Plan and Historic Structures Plan continue to undergo implementation. The 5-year RAP was updated in consultation with the USDA-FS, BLM, and SHPO.
18.6	Cultural Resources Monitoring	2001-2038	PacifiCorp coordinated ground-disturbing activities with the USDA-FS, BLM, and SHPO to assure ongoing monitoring and protection of historic properties.
19.1	Tributary Enhancement Program	2004-2038	Per the ODFW Memorandum of Understanding, work continued on fish habitat enhancements and fish passage improvements.
19.2	Long-Term Monitoring and Predator Control	2004-2038	PacifiCorp deposited \$143,871.07 into the designated fund in 2020. The RCC continued to manage expenses from this fund. Long-term monitoring and predator control study work proceeded according to the Long-Term Monitoring and Predator Control Study Plan, refined as necessary by the Technical Working Group (TWG).
19.3	Mitigation Fund	2004-2038	PacifiCorp deposited \$1,798,388.44 into the USDA-FS-administered mitigation fund account in 2020. A USDA-FS Mitigation Fund Board of Directors (BOD) annually evaluates proposals and selects mitigation projects to be implemented with this funding. Project rankings are completed by the USDA-FS hydropower project review group, and final recommendations are made by the BOD. The Forest Supervisor of the Umpqua National Forest makes the final decision on project selections.
19.4	Oversight Costs	2005-2038	PacifiCorp provided \$233,071.14 in 2020 to ODFW for the funding of ODFW personnel to monitor the SA 19.1 program and oversee on-site PM&Es. The necessity and level of funding were reviewed by PacifiCorp and ODFW as required in Year 15 of the License. Both parties agreed to the ongoing need for the funding and to continue the funding level of \$162,000, escalated per SA 22.4.4.
21.4.1	RCC	2001-2038	The RCC continued to facilitate the implementation of PM&Es. It held quarterly meetings in 2020. The TWGs continued to convene, when necessary, to address detailed consultation issues. The annual public tour was canceled this year due to COVID-19 restrictions.



Figure 2. Flying a drone to monitor the Flume 12 area of Lemolo 2 canal.

3.1.1 Noteworthy Accomplishments

During the reporting period, PacifiCorp continued implementing PM&E Measures in compliance with the Settlement Agreement. Noteworthy accomplishments are described below by Settlement Agreement section.

Tributary Enhancement Program (SA Section 19.1)

Implementation of habitat enhancements and other program work by ODFW's hydropower staff continued in 2020 and included:

- *Harrington Creek Pre/Post-restoration Monitoring Report* – ODFW's hydropower staff completed the Effectiveness Monitoring Project Report for Habitat Structures placed in Harrington Creek. Analysis of the Harrington Creek Effectiveness Monitoring Project indicates the enhancement reach has increased the summer juvenile Coho Salmon average abundance by 184% and increased winter juvenile Coho Salmon average abundance by 585%. Average overwintering success increased from 14% pre-restoration to 33% post-restoration for Coho Salmon. Although Harrington Creek's water quality station survived the Archie Creek Wildfire (Fire) on the outside, the inside electronic motherboard may have suffered a slow death. Erratic readings continue to be the norm and if/when FEMA replacement funds arrive, the station electronics will be replaced. Harrington Creek's Riparian Management Area escaped complete fire devastation with an ample number of trees surviving. The majority of large woody debris structures placed in Harrington Creek over the years survived with their integrity still intact (Figure 3).



Figure 3. Harrington Creek post-fire with larger logs still intact and many riparian shading trees remaining.

- *Rock Creek Mainstem and Tributaries Enhancement* – ODFW completed summer supplemental restoration throughout the basin at 25 sites by adding either large wood, root-wad trees, or boulders in various locations to fill gaps and repair a few battered structures. Unfortunately, most of the smaller filler wood and root-wad trees that were placed in the summer burned up in the Fire. Only the large-diameter logs remained (Figure 4).



Figure 4. Typical post-fire condition of habitat enhancement log jams in East Fork Rock Creek with large logs intact and burnt smaller pieces.

Post-fire, East Fork Rock Creek received some emergency large woody debris placements in the form of 10 large jams using 80 burnt riparian trees. The trees were pushed over with full root-wads attached and placed either on existing burnt structures or in stream-pinch areas to slow and capture the large debris flows expected from winter freshets (Figure 5).



Figure 5. One of 15 emergency log jams placed in East Fork Rock Creek to capture anticipated debris flow.

- *Spawning Surveys in Rock Creek, East Fork Rock Creek, and Harrington Creek* – Despite the hindrance of the Fire, Chinook and Coho Salmon, winter and summer steelhead, and Pacific Lamprey spawning surveys continued. In Rock Creek, spring Chinook Salmon surveys yielded a peak count of 33 fish which was greater than the 9 observed last year, and 154 total redds which was also greater than the 31 recorded last year. A total of 59 redds were counted in 2020 during Coho Salmon surveys in mainstem Rock Creek (104 redds observed in 2019). Surveyors also observed two Pacific Lamprey redds located in ODFW’s newly-constructed habitat structures in lower mainstem Rock Creek on private, family-owned land.

East Fork Rock Creek surveys yielded a peak count of 15 Coho Salmon redds in 2020. This was the least amount of Coho Salmon redds observed in East Fork Rock Creek in the past 4 years (49 redds in 2019; 40 redds in 2018; 28 redds in 2017; and 36 redds in 2016).

Harrington Creek Coho Salmon surveys produced a peak count of 10 redds in 2020 which was less than the 21 redds counted in 2019. Surveys were hindered by the Fire.

- *Adult Salmonid Snorkel Surveys in Rock Creek Mainstem* – Snorkel surveys for holding adult salmonids were abbreviated due to the Fire. Total spring Chinook Salmon counts were 91 adults below the Rock Creek Hatchery diversion dam and 90 above the dam. As in years past, hatchery fish outnumbered wild fish in the counts with 98% of spring Chinook Salmon observed being of hatchery origin. In addition, 16 adult summer steelhead were counted below the dam and 43 above the dam, with 80% of those fish being of hatchery origin.
- *Monitoring* – ODFW continues to partner with local watershed councils (e.g., South Umpqua Rural Community Partnership and Partnership for Umpqua Rivers) to help supplement mitigation dollars and provide continued enhancement of tributaries in the basin well into the future. Basin-wide habitat monitoring continues to document the changes in restoration structure movements and effectiveness after big freshets, especially after the Fire. It will be interesting to see the role that established habitat enhancement structures play in the race to keep the basin’s streams cool until the biota can recover from the Fire (Figure 6).



Figure 6. Upper East Fork Rock Creek, where the fire came over the hill into the Rock Creek Basin and created a fire tornado. Note the snapped and uprooted trees facing the opposite direction of fire progression.

ODFW hydropower program's water quality stations were mostly all disintegrated in the Fire. Only one station survived, but similar to what was observed in the Harrington Creek station, it has internal motherboard problems and will have to be replaced. (Figure 7).

Drones equipped with forward-looking infrared (FLIR) cameras that are able to show water temperature variations could provide valuable data to demonstrate the effectiveness of ODFW's efforts to cool stream temperatures through restoration activities. Thus, ODFW's hydropower staff have procured a summer drone flight with a FLIR camera attached to detect the differences in water temperature, specifically in cold water refugia areas. Corvallis Research will be flying the drone and processing the data.



Figure 7. A water quality station that was undamaged by fire on the outside, though the electronics on the inside were destroyed by the heat.

- *Restoration Resources* – In keeping with ODFW hydropower staff’s continued efforts to reduce costs, a cooperative landowner, Forest Investment Associates (FIA), who has been an excellent and ongoing partner in ODFW’s restoration efforts, is once again working with ODFW’s hydropower staff to provide approximately 500-1,000 large boulders that will be collected from a recent salvage harvest area. Additionally, hazard trees along the mainstem and tributaries on FIA-owned land will be felled or pushed into the stream with root-wads attached. Roseburg Resources, Seneca Jones, and Lone Rock will also be felling or pushing root-wad trees into the stream on their company-owned lands. ODFW’s hydropower staff estimates that up to 500 or more of the hazard trees will be strategically placed instream in the Rock Creek Basin.

In addition, ODFW's hydropower staff were able to obtain more than 300 fish logs from the Rock Creek Hatchery's hazard tree removal post-fire cleanup (Figure 8). With 300 logs that were purchased just prior to the Fire, post-fire hazard trees from Rock Creek Hatchery, post-fire hazard trees from private industrial landowners in the Riparian Management Area, and the likelihood of additional free boulders, ODFW's hydropower staff should have enough restoration materials for many years to come.



Figure 8. Rock Creek Hatchery hazard tree removal and salvage produced several hundred fish logs.

Long-Term Monitoring and Predator Control Study Program (SA Section 19.2)

Long-term monitoring of fish movement and populations affected by Soda Springs fish passage is currently in the “interim period” and continues with a limited scope per the Study Plan. Efforts this year concentrated on routine monitoring of fish use of the fish passage facilities, with a secondary focus on predator control and redd surveys. Upstream passage of adult salmonids was monitored daily via the video system at the Soda Springs fish ladder, where a recent annual average of about 1,500 adult salmon and steelhead have been passing upstream of the dam. Downstream passage of juvenile fish through the fish screen was monitored at the Soda Springs Fish Evaluation Building one to three nights per week, with catches much higher in 2020 than in 2019, presumably owing to different weather and flow conditions. Redd surveys helped describe the distribution of fish and the relative use of the available spawning habitats, which was similar in 2020 and 2019. The predator control study initiated a new phase of targeted predator removal. The goal was to remove 200 brown trout, but only about 100 were able to be removed due to COVID-19 restrictions preventing the safe use of the electrofishing boat. PacifiCorp plans to continue all of these activities in 2021.



Figure 9. Wild rainbow trout (top) and rainbow trout (or steelhead) hatched above Soda Springs Dam.



Figure 10. Floating the North Umpqua River on a Chinook redd survey with a field book at the ready.



Figure 11. One of the predatory brown trout removed from Soda Springs Reservoir.



Figure 12. Dewatering the Soda Springs fish screen for planned maintenance.



Figure 13. Jason Brandt (ODFW) inspects a new seal along the expansion joint in the Soda Springs fish ladder.



Figure 14. Wild rainbow trout salvaged from Lemolo 2 canal as it was dewatered for planned maintenance.



Figure 15. Lemolo 2 Diversion Dam in spill during a planned canal maintenance outage.

3.1.2 Plans and Reports

The following plans and reports were completed and/or revised during 2020:

Table 4. Plans and Reports Status

Plan/Report	SA Section, License Article, or FERC Order	Month Completed
Soda Springs Spawning Habitat Annual Report	SA 8.3	January
Lemolo Reservoir Management Annual Report	SA 9.0	January
Soda Springs Fish Passage Operation and Maintenance Annual Report	SA 4.1.1	January
Annual Avian Protection Report	SA 13.4	January
Annual Threatened and Endangered Species and Bald Eagle Monitoring Report	License Articles 411 & 412	January
Resource Coordination Committee Annual Report	SA 21.4.2	June
Long-term Monitoring and Predator Control Study Annual Report	SA 19.2	March
Erosion Control Plan Annual Report	SA 14.5	September
Historic Properties Annual Report	License Article 414	December
Flow Monitoring Plan Annual Report - Water Year 2018	SA 5.5, 6.6	August
Soda Springs Water Quality Annual Report	401 WQ Certification	May

3.2 FERC License Actions

The FERC license contains actions that are required in addition to those actions in the Settlement Agreement. Table 5 summarizes the FERC License requirements that were fulfilled during this reporting period.

Table 5. FERC License Actions Status

Date Filed	License Article(s)	Settlement Agreement Section(s)	Description	Status/ Comments
1/17/20	401	4.1	2019 Soda Springs Fish Passage Facility Operations and Maintenance Annual Report	Acknowledged 1/17/20
1/8/20	411 & 412	USDA-FS 4(e) Condition 16	2019 Threatened and Endangered Species and Bald Eagle Monitoring Report	Acknowledged 1/8/20
6/16/20	401	21.4.2	2019 Resource Coordination Committee Annual Report	Acknowledged 6/16/20
12/18/20	414	18.1 & 18.2	2019 Historic Properties Annual Report/Action Plan	Acknowledged 12/18/20

4.0 FIDUCIARY REPORTING

Consistent with Settlement Agreement fiduciary reporting requirements, this section provides account information for the following actions and fulfills the requirement to annually report the amounts deposited into and disbursed from each of the following accounts:

- SA Section 7.2.3 (amended) Gravel Augmentation Program;
- SA Section 8.3.5 (amended) North Umpqua River Habitat Restoration/Creation Project;
- SA Section 19.1.1.3 Tributary Enhancement Program; and
- SA Section 19.3.1 Mitigation Fund.

The Settlement Agreement does not require annual reporting for SA Section 19.2 Long-Term Monitoring and Predator Control Fund. Since this was likely an oversight, the account information for this fund is also provided in this section.

Fiduciary Reporting

Table 6. SA 7.2 Gravel Augmentation Program

Date	Item	Expenditures	Funding	Balance
2020	Opening Balance			\$10,225.01
2020	Annual Escalation (per SA 22.4.4)		\$175.11	\$10,400.12
2020	Expenditures			
	PacifiCorp			
	• Staff labor	(\$1,043.50)		
	Weekly Bros.			
	• Soda Springs Fish Habitat Weir Repairs*	(\$9,356.62)		
	Total Expenditures	(\$10,400.12)		\$0.00
2020	Ending Balance			\$0.00

* Invoice (\$22,700) split between SA 7.2 and SA 8.3.

Fiduciary Reporting

Table 7. SA 8.3 North Umpqua River Habitat Restoration/Creation Project

Date	Item	Expenditures	Funding	Balance
2020	Opening Balance			\$22,046.47
2020	Annual Escalation (per SA 22.4.4)		\$377.57	\$22,424.04
2020	Expenditures			
	PacifiCorp			
	• Staff labor	(\$2,608.75)		
	Weekly Bros.			
	• Soda Springs Fish Habitat Weir Repairs*	(\$13,343.38)		
	Total Expenditures	(\$15,952.13)		\$6,471.91
2020	Ending Balance			\$6,471.91

* Invoice (\$22,700) split between SA 7.2 and SA 8.3.

Fiduciary Reporting

Table 8. SA 19.1 Tributary Enhancement Program Fund

Date	Item	Expenditures	Funding	Balance
2020	Opening Balance			\$892,170.93
2020	Expenditures			
	Kevin Saylor			
	<ul style="list-style-type: none"> • Glide Lumber Yard debris clean-up from fish log transfer • Boulder/log/rootwad staging for instream habitat project • Erosion control at East Fork Rock Creek • Burnt tree salvage at Rock Creek Hatchery for fish logs 	(\$106,995.00)		
	Phil Strader			
	<ul style="list-style-type: none"> • Tree tipping for fish enhancement logs, some with rootwads • Fifteen loads of fish habitat logs salvaged from Strader Ranch 	(\$50,000.00)		
	Total Expenditures	(\$156,995.00)		\$735,175.93
2020	Investment Earnings		\$2,866.35	\$738,042.28
2020	Ending Balance			\$738,042.28

Fiduciary Reporting

Table 9. SA 19.2 Long Term Monitoring/Predator Control Fund

Date	Item	Expenditures	Funding	Balance
2020	Opening Balance			\$18,413.66
2020	Annual Funding (\$100K escalated)		\$143,871.07	\$162,284.73
2020	Expenditures			
	ODFW			
	Experimental Biological Aides (EBAs)	(\$100,000.00)		
	PacifiCorp			
	Staff Labor and Expenses	(\$10,917.60)		
	Stillwater Sciences			
	Soda Springs Predator Control Study	(\$3,713.25)		
	Total Expenditures	(\$114,630.85)		\$47,653.88
2020	Investment Earnings		\$361.88	\$48,015.76
2020	Ending Balance			\$48,015.76

Fiduciary Reporting

Table 10. SA 19.3 Mitigation Fund

Date	Item	Expenditures	Funding	Balance
2020	Opening Balance			\$2,340,203.31
2020	Annual Funding (\$1,250,000 escalated)		\$1,798,388.44	\$4,138,591.75
2020	Expenditures			
	Mitigation Projects			
	Population Survey of Umpqua Chub			
	Shrubland Regeneration and Restoration (2021)			
	Francis Creek AOP – Phase 3			
	Calf Copeland Fuel Break – Phase 2			
	Cavitt Lakes Wetland Restoration – Phase 1			
	Copeland Road Storage and Decommissioning			
	GRAIP 2021			
	Upper Steamboat Instream Gravel Restoration Implementation			
	Wright Creek AOP Survey and Design			
	Elk Survey (ODFW)			
	Winter Range Gates Repair & Maintenance			
	Steamboat and Canton Creek Smolt Trapping – Pacific Rivers			
	Stream Gage Funding			
	Stream Temp			
	Meadow and Aspen Maintenance			
	Pit Toilet Vent Covers			
	Seasonal Gate Timeliness			
	Copeland Creek Aquatic Restoration			
	East Copeland Creek Pine Restoration			
	Restoration Partnership Coordinator			
	Program Management			
	Modifications and Overruns			
	Total Expenditures	(\$1,044,704.10)		\$3,093,887.65
2020	Interest Earned		\$1,406.88	\$3,095,294.53
2020	Ending Balance			\$3,095,294.53

5.0 CONCLUSION

The year 2020 marked the fifteenth anniversary of the new License (i.e., the date on which the new License became final) and a tumultuous year. Despite the global challenges of the COVID-19 pandemic and the local challenges of the Archie Creek Wildfire, 2020 was another successful year of PM&E implementation and RCC coordination. The Parties collaboratively adapted to these historic upheavals to facilitate ongoing operation and maintenance of the Project and implementation of PM&E measures. PacifiCorp expresses their sincere thanks to the Parties for their nimble response and close cooperation, often at a distance and through novel technologies, on behalf of PacifiCorp's customers and the natural resources of the North Umpqua Basin.

The full suite of date-certain PM&E Measures are in place on the Project and will continue to be operated and maintained throughout the License term for the benefit of natural resources in the Project area and beyond. Of particular note is the on-going, successful operation and maintenance of the Soda Springs fish passage facilities. Hundreds of steelhead and salmon were observed using the fish ladder during the year.

Other major accomplishments during the reporting period included implementation of the long-term monitoring and predator control study plan and completion of annual Rolling Action Plans for ongoing programs to manage vegetation, erosion, transportation, aesthetics, recreation, and cultural resources in the North Umpqua Project area.

The RCC ground rules and protocols for interagency teamwork and communication have provided an effective framework for watershed management consistent with the goals of the Settlement Agreement. Parties worked cooperatively toward meeting Settlement Agreement commitments during the report period and projects were completed on schedule.

In 2021, emphasis will be placed on the continued successful operation, evaluation, and maintenance of PM&E Measures, including the Soda Springs fish passage facilities, pursuant to the intent of the Settlement Agreement. As in past years, long-term monitoring and off-site mitigation will continue in the North Umpqua Basin as part of the implementation program to protect, mitigate, and enhance natural resources in this highly valued watershed.