

NORTH UMPQUA HYDROELECTRIC PROJECT

FERC No. P-1927

Protection, Mitigation, and Enhancement Measures



2018 Annual Report



June 2019

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Front cover photo: First spring Chinook of the year passing in front of the Soda Springs fish ladder window.

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 2018 through December 2018) 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 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: <http://www.pacificorp.com/es/hydro/hl/nur.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 2018 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 the Tributary Enhancement Program and Mitigation Fund set forth in SA Sections 19.1 and 19.3, 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: <http://www.pacificorp.com/es/hydro/hl/nur.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. 2018 Resource Coordination Committee Members

RCC Member	Organization
Pam Sighting	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
Dave Harris	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:

http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Hydro/Hydro_Licensing/North_Umpqua_River/RCC_Ground_Rules.pdf

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: <http://www.pacificorp.com/es/hydro/hl/nur.html#>.

- The RCC approved the following expenditures, funding proposals, and other requests with regards to the SA 19.2 Long Term Monitoring/Predator Control Program:
 - Proposed draft 2018 budget of \$293,500 (includes \$133,000 for ODFW Experimental Biological Aide (EBA) and Tech Labor).
 - Revised ODFW EBA and Tech Labor amount of \$139,248 due to ODFW indirect rate increase. Total revised draft 2018 budget amount is \$299,748.
 - \$22,000 for Stillwater Sciences to perform a scale aging analysis.
 - \$62,625 for ODFW labor expenditures July 2017 through mid-October 2018.
 - \$8,408 for ODFW labor expenditures mid-October 2018 through December 2018.
- The annual public tour was held on October 12, 2018. Thirty-four people, including RCC representatives, attended the tour. Positive comments were shared by the public with respect to the presentation, the complexity of the project, and PacifiCorp's commitment to implementation of natural resource protection, mitigation, and enhancement measures.



Figure 1. Public tour group at Soda Springs with columnar basalt cliff in background.

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 2018. 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 2018, 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.

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	•	•	•	•	•	•	•					

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 +
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.
5.5	Instream Flow Monitoring	2002-2038	Monitoring and reporting continued as required in the Flow Monitoring Plan. The reporting schedule is contingent upon the provision of publication-grade data from the USGS to PacifiCorp.
6.2.1	Slide Creek Ramping Monitoring Plan Implementation	2013-2020	Study conditions (e.g., aggressive load following operations) did not occur this year, so field study was not implemented.
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. The reporting schedule is contingent upon the provision of publication-grade data from the USGS to PacifiCorp.
7.2 (and SA Amendment No. 1)	Gravel Augmentation Program	2002-2038	Monitoring and maintenance of augmentation sites continued per the Gravel Augmentation Plan.
7.3	Passage of Woody Debris at Soda Springs and Slide Creek Dams	2002-2038	Passage of woody debris continued according to the Plan.
8.2.1-8.2.2	Slide Creek Bypass Reach Habitat Project Implementation/ Monitoring	2002-2038	Monitoring continued according to the Plan.

SA Section	PM&E Measure	Due Date	Current Status
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. Minor maintenance also occurred.
9.1	Funding for Production of Rainbow Trout for Stocking	2004-2038	PacifiCorp provided \$20,745 to ODFW in 2018 for the production of trout.
9.3	Lemolo Reservoir Management Plan and Limits on Drawdown Rate and Elevations	2001-2038	Water levels and drawdown rates were monitored according to the Flow Monitoring Plan. Reservoir management and consultation occurred according to the Lemolo Reservoir Management 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 continued as required.
11.5	Wetland Enhancement	2006-2016	A total of eight wetland enhancement sites were constructed between 2006 and 2016. Three of the wetland enhancement sites continue to be monitored for a period of five years post-construction and maintained for self-sustaining, native wetland plant communities.
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 2018. 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 and presented to both the USDA-FS and BLM in February 2019.
13.1	Power Pole Modification	2001-2038	No transmission structures were replaced on transmission lines within the FERC boundary in 2018.
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.

SA Section	PM&E Measure	Due Date	Current Status
14.2	Canal Shutoff and Drainage Systems (CSDS) Operation and Maintenance	2007-2038	The three CSDS on the Clearwater 2, Fish Creek, and Lemolo 2 waterways continue to be operated and maintained consistent with SA requirements.
14.5	Erosion Control Monitoring	2001-2038	Erosion sites were monitored, and an annual report was produced and distributed to the agencies in October.
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 the BLM. The total cost of road maintenance on roads jointly-maintained by USDA-FS and PacifiCorp in 2018 was \$58,540, of which PacifiCorp's share was \$15,003.
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 will be completed in 2019 for 34 bridges.
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 developed in December.
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 \$125,961 to the USDA-FS in 2018 for campground operations and maintenance.
17.7	Law Enforcement	2004-2038	PacifiCorp provided \$11,064 to the USDA-FS in 2018 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 2018 for capital improvements to recreation facilities.

SA Section	PM&E Measure	Due Date	Current Status
17.9	Public Information	2004-2038	PacifiCorp provided \$9,045 to the USDA-FS in 2018 for public information projects.
17.10	Recreation Monitoring Recreation Monitoring (Periodic Surveys)	2004-2038 2007, 2012, 2017, 2022, 2027, and 2032	PacifiCorp provided \$9,045 to the USDA-FS in 2018 for routine recreation monitoring.
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, the BLM, and the SHPO.
18.6	Cultural Resources Monitoring	2001-2038	PacifiCorp coordinated ground-disturbing activities with the USDA-FS, the BLM, and the 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 \$138,297.30 into the designated fund in 2018. 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). Efforts during 2018 were concentrated on a major Predator Control Study and bringing the Fish Evaluation Building into routine use.

SA Section	PM&E Measure	Due Date	Current Status
19.3	Mitigation Fund	2004-2038	<p>PacifiCorp deposited \$318,953.26 into the USDA-FS-administered mitigation fund account in 2018. This year's deposit was reduced by \$26,790 to reimburse PacifiCorp for the cost of the approved FY18 Sediment Transport Study on Upper Slide Creek and Lower Fish Creek performed in 2017.</p> <p>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.</p>
19.4	Oversight Costs	2005-2020	PacifiCorp provided \$224,041.63 in 2018 to ODFW for the funding of two full-time ODFW personnel to monitor the 19.1 program and oversee on-site PM&Es.
21.4.1	RCC	2001-2038	The RCC continued to facilitate the implementation of PM&Es. It held an annual planning session, a public tour, and quarterly meetings. TWGs continued to convene, when necessary, to address detailed consultation issues.

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 hydro staff continued in 2018 and included:

- *Harrington Creek Post-restoration* – Summer 2018 water levels were at their lowest in over a decade, thereby reducing available rearing habitat and decreasing juvenile coho population numbers to 1,574 from 1,961 in 2017 and 1,597 in 2016.

ODFW hydropower mitigation biologists conducted night snorkeling surveys on 82 pools, enumerating 512 pre-smolt coho for a 33 percent overwintering survival rate. The highest overwintering juvenile coho count in any year (2007-2010) prior to total restoration was 120 coho. In 2018, there were 132 less coho than in 2017 and 18 less than

in 2016. The effectiveness monitoring study in Harrington Creek concluded with these surveys.

Based on the engineered designs and slope specifications to replace a perched and undersized culvert on a main tributary to Harrington Creek with a larger and longer culvert (105 feet), the ODFW hydropower fish biologist feared future downstream erosion and deemed new culvert designs wouldn't meet ODFW's fish passage criteria. Therefore, a joint-venture between ODFW hydropower staff and the landowner (Roseburg Resources) was implemented to design and replace the failing culvert with a prefabricated bridge from Big R Bridge to meet stream simulation. Installation was completed in July.



Figure 2. Harrington Creek tributary culvert replacement area (pre-installation).



Figure 3. Perched outlet (left).



Figure 4. Undersized 30" culvert inlet (right).



Figure 5. Harrington Creek tributary bridge work in progress.



Figure 6. Harrington Creek tributary bridge following installation.

The proposal for a temporary bridge in upper Harrington Creek to access restoration of another 0.75-mile section has been put back on the table and talks have begun again between Roseburg Resources, BLM, and ODFW hydro staff.

- *Rock Creek Mainstem and Tributaries* – On lower mainstem Rock Creek at mile marker 4, Phase II of a 0.25-mile side channel was bolstered by the addition of 10 root-wad/log/boulder combinations to slow water velocity and promote scour pools for juveniles.

Li'l Conley Creek, a 2.5-mile tributary of Rock Creek, received a new 9-foot, round culvert to replace two perched and rusted 36-inch culverts as well as an 18-inch cross drain on main-line Conley Creek Road to facilitate upstream passage of coho, winter and summer steelhead, cutthroat trout, and Pacific lamprey while allowing gravel and materials to move freely downstream to create habitat and spawning areas.



Figure 7. Li'l Conley Creek fish passage culvert upgrade area (pre-upgrade).



Figure 8. Perched dual outlet (left).



Figure 9. Twin 30" undersized culverts in 7-foot wide active channel (right).



Figure 10. Li'l Conley Creek fish passage culvert upgrade work in progress.



Figure 11. Li'l Conley Creek fish passage culvert site following installation.

A smaller tributary (Tributary A), 0.25 miles above the main-line culvert replacement, received a 6.5-foot squash pipe upgrade from a single 36-inch, perched culvert to allow volitional movement of cutthroat trout, summer and winter steelhead, and Pacific lamprey while allowing the stream bed to regain its channel form. An 18-inch cross drain was placed above the culvert to divert ditch line water away from the side of the new culvert.



Figure 12. Li'l Conley Creek Tributary A culvert replacement area (pre-upgrade).



Figure 13. Perched outlet (left).



Figure 14. Undersized 36" culvert inlet (middle).



Figure 15. Undersized 36" culvert inlet (right).



Figure 16. Li'l Conley Creek Tributary A fish passage culvert site following installation.

Work on the large, 9-foot culvert and 18-inch cross drains was a joint-project coordinated between ODFW hydropower staff, Lone Rock Resources, and Oregon Department of Forestry. The project required work to be completed on the weekend to avoid active logging operations on main-line Conley Creek Road. ODFW extended appreciation to all involved including the General Contractor, Kevin Saylor Excavating, for going above and beyond to complete this enormous project in such a short period of time.

- *Spawning Surveys in Rock Creek, East Fork Rock Creek, and Harrington Creek* – Adult spring Chinook, coho, winter and summer steelhead, and adult Pacific lamprey spawning surveys continued in most of the previously-enhanced and long-term index reaches. Due to Rock Creek Hatchery's total loss of spring Chinook smolts in 2015, Rock Creek mainstem survey totals in 2018 for spring Chinook plummeted to only 3 redds compared to 29 redds in 2017, 25 redds in 2016, and 11 redds in 2015. For all of the other species in mainstem Rock Creek, survey totals were: coho (39 redds in 2018 compared to 33 redds in 2017, 25 redds in 2016, and 17 redds in 2015), and winter steelhead (55 redds compared to 61 redds in 2017, 54 redds in 2016, and 18 redds in 2015). Fish continue to be found spawning in the restored reaches and are slowly dispersing farther up Rock Creek as enhancement structures mature. Cow Creek tribal staff electrofished the entire Rock Creek mainstem for juvenile ammocetes and found that Pacific lamprey distribution extended above the 8.5-mile marker and even farther upstream than previously recorded. Consequently, an expanded effort to survey for adult lamprey redds was conducted, and adult lamprey redds were found as high as river mile 11.5, just below the confluence of Rock Creek and Northeast Fork Rock Creek.

East Fork Rock Creek surveys enumerated a peak of 40 coho redds in 2018 compared to 28 redds in 2017 and 36 redds in 2016.

As Harrington Creek enhancements continue to mature and carrying capacity increases, so have adult coho. In 2018, there was a peak adult count of 34 fish compared to 15 fish in 2017, 16 fish in 2016, and 8 fish in 2015, along with a peak count of 29 redds in 2018 compared to 24 redds in 2017, 26 redds in 2016, and 13 redds in 2015.

- *Adult Salmonid Snorkel Survey in Rock Creek Mainstem* – Snorkel surveys for adult summer salmonids continued in September 2018. Mimicking adult spring Chinook redd counts, Rock Creek live adult counts also decreased dramatically to 14 spring Chinook from 641 spring Chinook in 2016 and 338 spring Chinook in 2017, continuing the overall declining trend for North Umpqua spring Chinook. Again, hatchery fish dominated at 86 percent of the total count. In addition, summer steelhead escapement also decreased dramatically from 238 fish in 2016 and 81 fish in 2017 to just 25 fish in 2018, with hatchery fish accounting for 48 percent of the total.
- *Monitoring* – ODFW continues to partner with local watershed councils (e.g., South Umpqua Rural Community Partnership and Partnership for Umpqua Rivers) to supplement mitigation dollars to provide continued enhancement of tributaries in the basin well into the future.

ODFW's hydropower program water quality stations continue to operate. Winter graphs will hopefully show that large freshets and their associated peaks are ameliorated as the rise and fall of stream height is slower with the addition of mainstem, reconnected side channels and floodplains. Several years of data will have to be used to compare with post-restoration flows. With the continued help of BLM's hydrologist, water quality station problems are becoming easier to diagnose for the fish biologist.

ODFW hydro staff continues to debate the use of drones as way of monitoring because no baseline data was generated pre-restoration for comparison. However, new drones equipped with forward-looking infrared (FLIR) cameras that can show temperature differences could produce invaluable data to demonstrate the effectiveness of efforts to cool the watershed.

In keeping with ODFW hydropower staff's continued efforts to reduce costs, a cooperative landowner (Forest Investment Associates), who has been an excellent partner in our restoration efforts, has partnered with ODFW hydropower staff to acquire 500 to 600 free boulders, with the possibility for future additional procurement, in exchange for some road grading. With a winter storm producing thousands of fallen trees in the county in 2018, much effort was put forth to obtain some of these trees from USDA-FS, BLM, ODOT and Douglas County, to no avail. Therefore, trees from the local ranch will be dug up and pushed over to keep the invaluable root wad intact, and then half of the tree will be cut for additional logs. This is a very efficient process for our specific restoration needs. Lastly, three large, non-industrial, private landowners have partnered with ODFW hydropower staff and granted access to over two miles of lower Rock Creek and the vast expanse of off-channel habitat. Large-scale designs are being developed, and implementation of enhancement structures is scheduled for the summer 2019.

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

Long-term monitoring is currently in the “interim period” and continues with a limited scope per the Study Plan. During 2018, effort was concentrated on a second consecutive year of the major Predator Control Study and improving the routine use of the Soda Springs Fish Evaluation Building for monitoring downstream migration of juvenile fish. The predator control study included extensive field efforts to measure the predator population, diet, growth rates, and movements as well as juvenile fish production and survival to document post-passage predator abundance and predation within the Soda Springs Reservoir.



Figure 17. Wild rainbow trout (and/or steelhead) fry.



Figure 18. Wild spring Chinook salmon smolt.



Figure 19. A typical summer catch of primarily Chinook and coho salmon parr with a few trout/steelhead parr and fry.



Figure 20. A wild brown trout about to have its stomach contents analyzed for the predation study.



Figure 21. An August tour of the Soda Springs fish passage facilities with the Roseburg High School Science Club.

3.1.2 Plans and Reports

The following plans and reports were completed and/or revised during 2018:

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	February
Resource Coordination Committee Annual Report	SA 21.4.2	May
Long-term Monitoring and Predator Control Study Annual Report	SA 19.2	July
SA 19.2 Predator Control Program, 2017 Soda Springs Reservoir Predation Studies (interim report)	SA 19.2	March
Predator Control Program – 2018 Implementation Plan (updated)	SA 19.2	May
Erosion Control Plan Annual Report	SA 14.5	October
Historic Properties Annual Report	License Article 414	December
Flow Monitoring Plan Annual Report - Water Year 2015	SA 5.5, 6.6	April
Flow Monitoring Plan Annual Report - Water Year 2016	SA 5.5, 6.6	April
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
1/11/18	401	4.1	2017 Soda Springs Fish Passage Facility Operations and Maintenance Annual Report	Acknowledged 1/11/18
3/1/18	411 & 412	USDA-FS 4(e) Condition 16	2017 Threatened and Endangered Species and Bald Eagle Monitoring Report	Acknowledged 3/1/18
6/7/18	401	21.4.2	2017 Resource Coordination Committee Annual Report	Acknowledged 6/7/18
12/17/18	414	18.1 & 18.2	2018 Historic Properties Annual Report/Action Plan	Acknowledged 12/17/18

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
2018	Opening Balance			\$38,436.16
2018	Annual Escalation (per SA 22.4.4)		\$683.83	\$39,119.99
2018	Expenditures			
	PacifiCorp			
	Staff Labor	(\$1,293.19)		
	Total Expenditures	(\$1,293.19)		\$37,826.80
2018	Ending Balance			\$37,826.80

Fiduciary Reporting

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

Date	Item	Expenditures	Funding	Balance
2018	Opening Balance			\$26,838.40
2018	Annual Escalation (per SA 22.4.4)		\$477.49	\$27,315.89
2018	Expenditures			
	PacifiCorp			
	Staff Labor	(\$904.77)		
	Total Expenditures	(\$904.77)		\$26,411.12
2018	Ending Balance			\$26,411.12

Fiduciary Reporting

Table 8. SA 19.1 Tributary Enhancement Program Fund

Date	Item	Expenditures	Funding	Balance
2018	Opening Balance			\$1,222,578.66
2018	Expenditures			
	Kevin Saylor			
	Boulder/bark hauling; boulder, log, and root wad placement; seeding/mulching; equipment rental	(\$88,371.09)		
	Weekly Bros.			
	Bridge work	(\$106,097.00)		
	Total Expenditures	(\$194,468.09)		\$1,028,110.57
2018	Investment Earnings		\$18,817.95	\$1,046,928.52
2018	Ending Balance			\$1,046,928.52

Fiduciary Reporting

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

Date	Item	Expenditures	Funding	Balance
2018	Opening Balance			\$308,089.10
2018	Annual Funding (\$100K escalated)		\$138,297.30	\$446,386.40
2018	Expenditures			
	EG Solutions			
	Smolt trap repair	(\$392.00)		
	ODFW			
	Experimental Biological Aides (EBAs)	(\$139,248.00)		
	ODFW staff labor/expenses	(\$71,033.00)		
	PacifiCorp			
	PacifiCorp staff labor and expenses	(\$23,579.51)		
	Stillwater Sciences			
	Soda Springs Predator Control Study	(\$112,358.80)		
	Weekly Bros.			
	Smolt trap anchors	(\$2,500.00)		
	Total Expenditures	(\$349,111.31)		\$97,275.09
2018	Investment Earnings		\$4,576.15	\$101,851.24
2018	Ending Balance			\$101,851.24

Fiduciary Reporting

Table 10. SA 19.3 Mitigation Fund

Date	Item	Expenditures	Funding	Balance
2018	Opening Balance			\$3,474,222.57
2018	Annual Funding (\$250,000 escalated)		\$318,953.26	\$3,793,175.83
2018	Expenditures			
	Mitigation Projects			
	Shrub Understory Mechanical Regeneration - NEPA			
	Partnered Owl Survey			
	Late Seral Habitat Wildfire Protection Strategy			
	Mowich Ponds (Wetland Enhancement)			
	Fish Watch 2019 (\$15,000 for 3 years, annually)			
	USGS Cooperative Stream Gages			
	Middle Steamboat Restoration Survey and Design			
	GRAIP Phase II of III – Steamboat Creek			
	Harmful Algae Bloom Surveillance and Water Quality Monitoring of Lemolo and Diamond			
	Stream Temperature Monitoring			
	Aquatic Invasive Species (AIS) Education and Prevention			
	Gravel Augmentation at Soda Springs			
	NUT Trail Bridges			
	Rock Creek Mainstem Restoration – Phase 1			
	Canton Creek Instream Restoration			
	Total Expenditures	(\$951,384.00)		\$2,841,791.83
2018	Interest Earned		\$8,314.75	\$2,850,106.58
2018	Ending Balance			\$2,850,106.58

5.0 CONCLUSION

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.

As in years past, a productive year of Project License and Settlement Agreement implementation was made possible through the dedication of the Parties and their respective staff in coordination with PacifiCorp's implementation team and operations and maintenance staff. 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 2019, 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.