

Evaluation and Findings Report

Clean Water Act Section 401 Water Quality Certification

Prospect 3 Hydroelectric Project (FERC No. P-2337)

February 2020



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1. Introduction

The Oregon Department of Environmental Quality prepared this Evaluation and Findings Report in response to an application for water quality certification submitted by PacifiCorp (Applicant) for a new license for the existing Prospect 3 hydroelectric project from the Federal Energy Regulatory Commission (FERC Project P-2337). The Project was constructed in 1931 and 1932, and the original major license (No. P-2337) issued to the California Oregon Power Company (COPCO) on July 30, 1931. The current license issued on January 30, 1989 for a period of thirty years, (PacifiCorp, Dec. 2016, Page E-14) expired on December 31, 2018.

The purpose of this report is to assess the effects, if any, of the proposed Project on water quality and beneficial uses. As allowed by Section 401 of the Clean Water Act, DEQ may impose conditions in the federal license, as necessary, to ensure the Project, as proposed, complies with Oregon water quality standards, applicable portions of the Clean Water Act, and other relevant provisions of state law.

DEQ received an initial application on March 29, 2017. On January 9, 2018, DEQ issued a draft certification for public review and comment. On February 13, 2018, PacifiCorp requested withdrawal of its then pending application for 401 certification, and submitted a new application that same date with a modified proposed Project. The application dated February 13, 2018 is the subject of the foregoing analysis.

DEQ issued a Clean Water Act Section 401 water quality certification to PacifiCorp on February 7, 2019. On February 21, 2019, PacifiCorp filed its request for hearing regarding certain conditions of the 401 certification. On September 27, 2019, the Federal Energy Regulatory Commission issued a new license for the project that incorporated the conditions of the certification, including the conditions that are the subject of PacifiCorp's request for hearing. As part of a settlement agreement to resolve the contested conditions, PacifiCorp proposed actions, as described in Section 4.2 of this document. The settlement agreement containing the proposed actions was signed December 31, 2019. DEQ has evaluated these proposed actions in this draft certification decision.

The Prospect 3 hydroelectric project is located in the Rogue Basin, on the South Fork of the Rogue River near the community of Prospect in northeastern Jackson County, Oregon (Figure 1) (PacifiCorp, Feb. 2018, Page 3). The project is located partially within the High Cascades Ranger District of the Rogue River-Siskiyou National Forest.

The project diversion dam is located at river mile 10.5 on the South Fork Rogue River in the approximately 1,616 square-mile Upper Rogue River sub-basin. The project operates in run-of-river mode with no appreciable water storage capacity. The 30-year (1986-2015) average annual generation is 35,050 megawatt -hours (MWh) and the average monthly generation over the same period is 2,921 MWh (PacifiCorp, Feb. 2018,Page 4).

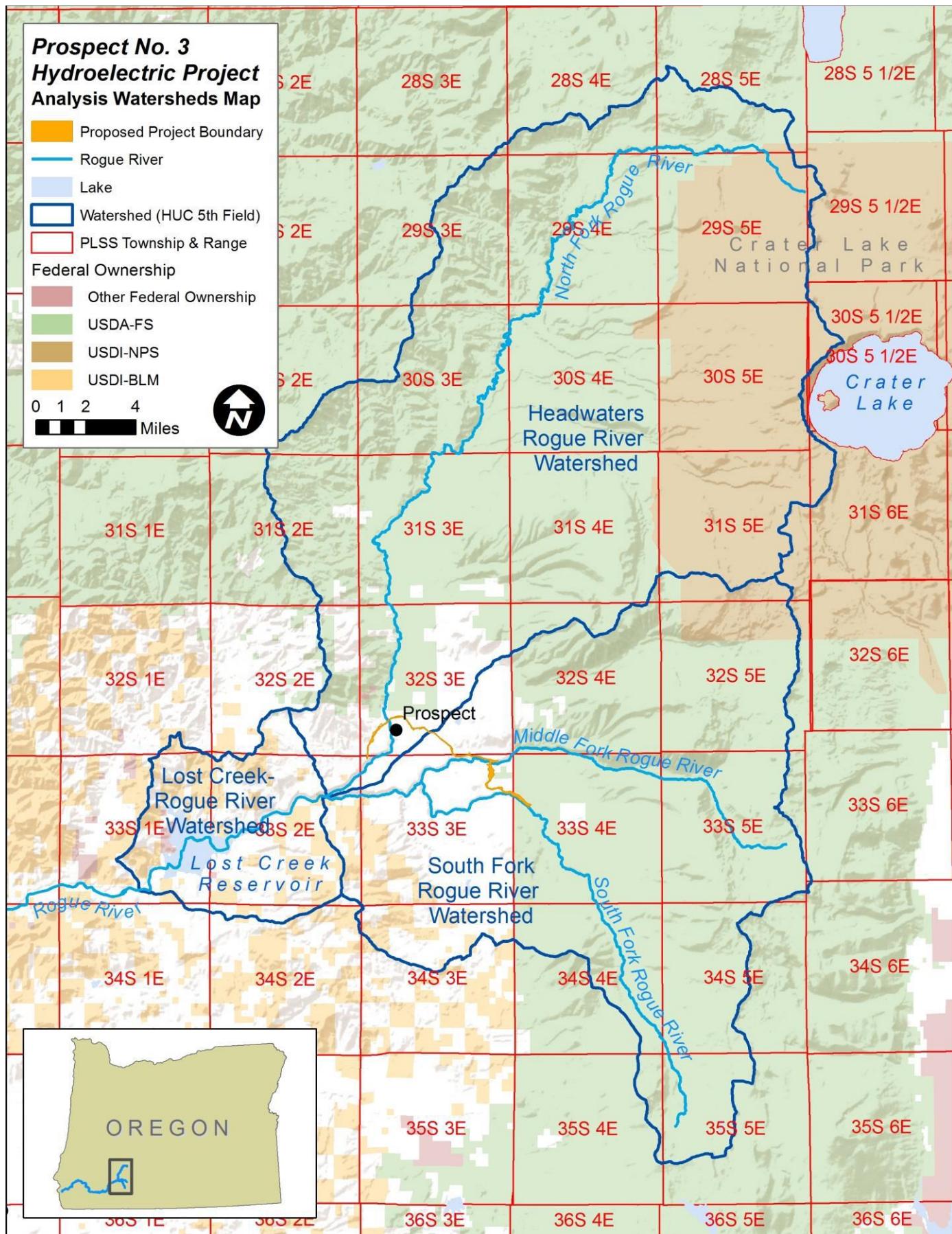


Figure 1: Project Location

2. Requirements for Certification

PacifiCorp has applied to the Federal Energy Regulatory Commission for a new license for the existing 7.2 megawatt Prospect 3 hydroelectric facility on the South Fork Rogue River near Prospect, Oregon. Section 401 of the Federal Clean Water Act requires that an applicant for a federal permit or license to conduct any activity which may result in any discharge into navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates.

Oregon water-quality standards were enacted under the authority of the Federal Clean Water Act, 33 U.S.C. 1251 – 1387, to implement the Act’s primary goal of “restor[ing] and maintain[ing] the chemical, physical, and biological integrity of the Nation’s waters.” 33 U.S.C. 1251(a). Oregon state law provides that the Environmental Quality Commission may perform all necessary acts to implement the Federal Clean Water Act, as amended and federal regulations or guidance issued pursuant to that act, including promulgation of rules. ORS 468B.035.

Accordingly, DEQ issues §401 Water Quality Certifications in the State of Oregon. In order for DEQ to issue a 401 certification, the DEQ must certify that the proposed project will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of the Clean Water Act and any state regulations adopted to implement these sections. DEQ is further authorized to condition any granted certification to assure compliance with state water quality standards and other appropriate requirements of state law.

Federal Requirements

Sections 301, 302, 303, 306, and 307 of the Federal Clean Water Act: These sections prescribe, among others, effluent limitations, water quality related effluent limitations, water quality standards and implementation plans, national standards of performance for new sources, and toxic and pretreatment effluent standards.

State Requirements

Oregon Administrative Rules 340-041 and 340-048-0005 to 340-048-0050: These rules were adopted by the Environmental Quality Commission to prescribe the state’s water quality standards (OAR 340-041) and procedures for receiving, evaluating, and taking final action upon a §401 certification application (OAR 340-048). The rules include requirements for general information such as the location and characteristics of the project, as well as confirmation that the project complies with other appropriate requirements of state law including provisions addressing ORS 197.180, which requires certification decisions to comply with water-quality-related requirements in statewide planning goals and the provisions in acknowledged comprehensive plans and land use regulations that implement the goals.

ORS 468B.040: This statute prescribes procedural requirements and findings with which DEQ must comply as it makes a decision on a § 401 certification application. This statute references the federal law requirements, state water quality rules, and other requirements of state law regarding hydroelectric projects including but not limited to those set forth in Section 8 below.

ORS 197.180(1): This statute requires state agency actions to be consistent with goals and acknowledged land use plans and implementing regulations. Findings must support the state agency action.

ORS 509.585 – 509.645: This statute requires that owners or operators of all artificial obstructions in Oregon waters where migratory native fish are currently or have historically been present must provide for upstream and downstream passage for native migratory fish.

ORS 541.405: This statute sets forth the Oregon Plan for Salmon and Watersheds, which provides for restoration of native fish populations, and the aquatic systems that support them, to productive and sustainable levels that will provide environmental, cultural and economic benefits.

ORS 496.012: This statute and its implementing rules prevent serious depletion of any indigenous species and requires measures to maintain all species of fish and wildlife at optimum levels. OAR 635-415-0000 – 0030.

ORS 496.435: This statute promotes rehabilitation of salmon and trout populations by restoration of native stocks to historic levels of abundance.

ORS 543A: This statute establishes procedures among state agencies in the reauthorization of federally licensed hydroelectric projects, including state certification of water quality.

Oregon Water Quality Standards

The water quality standards in Division 41 are composed of three elements: designated beneficial uses, numeric and narrative criteria, and the anti-degradation policy. The role of each of these is explained below.

Designated Beneficial Uses: The Oregon water quality standards are designed to attain or maintain the level of water quality necessary to support designated beneficial uses. DEQ considers the designated uses of a body of water when reviewing whether a proposed activity will meet state water-quality standards. The regulatory approach is: (1) identify beneficial uses (2) develop and adopt criteria for water quality parameters to protect the identified beneficial uses; (3) establish and enforce discharge limitations for each source that is permitted to discharge treated wastes into public waters to assure that water quality standards are not violated and beneficial uses are not impaired; and (4) establish and implement "best management practices" for a variety of "land management" activities to minimize their contribution to lower water quality standards and impairment of beneficial uses.

Narrative and Numeric Criteria: Criteria can be expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular designated beneficial use. When criteria are met, water quality will generally protect the designated beneficial use. Development of water quality standards is a continuing process. As new information becomes available, criteria for additional parameters may be added and existing numeric and narrative criteria may be revised. In addition, as individual projects are evaluated for compliance with state water-quality standards, narrative criteria may be translated into specific limitations to ensure proposed activities are consistent with the specific beneficial uses and attributes of a particular body of water.

Antidegradation Policy: Oregon's anti-degradation policy (OAR 340-041-0004) guides decisions that affect water quality such that unnecessary further degradation from new or increased point and nonpoint sources of pollution is prevented, and decisions are made to protect, maintain, and enhance existing surface water quality to ensure the full protection of all existing beneficial uses. Accordingly, this policy supplements other applicable criteria.

3. Summary of Application

3.1 Applicant Information

Name and Address of Applicant

PacifiCorp
825 N.E. Multnomah Street, Suite 1800
Portland, OR 97232

Name and Address of Applicant's Authorized Representative

Steve Albertelli
PacifiCorp, License Program Manager
925 South Grape Street, Building 5
Medford, OR 97501

Documents Reviewed in Support of §401 Application

Information which must be included in an application for § 401 certification is presented in OAR 340-048-0020(2). The application together with information provided during public comment and interagency coordination are the basis for the following determinations made by DEQ:

- A determination whether to issue or deny certification.
- Determination of conditions that are appropriate to include in any granted certificate.
- Development of findings as required by ORS 468B.040 and ORS 197.180(1).

PacifiCorp filed the following key document in support of its §401-certification application for the licensing of the Project:

PacifiCorp. Application for Water Quality Certification Pursuant to Section 401 of the Federal Water Pollution Control Act OAR 340-048-0020 and ORS 468B.040 Prospect No. 3 Hydroelectric Project (FERC No. P-2337) Jackson County, Oregon. Feb. 2018.

DEQ also reviewed the following documents to complete this evaluation and findings report:

Final Order and Settlement Agreement between Oregon Department of Environmental Quality and PacifiCorp, Dec. 2019.

Harris, D.A., West Region Hydropower Coordinator Oregon Department of Fish and Wildlife. Letter to Federal Energy Regulatory Commission, May 11, 2017.

Hunter, M.A, September 1992, Hydropower Flow Fluctuations and Salmonids: A Review of the Biological Effects, Mechanical Causes, and Options for Mitigation. State of Washington Department of Fisheries.

PacifiCorp. Final License Application, Prospect No. 3 Hydroelectric Project (FERC No. P-2337), PacifiCorp, Portland, Oregon. Dec. 2016.

PacifiCorp. Lemolo 2 Fish Passage Evaluation Report, October 22, 2007.

PacifiCorp. 2015. Initial Study Report: Instream Flow. Prospect Hydroelectric Project. FERC Project No. P-2337. Prepared by PacifiCorp, Medford, OR. April 2015.

PacifiCorp. Prospect No. 3 Hydroelectric Project FERC Project No. P-2337 Initial Study Report: Water Quality. May 2015.

PacifiCorp. Prospect No. 3 Hydroelectric Project FERC Project No. P-2337. Updated Study report: Water Quality. May 2016.

3.2 Waters of the State

Waters Affected by the Project

The South Fork Rogue River is approximately 26 miles in length and has a drainage area of approximately 251 square miles. The stream originates at elevations between 5,600 feet and 5,700 feet in the South Blue Lake Group, a series of small lakes and springs in Sky Lakes Wilderness. The channel drops in elevation to 3,400 feet as it flows through the canyon to the South Fork diversion dam at RM 10.5. Downstream of the diversion, the South Fork Rogue River enters a narrow canyon that runs from the diversion dam to Lost Creek Reservoir. The Prospect 3 hydroelectric Project diversion dam is located at approximately river mile 10.5 on the South Fork Rogue River. As noted by PacifiCorp: “The Project primarily consists of a 172-foot-long, 24-foot-high concrete diversion dam on the South Fork Rogue; upstream and downstream fish passage facilities; a 15,894-foot-long conduit system; a powerhouse containing one generating unit with a rated capacity of 7,200 kilowatts (kW) operating under 713 feet of static head on the south bank of the Middle Fork Rogue; a sag-pipe conveying flows from the Project tailrace to the Middle Fork Canal of the Prospect Nos. 1, 2, and 4 Hydroelectric Project (FERC Project No. P-2630); and a 6.97-mile-long, 69-kilovolt transmission line terminating at the Prospect Central sub-station. The Project operates in run-of-river mode with no appreciable water storage capacity. The 30-year (1986-2015) average annual generation is 35,050 megawatt hours (MWh), and the average monthly generation over the same period is 2,921 MWh” (PacifiCorp, Feb. 2018, Page 4).

Water Rights

PacifiCorp holds an Oregon Certificate of Water Right (Certificate No. 9688, State Engineer Permit No. 7861) in perpetuity for the purposes of power generation at the Project. The certificate allows for a maximum of 150 cubic feet per second diversion from the South Fork Rogue River.

Beneficial Uses

Designated beneficial uses for the Rogue River and its tributaries (including the South Fork Rogue River) are set forth in OAR-041-0270, Table 270A and apply to all waters within the Project area (Table 1).

Table 1: Designated Uses Rogue Basin

Beneficial Uses	Rogue River Estuary & Adjacent Marine Waters	Rogue River Main Stem from Estuary to Lost Creek Dam	Rogue River Main Stem above Lost Dam & Tributaries	Bear Creek Main Stem	All Other Tributaries to Rogue River & Bear Creek
Public Domestic Water Supply ¹		X	X	*	X
Private Domestic Water Supply ²		X	X		X
Industrial Water Supply	X	X	X	X	X
Irrigation		X	X	X	X
Livestock Watering		X	X	X	X
Fish & Aquatic Life	X	X	X	X	X
Wildlife & Hunting	X	X	X	X	X
Fishing	X	X	X	X	X
Boating	X	X	X	X	X
Water Contact Recreation	X	X	X	X	X
Aesthetic Quality	X	X	X	X	X
Hydro Power			X		X
Commercial Navigation & Transportation	X	X			
1 With adequate pretreatment (filtration & disinfection) and natural quality to meet drinking water standards					
2 See also Figures 271A and 271B for fish use designations for this basin.					
* Designation for this use is presently under study					

Fish use designations for the Rogue Basin are provided in OAR-041-0270, Figure 271A (Figure 2), with the location of the Prospect 3 diversion dam noted. The designated fish use is salmon and trout rearing and migration in waters affected by the project. The operation of the Project affects designated beneficial uses, including but not limited to such fish uses.

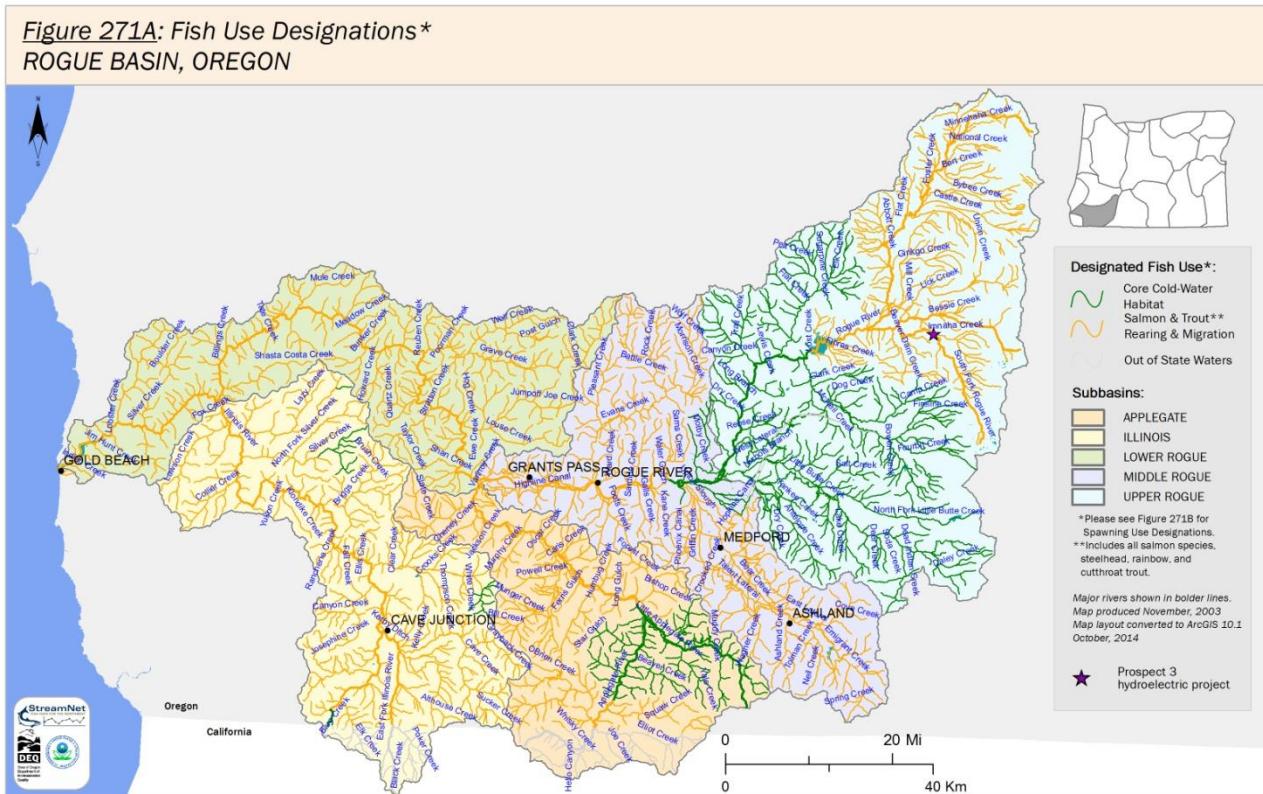


Figure 2: Fish Uses in the Rogue Basin

There are currently no salmon or steelhead spawning uses in the Prospect 3 project vicinity, as seen in Figure 3 (OAR-041-0270, Figure 271B.) The Jess dam currently prevents anadromous fish species from accessing the watersheds. The Jess Dam is approximately 22 river miles southwest of the Project.

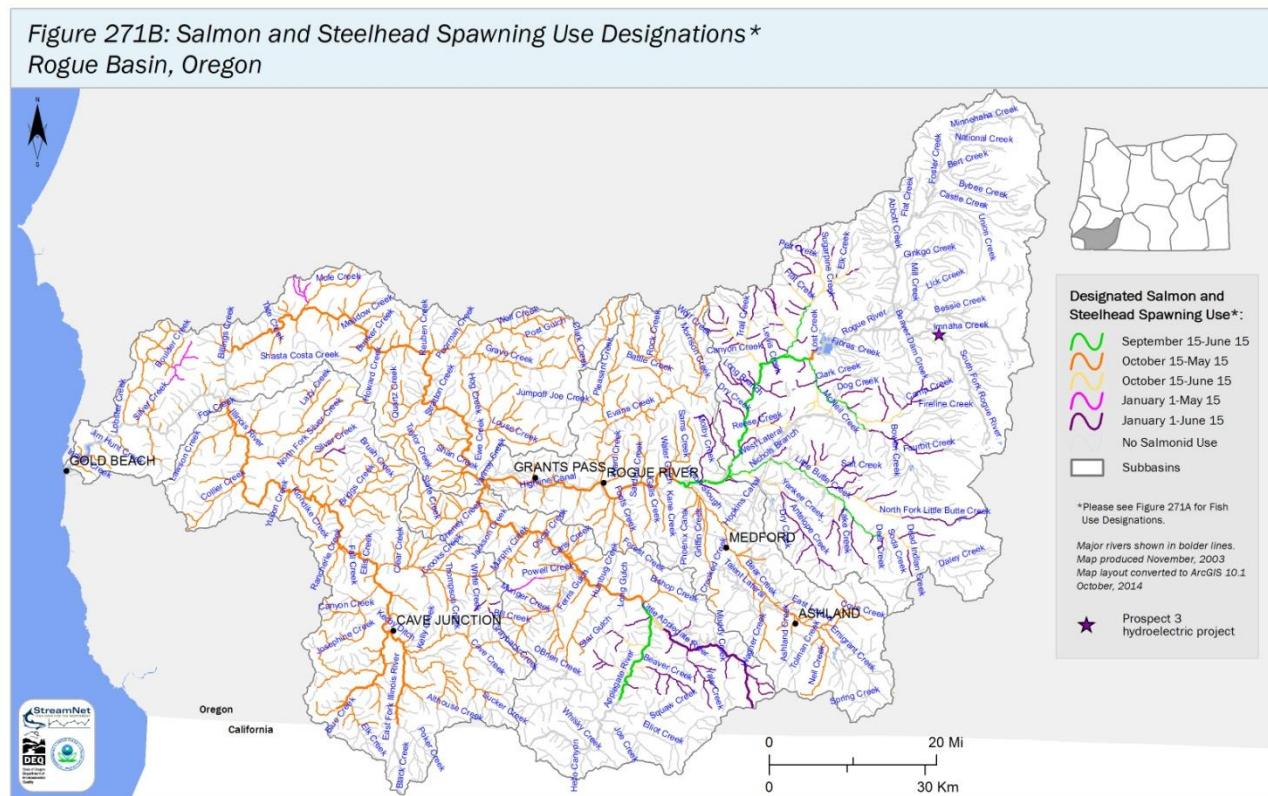


Figure 3: Salmon and Steelhead Spawning Rogue Basin

3.3 Aquatic Resources in the Project Vicinity

Resident migratory fish near the Project include rainbow trout (*Oncorhynchus mykiss*), cutthroat trout (*O. clarkii*), brown trout (*Salmo trutta*), and brook trout (*Salvelinus fontinalis*). Rainbow and cutthroat trout are indigenous to the upper Rogue River and its tributaries, while brown and brook trout are introduced species. All four species are self-sustaining and reproduce naturally in areas of the upper Rogue River and its tributaries; therefore, eggs, fry, juveniles, and adults inhabit the Project area. ODFW classifies rainbow and cutthroat trout as native migratory species (ORS 509.580(6) and OAR 635-412-0005(32)(u and x)), meaning that both species migrate to complete their life cycle needs and passage for these species must be provided at artificial obstructions. (ODFW, May 2017).

ODEQ uses the following dates to apply the dissolved oxygen spawning criteria:

“Resident Trout Spawning (redband, rainbow, westslope and coastal cutthroat):

For trout rearing waters upstream from core cold water habitat, spawning is also deemed to occur from January 1 – June 15 each year.” (Quality, 2004)

In October 2014, The Cow Creek Tribe of Umpqua Band of Indians conducted two days of Pacific lamprey (*Lampetra tridentata*) surveys in the Project Area. Lamprey presence/absence surveys were conducted downstream of the South Fork Diversion Dam. Lamprey were not detected downstream of the South Fork

Diversion Dam during the survey. In addition, the crew surveyed upstream of the dam at the impoundment where Imnaha Creek enters the South Fork Rogue River. There were no detections of lamprey in the area electro fished at the impoundment. (PacifiCorp, Dec. 2016. Page E-49).

According to FERC, Spring Chinook salmon and winter steelhead may have historically migrated to the South Fork; however, since 1977, the Corps' William Jess Dam, located on the Rogue River about 18 miles downstream of the project, has prevented upstream movement of anadromous fish into the South Fork. FERC notes, "No federal or state-listed fish species currently occur in the bypassed reach" (FERC, Oct. 2017. Page 28).

4. Project Description

4.1 Existing Project Facilities and Operations

Project facilities include:

- (1) A 172-foot-long, 24-foot-high concrete diversion dam with a 98-foot-long un-gated ogee spillway, located at river mile (RM) 10.5 on the South Fork Rogue River.
- (2) A 1-acre impoundment at elevation 3,375 feet with a gross capacity of 19-acre-feet and usable capacity of less than 5 acre-feet. The retention time of impounded water is less than one hour. The impoundment has a gross storage capacity of approximately nineteen acre-feet and useable capacity of less than five acre-feet. Average and maximum depths are approximately five feet and eight feet, respectively.
- (3) The fish ladder is a concrete pool-and-weir-type ladder with 15 pools of varying dimensions and an approximate running length of eighty-six feet providing upstream fish passage over the diversion dam.
- (4) South Fork bypass reach – the 10.5-mile-long reach of river subject to reduced flows from project diversion of up to 150 cubic feet per second year-round, and operated with a minimum flow requirement of 10 cubic feet per second.
- (5) The 15,894-foot-long Project waterway, with a primarily southeast-to-northwest alignment, consists of, in order, (a) a 273-foot-long, concrete-lined canal section, which contains the fish screen; (b) a 66-inch-diameter, 5,448-foot-long woodstave pipe; (c) a 5,805-foot-long concrete-lined canal section; (d) a 5-foot-wide by 6.5-foot-high, 698-foot-long, concrete-lined, horseshoe type tunnel; (e) a 416-foot-long canal to penstock transition (i.e. forebay) with a 2,486-foot-long side channel spillway that discharges to Daniel Creek; and (f) a 66-inch to 48-inch-diameter, 3,254-foot-long, riveted steel penstock with a south-to-north alignment (PacifiCorp, Feb. 2018. Page 15).

Water diverted from the South Fork Rogue to the Project powerhouse is conveyed directly from the Project tailrace to the Middle Fork Canal of the Prospect Nos. 1, 2, and 4 Hydroelectric Project (FERC No. P-2630) located to the north of the Middle Fork Rogue (PacifiCorp, May 2016, page 2). Figure 4 provides a view of Prospect 3 project in relation to Prospect 1, 2, 4 Project (PacifiCorp, 2015).

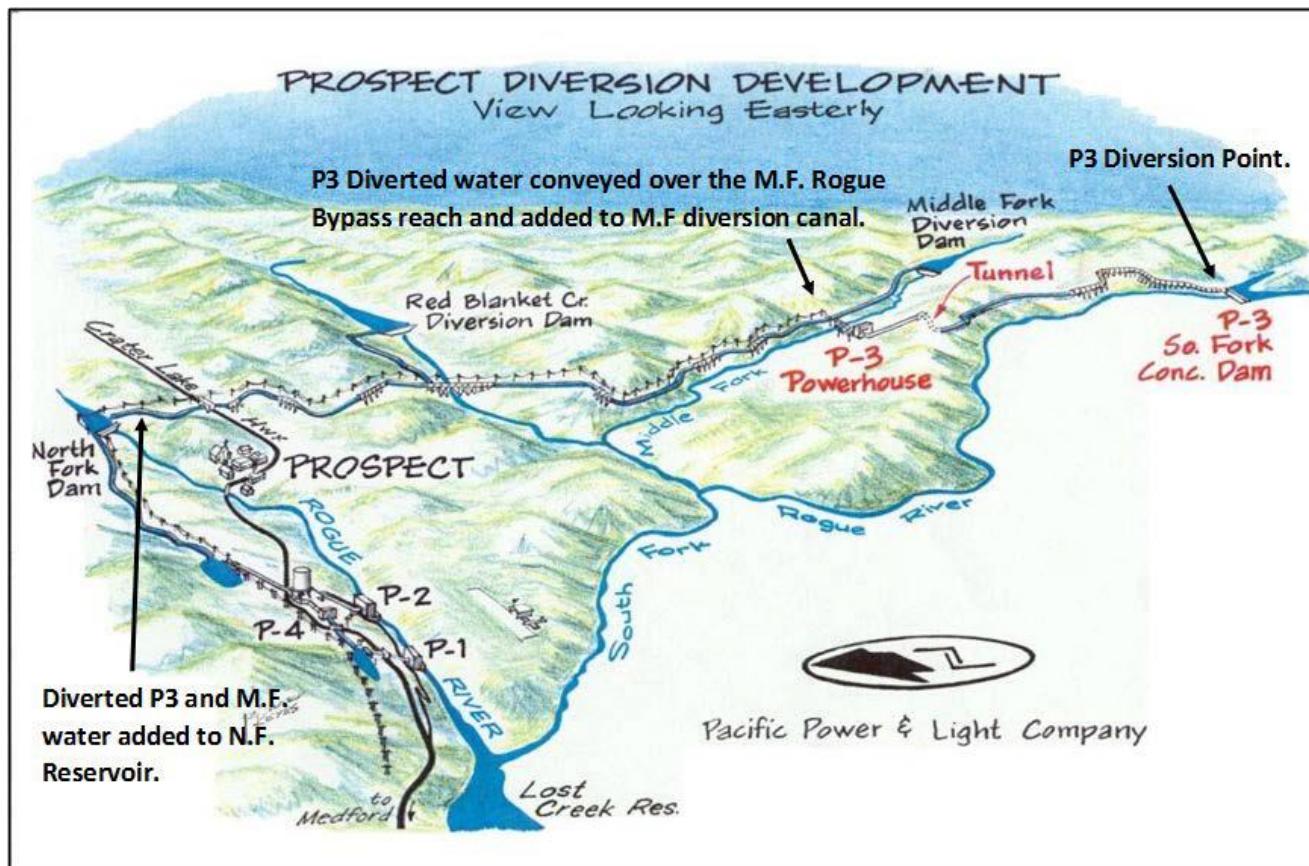


Figure 4: Prospect 3 Project Map

The current Project license identifies a minimum instream flow of 10 cubic feet per second be maintained in the South Fork Rogue River below the diversion dam. The Project operates in run-of-river mode as the small impoundment on the South Fork Rogue River lacks storage. When natural inflows exceed the sum of project hydraulic capacity and the minimum flow requirement, spill occurs at the diversion over the ungated, ogee-style spillway (PaciCorp, Feb. 2018, Page 16).

4.2 Proposed Project Facilities and Operations

Proposed Project Facilities:

PaciCorp proposes to construct an auxiliary bypass flow system, consisting of an automated, 3'-wide weir gate, 8' x 5' plunge pool, and 130'-long, 2'-diameter pipe, from the intake canal to a plunge pool at the base of the fish ladder to reliably provide increased minimum flows to the bypassed reach. PaciCorp proposes to replace the existing wood stave flow line and wood stave sag-pipe. The temporary vehicle-access bridge over the flowline would be rehabilitated to meet current Forest Service engineering standards following flowline replacement. PaciCorp proposes to construct a road spur from the flowline vehicle-access bridge to the bank of the bypassed reach to facilitate pass-through of materials dredged from the impoundment upstream of the dam to the bypassed reach downstream of the dam. PaciCorp proposes to upgrade the six existing four-foot-wide wildlife crossings of the canal to twelve feet in width. PaciCorp also proposes to construct five twelve-foot-wide wildlife crossings of the new steel flowline and eight two-foot-wide wildlife crossings of the canal within the canal fencing. To facilitate compliance with proposed ramp rates, PaciCorp proposes to install a communications link on the USGS' South Fork Rogue gage 14332000 to deliver real-time flow readings to Project instrumentation and controls (PaciCorp. Feb. 2018. Page 17).

Proposed Project Operation:

PacifiCorp proposes to continue to operate in run-of-river mode with a maximum diversion of 150 cubic feet per second from the South Fork Rogue River. PacifiCorp proposes to increase the minimum in-stream flow in the South Fork Rogue River below the diversion dam to 30 cubic feet per second from March 1 through July 31, and 20 cubic feet per second from August 1 through February 28 (PacifiCorp. Feb. 2018. Page 18), as measured at the United States Geological Survey gage 14332000 at RM 10.25.

PacifiCorp proposes an operational ramping schedule based on the ramp rates and periods established by the Prospect Nos. 1, 2, 4 license for the bypassed reaches of Red Blanket Creek and Middle Fork Rogue River. Table 2 summarizes the proposed seasonal operational ramp rates.

Table 2: Proposed Ramping Rates

Period	Target Ramp Rate (feet/hr.)
May 1 – September 30	Not to exceed 0.2 feet per hour
October 1 – April 30	Not to exceed 0.3 feet per hour

PacifiCorp also proposes to (PacifiCorp. Feb. 2018. Page 19):

- Report operations-induced variances (i.e., non-natural events) of the minimum in-stream flow and/or ramping rate, within 24 hours of discovery and in a summary annual report for each water year.
- Prepare an updated Fish Passage Facilities Operations and Maintenance Plan, incorporating revised maintenance activities and schedules; and
- Operate and maintain the fish passage facilities according to the revised Plan.

Under the Settlement Agreement, signed December 2019, PacifiCorp proposes the following actions:

1. PacifiCorp will provide, no later than December 31, 2020, \$187,770 to WaterWatch of Oregon to fund implementation of or otherwise support the removal of three small, privately-owned diversion dams on Slate Creek and its tributary, Welter Creek (“Harboldt Dam Removal Project”). PacifiCorp will undertake follow-up monitoring to confirm that the dams have been removed and to provide a final report to DEQ, copying the Oregon Department of Fish and Wildlife (ODFW), at the completion of that project.
2. PacifiCorp will replace the two existing round, corrugated metal pipe culverts on Big Ben Creek below Forest Road 37 (T34S, R4E, S2, NESW) with a new culvert designed to U.S. Forest Service aquatic organism passage stream-simulation standards to restore upstream fish passage by December 31, 2021. The work includes timely obtaining all needed permits and approvals to carry out that work, subject to factors outside PacifiCorp’s reasonable control, and to undertake follow-up monitoring to confirm that the new culvert has been installed as designed to restore upstream fish passage and to provide a final report to the Department, copying the ODFW, at the completion of that project.
3. PacifiCorp will replace the existing round, 67' X 10', corrugated metal pipe culvert on Imnaha Creek below Forest Road 3775 (T33S, R4E, S17, NENW) with a new culvert designed to U.S. Forest Service aquatic organism passage stream-simulation standards to restore upstream fish passage by December 31, 2021. The work includes timely obtaining all needed permits and approvals to carry out that work, subject to factors outside PacifiCorp’s reasonable control, and to undertake follow-up monitoring to confirm that the new culvert has been installed as designed to restore upstream fish passage and to provide a final report to the Department, copying the ODFW, at the completion of that project.

4. PacifiCorp will construct and install a self-cleaning, rotary drum screen that meets the 2011 National Marine Fisheries Service fish screening criteria to prevent fish entrainment in an irrigation ditch that diverts flows from Mill Creek into the North Fork Rogue River by December 31, 2021. The work includes timely obtaining all needed permits and approvals to carry out that work, subject to factors outside PacifiCorp's reasonable control, and to undertake follow-up monitoring to confirm that the fish screen has been installed as designed to prevent fish entrainment and to provide a final report to the Department, copying the ODFW, at the completion of that project.

5. Water Quality Standards and Water Quality Status

5.1 Biologically Based Numeric Criteria

DEQ establishes biologically based numeric criteria to support biological functions of aquatic organisms. Table 3 presents the biologically based numeric criteria for temperature, dissolved oxygen and pH for the South Fork Rogue River.

Table 3: Numeric Criteria

Beneficial Fish Use	Salmon and Trout Rearing and Migration
Dissolved Oxygen Criteria	In a June 2010 memo to EPA (DEQ, June 2010), DEQ described how the dissolved oxygen criteria would be applied to the “salmon and trout rearing and migration” beneficial use. According to the memo, DEQ will apply either the cold or cool water aquatic life dissolved oxygen criteria based on ecoregions. The Project is located in the Southern Cascades ecoregion (Thorson 2003), and the cold water aquatic life dissolved oxygen criteria is the applicable use. OAR 340-041-0016(2) For water bodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen may not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen may not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen may not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and may not fall below 6.0 mg/l as an absolute minimum (Table 21);
Temperature Criteria	As seen in Figure 2, the waters around the Project are designated as “salmon and trout rearing and migration.” OAR 340-041-0028(4)(c) The seven-day average maximum temperature of a stream identified as having salmon and trout rearing and migration use on subbasin maps set out at OAR 340-041-0101 to

	340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 18.0 degrees Celsius (64.4 degrees Fahrenheit);
pH	OAR 340-041-0275 (1) pH (hydrogen ion concentration). pH values may not fall outside the following ranges: (a) Marine waters: 7.0-8.5; (b) Estuarine and fresh waters (except Cascade lakes): 6.5-8.5; (c) Cascade lakes above 3,000 feet altitude: pH values may not fall outside the range of 6.0 to 8.5.
Beneficial Fish Use	Resident Trout Spawning
Dissolved Oxygen	The dissolved oxygen criteria contain provisions that apply to resident trout spawning areas. DEQ applies the dissolved oxygen spawning criteria from January 1 – June 15, as described earlier. The remainder of the year the cold-water aquatic life criterion of 8 mg/L applies. OAR 340-041-0016 Dissolved Oxygen (1) For water bodies identified as active spawning areas in the places and times indicated on the following Tables and Figures set out in OAR 340-041-0101 to 340-041-0340: Tables 101B, 121B, and 190B, and Figures 130B, 151B, 160B, 170B, 180A, 201A, 220B, 230B, 260A, 271B, 286B, 300B, 310B, 320B, and 340B, (as well as any active spawning area used by resident trout species), the following criteria apply during the applicable spawning through fry emergence periods set forth in the tables and figures and, where resident trout spawning occurs, during the time trout spawning through fry emergence occurs: (a) The dissolved oxygen may not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l; (b) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels must not be less than 95 percent of saturation; (c) The spatial median intergravel dissolved oxygen concentration must not fall below 8.0 mg/l.

5.2 Antidegradation Policy

The purpose of Oregon's Antidegradation policy (OAR 340-041-0004) is to protect, maintain, and enhance the existing water quality to ensure the full protection of all existing beneficial uses.

The Antidegradation policy supplements other applicable water quality criteria. While criteria provide the absolute minimum values or conditions that must be met to protect designated uses, the Antidegradation policy offers protection to existing water quality, including instances where water quality meets or exceeds the criteria.

5.3 Water Quality Impairment in the South Fork Rogue River

Waterbodies which fail to meet certain water quality criteria are designated as water quality limited pursuant to CWA §303(d). The EPA requires States to develop total maximum daily loads for waters identified as water quality-limited. A TMDL identifies the maximum pollutant load that a water body may receive from combined point and non-point sources and still meet water quality standards necessary to support all designated beneficial uses. TMDLs quantify waste load allocations for point sources and load allocations for non-point sources. For hydroelectric projects located on a water quality-limited waterbody, a §401 certification may serve as the means for implementing LAs assigned to the project. Rules for developing, issuing and implementing TMDLs are in OAR Chapter 340, Division 042.

The DEQ 2012 Integrated Report presents a database of water quality limited waters in Oregon. The South Fork of the Rogue River is not water quality limited for any parameters based on the 2012 Integrated Report.

5.4 Water Quality Studies

May 2014 through May 2015 PacifiCorp collected water quality data to assess water quality conditions in the Project area. The Study Area included the South Fork bypass reach and inflows to Project from the South Fork Rogue River and Imnaha Creek. Water quality conditions in the upper 2.8 miles of the bypass reach (RM 7.7 to RM 10.5) are of particular interest. In this 2.8-mile reach, water releases at the diversion dam comprise 100 percent of instream baseflows; there are no contributions from springs, groundwater inflows, or tributaries.

The Study Area included five water quality monitoring stations (Table 4). PacifiCorp chose the sampling stations to assess current water quality conditions in the Project area. Figure 5 provides a map with the sampling locations.

Parameters monitored included temperature, dissolved oxygen, pH, and turbidity. Table 5 describes the monitoring frequency and monitoring type (PacifiCorp, May 2015, Page 7).

Table 4: Monitoring Locations

Sample Site Description	Location	Site Code
South Fork Rogue River Inflow to Project	RM 10.8	SFRI
Imnaha Creek Inflow to Project	RM 0.2	IMCI
South Fork Bypass Reach - Upper End (Below release point at diversion dam)	RM 10.5	SFBU
South Fork Bypass Reach - Mid-Reach (Above influence of springs and groundwater contribution)	RM 10.0	SFBM
South Fork Bypass Reach - Lower End (Below influence of springs and groundwater contributions)	RM 7.0	SFBL

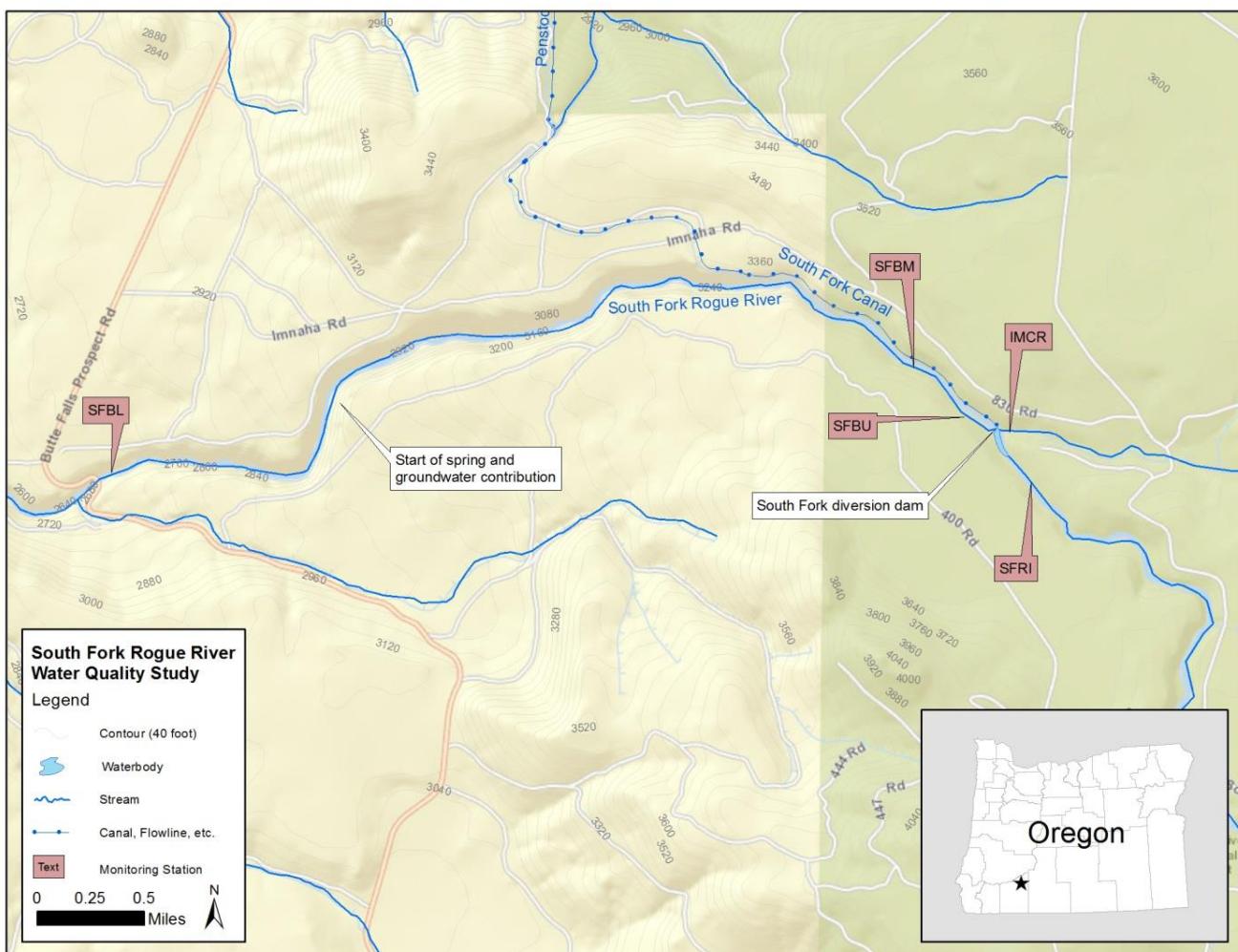
**Figure 5: Monitoring Locations**

Table 5: Monitoring Frequency and Type

Parameter	Monitoring Station	Sampling Technique
Water Temperature	SFRI, IMCI, SFBU, SFBM, SFBL	Continuously record hourly values for 1 year, beginning on May 1, 2014.
Dissolved Oxygen	SFBU, SFBM, SFBL	Continuously record hourly values for 72 hours, recorded from May 1-15 (trout fry emergence), and repeated in July, August, September, and October.
pH	SFBU, SFBM, SFBL	Continuously record hourly values for 72 hours, record from May 1-15, and repeated in July, August, September, and October.
Turbidity	SFRI, IMCI, SFBU	Continuously record 15-minute values for a 24-hour period during scheduled Project maintenance activities that necessitate spill at the diversion dam.

6. Water Quality Standards Compliance Evaluation

6.1 Water Quality Standards not of Concern

Table 6 identifies the water quality standards not expected to be violated by the operation of Prospect 3 hydroelectric facility. As explained in Table 6 and the following data summaries, DEQ is reasonably assured that the water quality standards identified in Table 6 will not be violated by operation of the proposed Project.

Table 6: Water Quality Standards Not Affected by Proposed Project Operations

Criterion	Standard	DEQ Evaluation
Fungi OAR 340-041-0007(9)	<i>The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or that are injurious to health, recreation, or industry may not be allowed.</i>	The Project does not discharge substances that promote fungal growth.
Taste & Odors OAR 340-041-0007(10)	<i>The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the palatability of drinking water or the palatability of fish or shellfish may not be allowed.</i>	DEQ knows of no reports of objectionable taste or odor or toxic conditions that are deleterious to fish or affect the palatability of water, fish, or shellfish. The proposed Project will not affect these characteristics.

Bottom or Sludge Deposits OAR 340-041-0007(11)	<i>The formation of bottom or sludge deposits deleterious to habitat and aquatic life are not allowed.</i>	The proposed Project is not expected to generate sludge or bottom sediments.
Aesthetic conditions OAR 340-041-0007(13)	<i>Aesthetic conditions offensive to human sight, taste, smell or touch may not be allowed.</i>	The proposed Project will not create aquatic conditions that are offensive to the human senses of sight, taste, smell, or touch.
Radioisotopes OAR 340-041-0007(14)	<i>Radioisotope concentrations may not exceed maximum permissible concentrations in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard.</i>	The Project will not utilize, store, or produce radioactive material.
Toxic Substances OAR 340-041-0033	<i>Discharge of toxic material that affects aquatic life or human uses is not allowed.</i>	The Project does not discharge toxic material. Available data indicates compliance with water quality criteria for metals.
pH OAR 340-041-0275(1)	<i>For fresh waters in the Rogue Basin, pH values may not fall outside the following range: 6.5-8.5</i>	Available data indicates compliance with the pH criteria. The Project will not alter the flow regime in a manner that contributes to changes in pH.
Bacteria OAR 340-041-0009	<i>Limits in-water concentration of bacterial cells, discharge of raw sewage, animal waste runoff, sewer overflows, and other sources of bacterial pollution.</i>	The Project will not discharge sewage or animal wastes into Project waters or engage in other activities that may contribute to bacterial pollution. Available data indicates compliance with the bacteria criteria.
Nuisance Algae Growth OAR 340-041-0019	<i>Algal growth that impairs the recognized beneficial uses of the water body is not allowed.</i>	The Project operates in “run of the river” mode, and the retention time of impounded water is less than one hour. The project does not cause conditions likely to cause the growth of nuisance algae.
Total Dissolved Solids OAR 340-041-0275(2)	<i>Standard generally prohibits TDS concentrations which exceed basin-specific criterion of 500.0 mg/l.</i>	The Project does not contribute organic or inorganic substances in molecular, ionized, or micro-granular form that may affect TDS in Project waters. Available data indicate no exceedance of the TDS guidance value.
Temperature OAR 340-041-028	<i>Criteria is intended to minimize the risk to cold-water aquatic ecosystems from anthropogenic warming, to encourage the restoration and protection of critical aquatic</i>	The Project operates in “run of the river” mode, and the retention time of impounded water is less than one hour. Stratification does not occur due to the brief residence time.

<p><i>habitat, and to control extremes in temperature fluctuations due to anthropogenic activities.</i></p>	<p>Available data indicates compliance with the temperature criteria.</p>
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Toxic Substances

Statewide Narrative Criteria on Toxic Substance

OAR 340-041-0007:

- (10) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish may not be allowed;

Toxic Substances

OAR 340-041-0033:

(1) Toxic Substances Narrative. Toxic substances may not be introduced above natural background levels in waters of the state in amounts, concentrations, or combinations that may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare or aquatic life, wildlife or other designated beneficial uses.

(2) Aquatic Life Numeric Criteria. Levels of toxic substances in waters of the state may not exceed the applicable aquatic life criteria as defined in Table 30 under OAR 340-041-8033.

(3) Human Health Numeric Criteria. The criteria for waters of the state listed in Table 40 under OAR 340-041-8033 are established to protect Oregonians from potential adverse health effects associated with long-term exposure to toxic substances associated with consumption of fish, shellfish and water.

Available Data

PacifiCorp collected monthly grab samples in Innaha Creek and South Fork Rogue, upstream and downstream of the dam, in May through October 2012 and analyzed the samples for a broad suite of metals. Only iron, lead, and nickel were detected in the samples. PacifiCorp compared metals concentrations to OAR fresh water acute and chronic aquatic life criteria (PacifiCorp. Feb. 2018, Page 49). According to PacifiCorp, concentrations of all metals either were below applicable acute and chronic aquatic life criteria or not detected at concentrations exceeding laboratory method reporting limits. PacifiCorp notes that the project facilities and operations do not discharge any potentially toxic substances to any waters in the Project area. The Project does not use or produce contaminants and potential toxins. DEQ concurs that the available data indicates compliance with the criteria for metals and no conditions are needed.

pH

Water Quality Standard

OAR 340-041-0275:

pH

(1) pH (hydrogen ion concentration). pH values may not fall outside the following ranges:

(b) Estuarine and fresh waters (except Cascade lakes): 6.5-8.5;

Available Data

All pH data gathered at each monitoring site complied with the standard pH of 6.5 to 8.5 for estuarine and fresh waters in the Rogue basin. Minimum and maximum pH values typically ranged from 7 to 8 at all sites, with some spatial and seasonal variation. The minimum pH reading recorded was 6.92, at a monitoring location at river mile 10.5 immediately below the diversion dam on the South Fork Rogue River on May 5, 2015 (PacifiCorp, Feb. 2018, Page 43). Because available water quality data indicated compliance with the pH criterion, the Applicant did not propose any pH related actions. DEQ concurs that the Project complies with the pH criterion and no conditions are needed.

Bacteria

Water Quality Standard

OAR 340-041-0009:

Bacteria

(1) Numeric Criteria: Organisms commonly associated with fecal sources may not exceed the criteria in subsections (a)-(c) of this section:

(a) Freshwater contact recreation:

(A) A 90-day geometric mean of 126 *E. coli* organisms per 100 mL;

(B) No single sample may exceed 406 *E. coli* organisms per 100 mL

Available Data

PacifiCorp collected monthly grab samples for bacteria analysis in Imnaha Creek and the South Fork Rogue River above and below the diversion dam in May through October 2012. *E. coli* concentrations up to 9.6 organisms per 100 ml were detected, which is below the DEQ numeric single-sample maximum of 406 *E. coli* organisms per 100 ml (PacifiCorp. Feb. 2018. Page 37). Because available water quality data indicated compliance with the *E. coli* criterion, the Applicant did not propose any *E. coli* related actions. DEQ concurs that the Project complies with the *E. coli* criterion and no conditions are needed.

Total Dissolved Solids**Water Quality Standard**

OAR 340-041-0275:

Total Dissolved Solids

(2) Total Dissolved Solids. Guide concentrations listed below may not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0271: 500.0 mg/l.

Available Data

PacifiCorp collected monthly grab samples in Imnaha Creek and South Fork Rogue River, upstream and downstream of the diversion dam, in July through October 2012. The samples were below the guide concentration throughout the sampling period (PacifiCorp, Feb. 2018, Page 48). DEQ concurs that the Project complies with the TDS guide concentration and no conditions are needed.

Temperature**Water Quality Standard**

OAR 340-041-0028:

Temperature

(4) (c) *The seven-day-average maximum temperature of a stream identified as having salmon and trout rearing and migration use on subbasin maps set out at OAR 340-041-0101 to 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 18.0 degrees Celsius (64.4 degrees Fahrenheit);*

Application of Water Quality Standard

The temperature standard protects waters of the state against anthropogenic thermal loading which may impair water quality or undermine support for existing and designated beneficial uses. Water temperatures that are acutely or chronically above biologically based levels can harm aquatic organisms that depend upon cold water to live or reproduce. This is particularly true of Oregon's native "cold-water" fish such as salmon, bull trout, rainbow trout, cutthroat trout, steelhead trout and certain amphibians including frogs and salamanders. Elevated water temperature may produce negative physiological effects including decreased spawning success, impaired feeding and growth, reduced resistance to disease and parasites, increased sensitivity to toxic substances, diminished migration tendencies, reduced ability to compete with more temperature-resistant species, and increased vulnerability to predation. If water temperatures are high enough for sustained periods, mortality occurs. Elevated temperatures may also adversely affect other important water quality parameters including dissolved oxygen, pH, and increase algae and fungi productivity.

DEQ adopts biologically based numeric temperature criteria to support specific life stage and development activities of species that may currently occupy or have historically occupied certain ranges. DEQ calculates the

temperature criterion as a seven-day average maximum temperature. The 7DAM metric is the average of the daily maximum temperatures from seven consecutive days made on a rolling basis.

The Fish Use Designation for the project area within the Rogue Basin is salmon and trout rearing and migration. Figure 271B indicates no salmonid spawning in the Project area. The appropriate biologically-based maximum temperature for the South Fork Rogue River flowing through and below the Project is 18.0 °C year round (OAR 340-041-0028(4)(c)).

Available Data

As noted earlier, 18°C is the applicable criterion on the South Fork Rogue River. Figure 11 presents a plot of continuous temperature data from monitoring stations on the South Fork Rogue River (PacifiCorp. Feb. 2018, PacifiCorp. Page 44). As seen in Figure 6, data at all monitoring locations indicate attainment with the applicable temperature criteria.

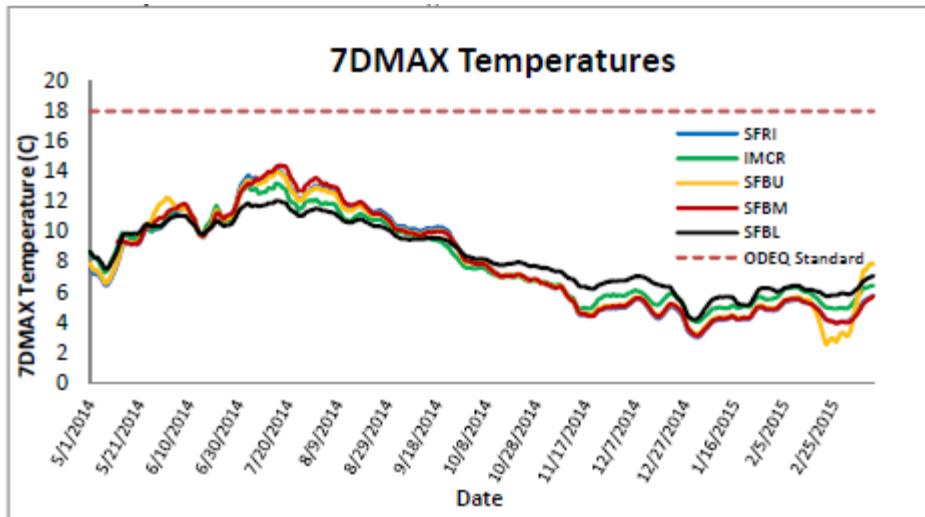


Figure 6: 7 DAM Temperatures

Applicant's Position

The Applicant does not propose any project-related action for temperature control or management because the South Fork of the Rogue River complies with the temperature criterion and no specific Project-related temperature action is necessary.

DEQ Evaluation

The Applicant has demonstrated the Project attains the temperature criterion of 18°C in the bypass reach of the South Fork Rogue River. Under a new FERC license, PacifiCorp will be increasing flows to the bypass reach. DEQ expects continued temperature criteria attainment under higher minimum flows. Because compliance with the temperature criteria has been demonstrated, there are no water quality certification conditions to address temperature in the §401 Water Quality Certification. However, temperature monitoring will be required as part of the dissolved oxygen monitoring plan.

DEQ Findings

DEQ is reasonably assured that the proposed Project under a new FERC License will continue to comply with the temperature criterion, provided the project is operated as described in the application for §401 water quality certification and in accordance with the 401 certification conditions.

6.2 Water Quality Standards of Potential Concern

This section provides an evaluation of potential Project effects over the range of operating conditions proposed by the Applicant. Based on this evaluation, DEQ determines whether proposed activities will likely comply with each water quality standard. DEQ may provide conditions on the operation of the facility, as necessary, to provide assurance that proposed operations do not violate Oregon water quality standards.

This evaluation is limited to the effects the operation of the Project under a new License may have on water quality and beneficial uses. Construction or other activities that necessitate in-water work may require separate water quality certifications issued by DEQ or pre-authorized pursuant to a dredge and fill permit issued by the Corps pursuant to Section 404 of the CWA.

Based on information provided by the Applicant coupled with an understanding of the impact of hydroelectric operations on water quality, DEQ has identified water quality standards potentially affected by proposed Project operations. Table 7 identifies the water quality standards potentially impacted by the operation of the Project under a new FERC License.

Table 7: Water Quality Standards of Potential Concern

Criterion	Standard	DEQ Evaluation
Dissolved Oxygen OAR 340-041-0016	<i>Sufficient concentrations of dissolved oxygen are necessary to support aquatic life.</i>	Diversion of South Fork River flow may affect the dissolved oxygen levels in the South Fork Rogue River in the bypass reach. The Project operates in “run of the river” mode, and the retention time of impounded water is less than one hour. Stratification does not occur due to the brief residence time.
Discoloration, oily sheen, oily coatings OAR 340-041-0007(13)	<i>Objectionable discoloration, scum, oily sheen, floating solids or coating aquatic life with oil films is not allowed.</i>	Project turbines and transformers use oil. Fuels may be stored onsite to operate back-up electrical generators.
Total Dissolved Gas OAR 340-041-0031	<i>Protects aquatic life from gas bubble trauma caused by water that is super saturated with atmospheric gases.</i>	Spills occur in response to water level in the forebay. Automation of the PRV has eliminated routine spill from the forebay.
Turbidity OAR 340-041-0036	<i>No more than a ten percent cumulative increase in natural stream turbidities may be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity.</i>	Increases in turbidity can occur when adjustment of Project gates may result in ramping of sufficient rate and stage change to mobilize sediment in the Project impoundment to the bypassed reach. Construction and maintenance of project access roads, waterways, and staging areas has resulted in the removal of vegetative cover and the exposure and compaction of soils. Construction and maintenance of project access roads, waterways, and staging areas has resulted in the

		removal of vegetative cover and the exposure and compaction of soils.
Biocriteria OAR 340-041-0011	<i>Waters of the State must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities.</i>	Diversion of South Fork River flow away from the bypass reach may affect the biological community in the bypass reach.
Statewide Narrative Criteria: Highest and Best Practical Treatment, Prohibition of Deleterious Conditions 340-041-0007 (1) and (10)	<i>The highest and best practicable treatment, activities, and flows must be provided so protect water quality and maintain deleterious factors at the lowest possible levels. The creation of conditions that are deleterious to fish or other aquatic life is not allowed.</i>	Hydroelectric dams may influence the aquatic environment by creating conditions that adversely affect fish and other aquatic life. These deleterious effects may be due to changes in flow below the hydroelectric project.
Antidegradation OAR 340-041-0004	<i>Protects existing water quality by preventing unnecessary additional water quality degradation.</i>	Addressed when a proposed project may lower existing water quality conditions, even though standard violations are not anticipated.

Dissolved Oxygen

Water Quality Standard

OAR 340-041-0016:

Dissolved Oxygen

Dissolved oxygen (DO): No wastes may be discharged and no activities must be conducted that either alone or in combination with other wastes or activities will cause violation of the following standards: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

- (1) *For water bodies identified as active spawning areas in the places and times indicated on the following Tables and Figures set out in OAR 340-041-0101 to OAR 340-041-0340: Tables 101B, 121B, 180B, 201B and 260B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B, (as well as any active spawning area used by resident trout species), the following criteria apply during the applicable spawning through fry emergence periods set forth in the tables and figures:*
- (a) *The dissolved oxygen may not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;*
 - (b) *Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels must not be less than 95 percent of saturation;*
 - (c) *The spatial median intergravel dissolved oxygen concentration must not fall below 8.0 mg/l.*
- (2) *For water bodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen may not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen may not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen may not fall below 8.0 mg/l as a 30- day mean minimum, 6.5 mg/l as a seven-day minimum mean, and may not fall below 6.0 mg/l as an absolute minimum (Table 21);*

As noted in Table 3 the applicable dissolved oxygen criterion for “Salmon and Trout Rearing and Migration” is 8 mg/L or 90% saturation. The applicable dissolved oxygen criterion for “Resident Trout Spawning” is 11 mg/L or 95% saturation. If the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the dissolved oxygen criterion is 9.0 mg/l. The spawning criteria applies from January 1 through June 15.

Application of Water Quality Standard

Dissolved oxygen is one of the principal parameters used to determine water quality in support of aquatic life. Maintaining adequate concentrations of dissolved oxygen is vital to the support of fish, invertebrates, and other aquatic life. Some aquatic species such as salmonids are sensitive to reduced dissolved oxygen concentrations. Sensitivity also varies between various life stages (e.g., incubation, emergence, growth) and between different life processes (e.g., rearing and reproduction).

During spawning, salmonids will construct redds from suitable gravels to shelter eggs during incubation. Proper intergravel dissolved oxygen is critical for egg and embryo development. However, factors such as gravel porosity, substrate embeddedness, and sediment oxygen demand may reduce intergravel dissolved oxygen relative to dissolved oxygen in the water column. For this reason, DEQ establishes a biologically based numeric criterion for IGDO to ensure adequate oxygen available to salmonids during early life stage development.

Available Data

As noted earlier, 11 mg/L is the applicable criterion from January 1 through June 15 to protect resident trout spawning through fry emergence. The remainder of the year the cold-water aquatic life criterion of 8 mg/L applies. Plots of continuous dissolved oxygen data from monitoring stations on the South Fork Rogue River are presented in Figures 7 - 11 (PacifiCorp, May 2015, Pages 14-17). As seen in Figure 7, in May the dissolved oxygen levels don't attain the applicable 11 mg/L dissolved oxygen criterion at river mile 10.5 (Station SFBU). As seen in Figure 8, in July the dissolved oxygen attains the 8 mg/L criterion at river mile 10.5 (Station SFBU), river mile 10.0 (Station SFBM) or river mile 7 (Station SFBL) in the South Fork Rogue River. As seen in Figure 9

- 11 all monitoring locations are attaining the applicable criterion of 8 mg/L during August, September, and October.

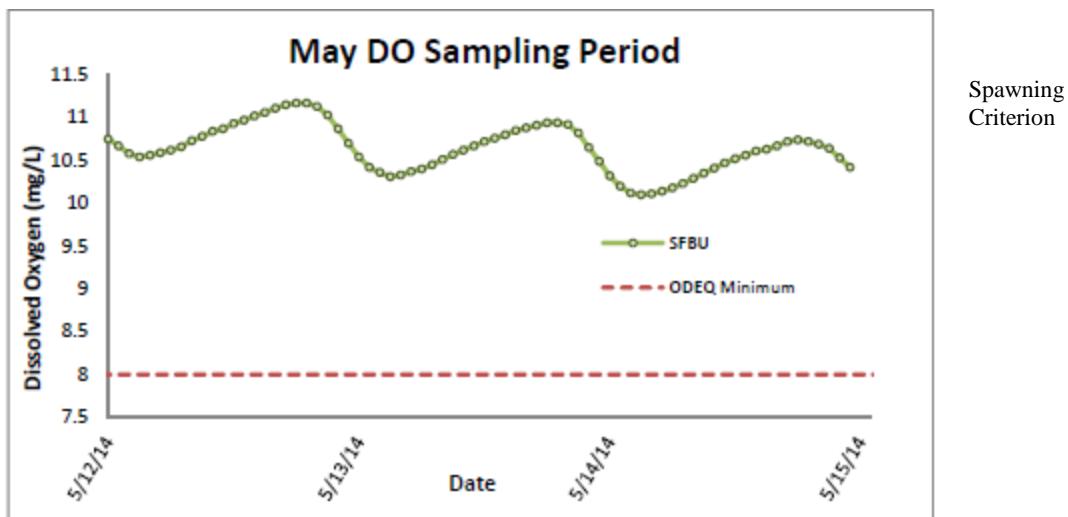


Figure 7: May 2014 Dissolved Oxygen

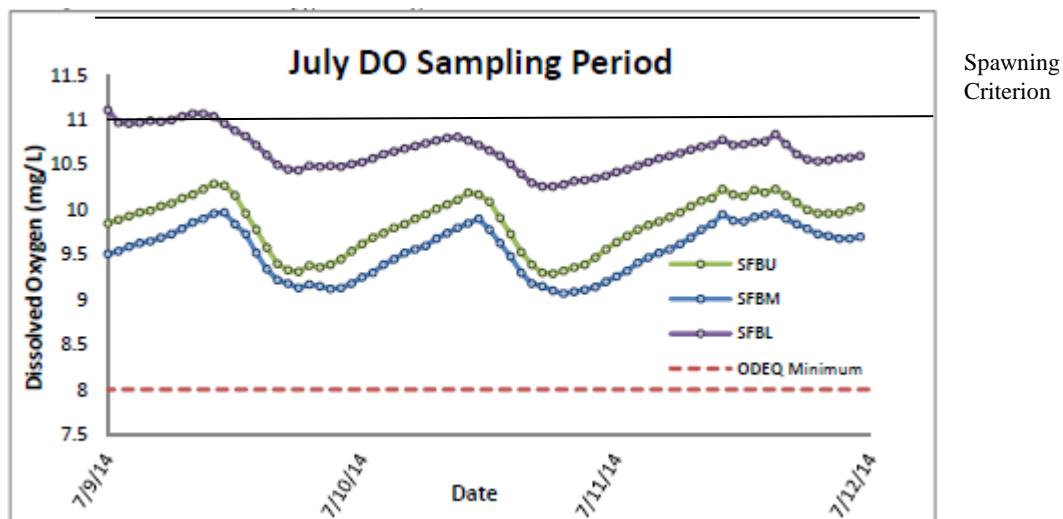


Figure 8: July 2014 Dissolved Oxygen

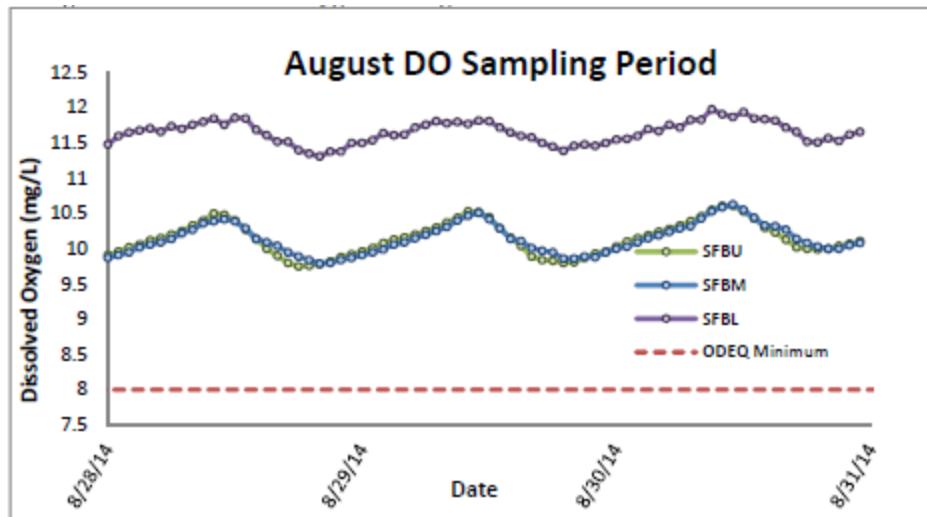


Figure 9: August 2014 Dissolved Oxygen

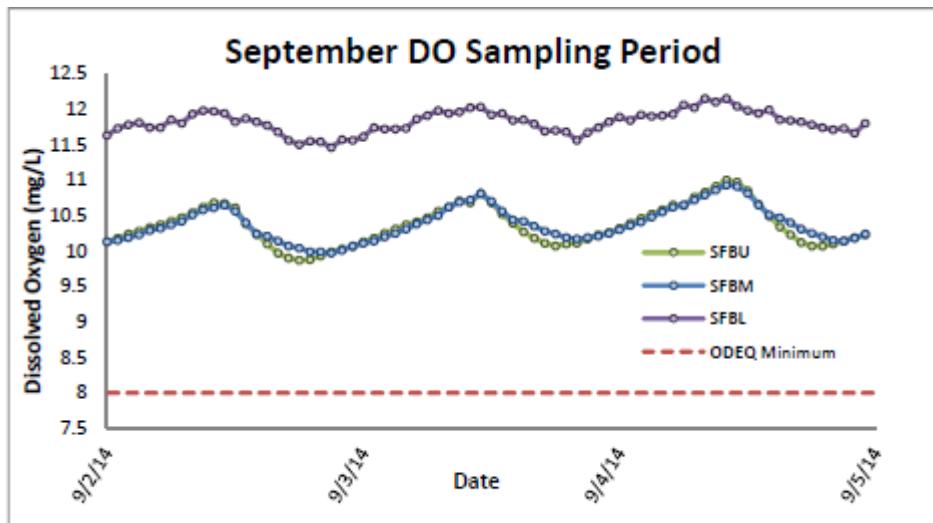
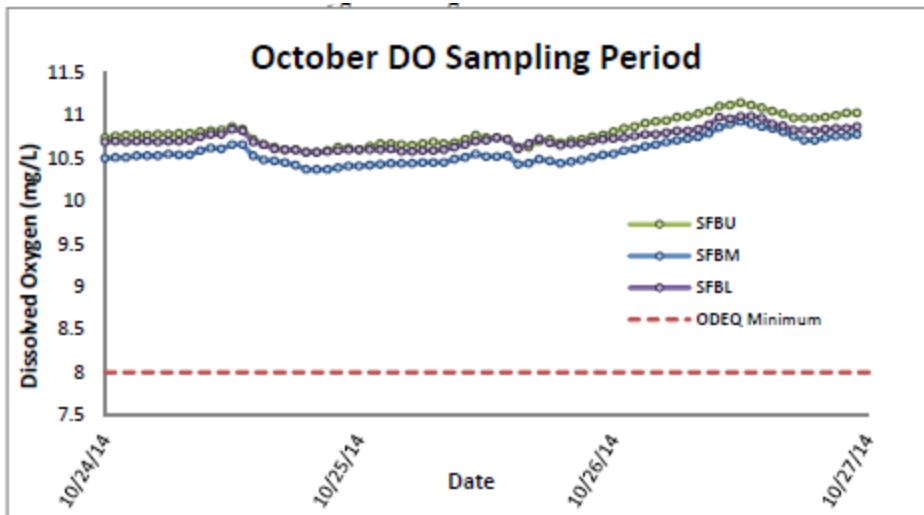


Figure 10: September 2014 Dissolved Oxygen

**Figure 11: October 2014 Dissolved Oxygen****Applicant's Position**

The Applicant states that the Project does not affect dissolved oxygen, it complies with the dissolved oxygen criterion, and no specific Project-related dissolved oxygen control or management is necessary.

DEQ Evaluation

The Applicant has demonstrated the Project attains the dissolved oxygen criterion of 8 mg/L from July through October in the bypass reach of the South Fork Rogue River. However, dissolved oxygen monitoring indicates non-attainment of the 11 mg/L spawning criterion in the South Fork Rogue River during at least part of the spawning period. PacifiCorp is proposing to increase the minimum flow in the bypass reach under a new FERC license. The increased flow may result in increased dissolved oxygen levels and attainment of the dissolved oxygen criteria. DEQ will include dissolved oxygen monitoring in the South Fork Rogue River as a condition of the §401 Water Quality Certification to determine whether the dissolved criteria are attained year round in the bypass reach. If monitoring indicates non-attainment of the dissolved oxygen criteria, PacifiCorp must propose and implement measures under an adaptive management plant to ensure attainment of the criteria.

DEQ Findings

DEQ is reasonably assured that operation of the proposed Project under a new FERC License will comply with the dissolved oxygen criterion, provided the following measures are implemented:

Dissolved Oxygen Monitoring

Within 90 days of FERC License issuance, PacifiCorp shall submit a Dissolved Oxygen Monitoring Plan to DEQ that presents a monitoring strategy for measuring dissolved oxygen, percent saturation and temperature at representative locations upstream and downstream from the Project. PacifiCorp shall also measure the flow from the project. Upon DEQ approval, PacifiCorp shall submit to FERC this Monitoring Plan as part of the required § 401 Certification Conditions for the Project for the purposes of any federal license or permit.

The monitoring plan shall include the following minimum components:

1. propose monitoring and assessment methodology
2. monitoring locations
3. monitoring frequency and duration
4. evaluation procedures

Dissolved Oxygen Reporting

PacifiCorp shall submit annual water quality monitoring reports to DEQ by January 31 of each year. Each report shall include an analysis of dissolved oxygen monitoring data from each station including graphical of continuous

dissolved oxygen data. To evaluate dissolved oxygen data with the applicable criteria given in Table 21 of OAR 340-041-0016, PacifiCorp shall also present data 7-day mean minimum (7D).

Implementation and Adaptive Management Plan

If monitoring indicates the project is causing or contributing to a violation of the dissolved oxygen criteria, DEQ will require PacifiCorp to develop, implement and evaluate measures to address the dissolved oxygen deficit as part of an adaptive management plan. PacifiCorp shall develop an adaptive management plan to ensure that project does not cause or contribute to a violation of the dissolved oxygen criteria. Following DEQ approval, PacifiCorp shall implement the plan.

Discoloration, Scum, Oily Sheens, Oil Films

Water Quality Standard

OAR 340-041-0007:

Oily Sheens

OAR 340-041-0007(12). Objectionable discoloration, scum, oily sheens, or floating solids, or coating of aquatic life with oil films may not be allowed.

Applicant's Position

Neither the proposed Project nor its operations create objectionable discoloration, scum, oily sheens, or floating solids or coat aquatic life with oil. The Project complies with this standard. PacifiCorp will maintain current spill prevention and response plans to prevent spills of oil or hazardous substances and to facilitate a rapid response in the event of an accidental release of these substances. PacifiCorp maintains a spill prevention control and countermeasure plan for the Project. The current SPCC plan, dated December 6, 2011, has been certified by a registered professional engineer to be prepared in accordance with good engineering practice, applicable industry standards; and the requirements of 40 CFR Part 112.

DEQ Evaluation

DEQ notes that the spill control and countermeasure plan is up to date for the project.

DEQ Findings

DEQ is reasonably assured that operation of the proposed Project under a new FERC License will continue to comply with the “oily sheen” narrative criterion, provided the project is operated as described in the application for §401 water quality certification and the SPCC is kept up to date.

Total Dissolved Gas

Water Quality Standard

OAR 340-041-0031:

Total Dissolved Gas

(1) Waters will be free from dissolved gases, such as carbon dioxide hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such water.

(2) Except when stream flow exceeds the ten-year, seven-day average flood, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection may not exceed 110 percent of saturation. However, in hatchery-receiving waters and other waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection may not exceed 105 percent of saturation.

Available Data

PacifiCorp has not collected any total dissolved gas data at the Project.

Applicant's Position

PacifiCorp notes that prior to automation of the pressure-relief valve (PRV) upstream of the generating unit and tailrace backwater gate automation, unit trips resulted in ramping in Daniel Creek and Middle Fork Rogue via the forebay overflow spillway. According to PacifiCorp, automation of the PRV and tailrace backwater gate in 2014 and 2016 respectively, eliminated this type of ramping (PacifiCorp, December 2016, Page E-72).

PacifiCorp maintains the Project complies with the total dissolved gas criteria. PacifiCorp notes that total dissolved gas monitoring is not warranted at the Project, as supersaturation is unlikely to occur below the South Fork dam due to shallow, turbulent waters and relatively low spill volumes. PacifiCorp also notes that waters exiting the powerhouse convey via the Project sag-pipe to the Middle Fork Canal of the Prospect Nos. 1, 2, and 4 Project and do not discharge routinely to Daniels Creek or Middle Fork Rogue River or both. PacifiCorp also notes that “automation of the pressure-relief valve and tailrace backwater gate, completed in 2014 and 2016, respectively, to respond to forebay water levels, would reduce the frequency, duration, and volume of forebay spillway discharge (see FLA E.4.6.1) and reduce the potential for erosion and/or water quality impacts in Daniel Creek and the Middle Fork Rogue River” (PacifiCorp. Feb. 2018. Page 51). PacifiCorp notes, “Automation of the pressure release valve (PRV) has eliminated routine spill from the overflow spillway to Daniels Creek and Middle Fork Rogue River” (PacifiCorp. Feb. 2018. Page 47). Any spill to these receiving waters would be on an emergency or non-routine (i.e., contrary to normal operations) basis¹. ” PacifiCorp expects these project improvements will reduce the frequency of spill events to less than once per year, on average.²

DEQ Evaluation

As noted earlier, PacifiCorp has not collected any total dissolved gas data at the Project. DEQ will require PacifiCorp to report on the frequency of spill events. If there are more than one spill event per year, DEQ may require PacifiCorp to implement total dissolved gas monitoring.

DEQ Findings

DEQ is reasonably assured that the proposed Project under a new FERC License will comply with the total dissolved gas criterion, provided the following measures are implemented:

Annual Reporting

PacifiCorp shall submit an annual report to DEQ by January 31 of each year summarizing the frequency of spill events. Following DEQ review of the annual report, DEQ may request PacifiCorp meet with DEQ to discuss the spill events. Following the meeting, if requested by DEQ, PacifiCorp shall develop a total dissolved gas monitoring plan. The monitoring plan shall include the following minimum components:

1. propose monitoring and assessment methodology
2. monitoring locations
3. evaluation procedures

Adaptive Management and Implementation Plan

If monitoring indicates non-attainment of the total dissolved gas criteria, PacifiCorp shall evaluate, develop and implement measures to address the total dissolved gas criteria exceedance as part of an adaptive management plan. PacifiCorp shall develop an adaptive management plan to ensure that the project does not cause or contribute to a violation of the total dissolved gas criteria. Following DEQ approval, PacifiCorp shall implement the plan in accordance with its approved terms and conditions.

Turbidity

Water Quality Standard

340-041-0036

Turbidity

Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities may be allowed, as measured relative to a control point immediately upstream of the turbidity

¹ Steve Albertelli, PacifiCorp, email communication, 12/5/2017.

² Steve Albertelli, PacifiCorp, personal communication, 8/8/2017.

causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

- (1) *Emergency activities: Approval coordinated by the Department with the Oregon Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;*
- (2) *Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 14l-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.*

Available Data

PacifiCorp recorded monthly turbidity measurements in Imnaha Creek and South Fork Rogue River, upstream and downstream of the dam, in May through October 2012. PacifiCorp notes that water clarity near the Project is very high. Turbidity measurements at all locations ranged from 0.113 NTU to 0.857 NTU.

PacifiCorp notes that turbidity could increase when adjustment of Project gates may mobilize sediment in the Project impoundment to the bypassed reach. On September 8, 2014, there was an outage at the Project resulting in closure of the diversion headgate and release of approximately 62 cfs of water (i.e., the full inflow upstream of the diversion) into the South Fork Rogue bypassed reach (PacifiCorp. Feb. 2018. Page 51). PacifiCorp measured turbidity during the first 48 hours of this event. Data collected on September 8, 2014 indicated that turbidity levels at SFBU increased above the SFBU background condition for 1.75 hours. However, the turbidity levels remained very low throughout the event, peaking at just 4.3 NTU.

PacifiCorp notes, “construction and maintenance of project access roads, waterways, and staging areas has resulted in the removal of vegetative cover and the exposure and compaction of soils. In particular, the dam access road and penstock slope were identified in Scoping Document 2 (FERC, 2013) for their potential impact to soil resources. With respect to the penstock slope, grasses, forbs, and shrubs provide over eighty percent areal cover on average, and water bars are present where necessary to route leakage and/or precipitation-derived sheet flows to natural drainages primarily to the east of the penstock alignment, thereby reducing the potential for erosion along this slope during normal operating conditions. Water bars are also present on the dam access road to facilitate appropriate draining and prevent volumes of water that may otherwise mobilize sediments on an exposed native surface slope. However, potential for future erosion along the dam access road would increase if the water bars and ditch lines are not maintained properly (PacifiCorp Feb. 2018, Page 33-34).

Applicant's Position

PacifiCorp noted that although the “not more than a ten percent cumulative increase in natural stream turbidities” language in the turbidity standard was not met during the closure of the diversion headgate, the low NTU value of the data point out of compliance suggest that turbidity impacts were negligible.

PacifiCorp proposes to replace the existing wood stave flow line and sag-pipe with new steel pipelines of the same massing and alignment to reduce the potential for rupture and resultant erosion. To address the exposure and compaction of soils PacifiCorp proposes to prepare and implement an Erosion and Sediment Control Plan. The ESCP would “include inspection and maintenance schedules and specifications for ensuring the proper operation of erosion and sediment controls, including Project access road waterbars. The ESCP would identify erosion control best management practices (BMPs) to be implemented during any ground-disturbing activities” (PacifiCorp Feb. 2018, Page 34). USDA Forest Service submitted the Erosion and Sediment Control Plan as a Federal Power Act Section 4(e) mandatory terms and conditions for the Project.

DEQ Evaluation

DEQ concurs that the low turbidity values recorded (< 5 NTU) indicate minimal impacts on water quality; therefore, DEQ finds that no certification conditions are needed to address turbidity at the Project due to Project gate adjustment.

PaciFiCorp notes that there are two segments of the wood stave pipeline. The flow line runs from the intake up a hill to the powerhouse. This segment does not cross over water.³ The sag pipe runs from the tailrace of the Prospect 3 powerhouse to the Middle Fork Canal of the Prospect Nos. 1, 2 and 4 hydroelectric project. The existing siphon is primarily wood-stave construction with the exception of an approximately 250-foot-long section of steel pipe over the Middle Fork Rogue River that was installed following high flow damage to the original wood stave pipe in December 1964. The wood stave sections that are being replaced are not over water but adjacent to water. Given these specific facts, DEQ has determined that replacement is unlikely to have an impact on water quality such that no water quality conditions are needed at this time.

Biocriteria

Water Quality Standard

OAR 340-041-0011:

Waters of the State must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities.

Definitions applicable to the biocriteria standard include (OAR 340-041-0002):

- (5) "Appropriate Reference Site or Region" means a site on the same waterbody, or within the same basin or ecoregion that has similar habitat conditions, and represents the water quality and biological community attainable within the areas of concern.
- (6) "Aquatic Species" means plants or animals that live at least part of their life cycle in waters of the state.
- (17) "Designated Beneficial Use" means the purpose or benefit to be derived from a water body, as designated by the Water Resources Department or the Water Resources Commission.
- (19) "Ecological Integrity" means the summation of chemical, physical and biological integrity capable of supporting and maintaining a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of the natural habitat of the region.
- (50) "Resident Biological Community" means aquatic life expected to exist in a particular habitat when water quality standards for a specific ecoregion, basin, or water body are met. This must be established by accepted biomonitoring techniques.
- (75) "Without Detrimental Changes in the Resident Biological Community" means no loss of ecological integrity when compared to natural conditions at an appropriate reference site or region.

Application of Standard

This narrative criterion recognizes that compliance with individual criteria may not fully capture synergistic effects resulting from multiple stressors and cumulative impacts on aquatic species and resident biological communities. For example, the standard may be used to guard against cumulative effects of stressful water quality conditions that otherwise meet individual criterion. The biocriteria standard complements parameter-specific standards by extending broad protections to all designated beneficial uses with the implicit assumption that if the most sensitive beneficial use is protected, then all uses will be protected. Application of the biological criteria intends to assess the overall impact to the aquatic community from water quality changes attributable to an anthropogenic activity, addressing impacts to aquatic habitats, be that of a physical or chemical nature. In practice, the biological criteria standard uses biomonitoring techniques to assess biological health, integrity, and complexity of resident biological communities within the Project area relative to comparable reference locations.

Statewide Narrative Criteria

OAR 340-041-0007

- (1) *Notwithstanding the water quality standards contained in this Division, the highest and best practicable treatment and/or control of wastes, activities, and flows must in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels and water temperatures, coliform*

³ Personal communication via phone call with Steve Albertelli, PacifiCorp, 8/7/2017.

bacteria concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor, and other deleterious factors at the lowest possible levels.

(10) *The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish may not be allowed.*

These standards provide protection for humans and aquatic life from adverse effects resulting from the presence of deleterious conditions. These standards require the highest and best practicable control of flows to maintain overall water quality at the highest possible levels and other deleterious conditions at the lowest possible level. Further, these standards prohibit deleterious conditions to fish or other aquatic life. Deleterious conditions may include chemical, biological, or physical changes to water quality that result from modifications to flow regimes and impoundments. Narrative criteria may be translated into specific limitations to ensure a proposed activity is consistent with the specific beneficial uses and attributes of a particular body of water.

Macroinvertebrates

Available Data

Neither DEQ nor PacifiCorp has collected any macroinvertebrate or other biomonitoring data to determine compliance with the biocriteria in the South Fork Rogue River below the diversion dam.

Applicant's Position

The Applicant maintains the Project complies with the biocriteria standard.

DEQ Evaluation

The biocriteria standard extends broad protections to all beneficial uses. This standard complements other criteria-specific water quality standards while examining cumulative impacts from multiple stressors associated with Project developments and operations.

DEQ Findings

DEQ is reasonably assured that the proposed Project under a new FERC License will comply with the biocriteria, provided the following measures are implemented:

Macroinvertebrate Monitoring Plan

Within 180 days of FERC License issuance, PacifiCorp shall develop a macroinvertebrate monitoring plan for the South Fork Rogue River below the diversion dam, which will include standard bioassessment metrics including densities, abundance, richness and tolerance as well as identify monitoring locations. Upon DEQ approval, PacifiCorp shall submit to FERC this Monitoring Plan as part of the required § 401 Certification Conditions for the Project for the purposes of any federal license or permit.

Macroinvertebrate Monitoring Reporting

PacifiCorp shall submit annual monitoring reports to DEQ by January 31 of each year.

Adaptive Management Plan

If after evaluating the monitoring results DEQ determines that the resident biological community below the diversion dam is impaired or in poor condition, based on comparison of the standard bioassessment metrics to the monitoring results, PacifiCorp shall develop, implement and evaluate measures to address the biocriteria standard as part of an adaptive management plan. The adaptive management plan will ensure that the project does not cause or contribute to a violation of the biocriteria standard. Following DEQ approval, PacifiCorp shall implement the plan.

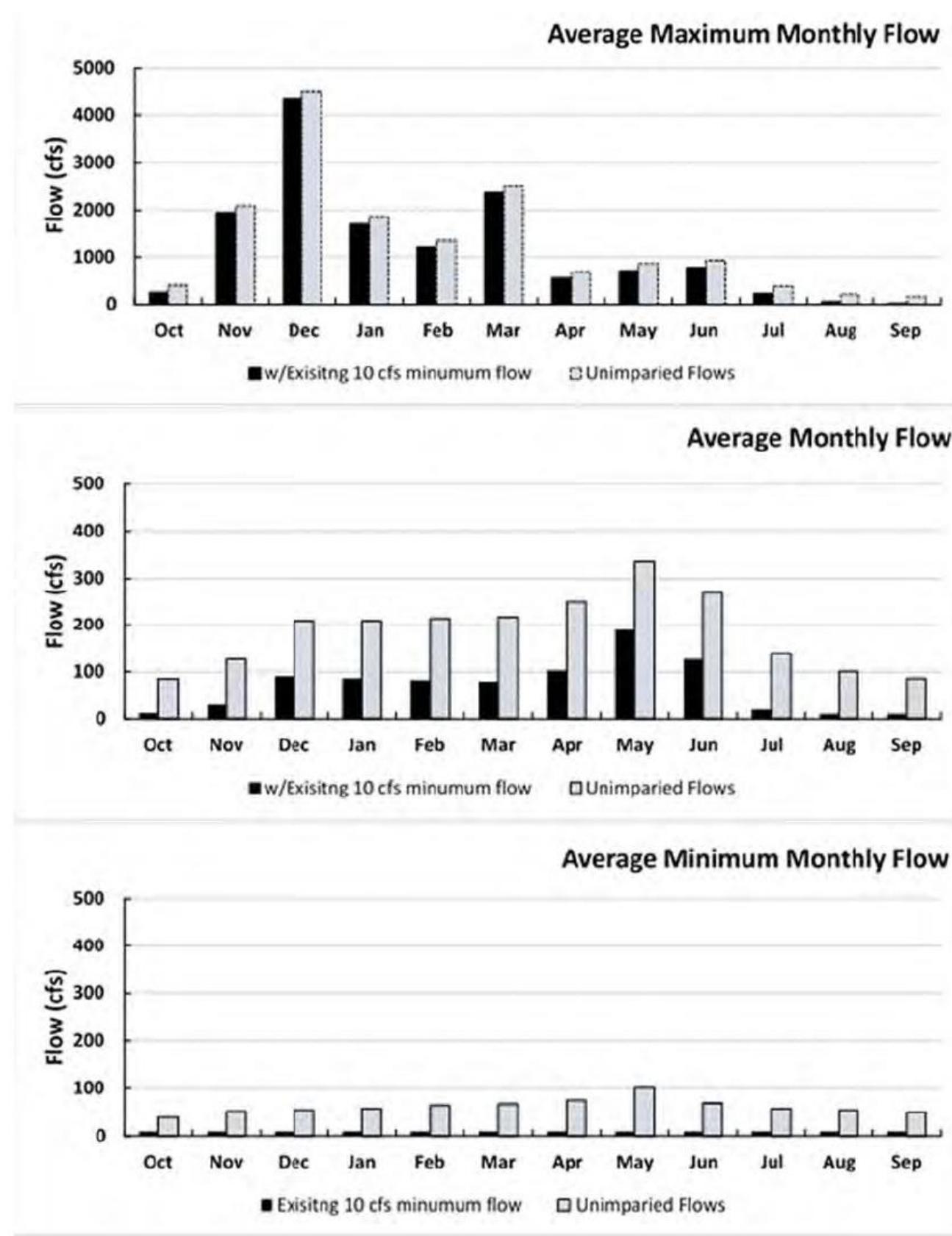
Resident Biological Communities

Flow alteration and Project operations affect cutthroat trout and rainbow trout by, among other effects, decreasing available habitat. Project ramping can also have adverse impacts on designated uses. Although exact impacts are site-specific, generally a major ramping-related impact on fish is fish stranding. Hunter (1992) defines stranding as “the separation of fish from flowing surface water as the result of declining river stage” (page 5). Hunter notes the high vulnerability of small salmonid fry to stranding.

Flow**Available Data**

PacifiCorp notes that “Information on historical flow conditions was developed by combining the flow records from two historic (now discontinued) USGS gages located upstream of the diversion dam: (1) USGS Gage No. 14330500 that was located on the S.F. Rogue River approximately 0.25 miles upstream of the diversion dam; and (2) USGS Gage No. 14331000 on Imnaha Creek that was located approximately 0.5 miles upstream of the confluence with the S.F. Rogue River (PacifiCorp. April 2015. Page 2-2)”. The historical data indicate that the baseflow period generally includes September and October when runoff from precipitation is relatively low and runoff from late season snowmelt has occurred. From November to January, flow gradually increases due to seasonal increases in precipitation. Flow remains consistent from January through March, when annual snowfall and snow depths are high. Increasing snowmelts and decreasing precipitation characterize the runoff period, which occurs from April through June.

Project operations divert up to 150 cubic feet per second from the South Fork Rogue River at the South Fork diversion dam, while maintaining a continuous minimum flow of 10 cubic feet per second, or inflow to the Project, whichever is less, as measured at the gage (USGS gage number 14332000, South Fork Rogue River near Prospect, Oregon) below the diversion dam. Figure 12 shows the average maximum, mean and minimum monthly flows calculated from the South Fork reach below the diversion dam for the current 10 cubic feet per second minimum flow compared to a no-diversion scenario.

**Figure 12: Flows in the S. Fork bypass reach**

The flow reduction due to the diversion “has the potential to impact native rainbow and cutthroat trout habitat, particularly in the upper 2.8 miles of the bypass reach (RM 7.7 to RM 10.5), where water releases at the dam

comprise 100 percent of instream baseflow (PacifiCorp. April 2015. Page 2-3). Below river mile 7.7 flow augmentation from spring inflows, groundwater contributions and tributaries lessens the project related effects on habitat. Trout 0-100 mm make up 17.4% of the total number of trout observed below the South Fork Diversion dam, while trout from 100 mm to 200 mm (sub yearlings) make up 73.4%. However, only 9.2% of the total are trout of size class > 200 mm (FERC, Oct. 2017. Page 30).

ODFW noted that PacifiCorp collected field data in the upper bypass reach and consulted with ODFW and US Fish and Wildlife Service on habitat suitability criteria for the Physical Habitat Simulation System (PHABSIM). ODFW is recommending specific minimum flows for the upper bypass reach below the South Fork Dam based on its analysis of the PHABSIM results (ODFW. May 2017. Page 19). Because the PHABSIM software is out of date, PacifiCorp used a model called the System for Environmental Flow Analysis (SEFA), based on the algorithms found in the original PHABSIM model. PacifiCorp used the SEFA model to produce habitat flow relationships for target rainbow trout and cutthroat life stages, including fry, juvenile, adult and spawning (PacifiCorp. April 2015. Page 3-2). The habitat value is a value of average weighted suitability (AWS) in units of square feet of habitat per lineal foot of channel (PacifiCorp. April 2015. Page 3-7). Figures 13 and 14 demonstrate the relationship between flow and average weighted suitability for cutthroat trout and rainbow trout.

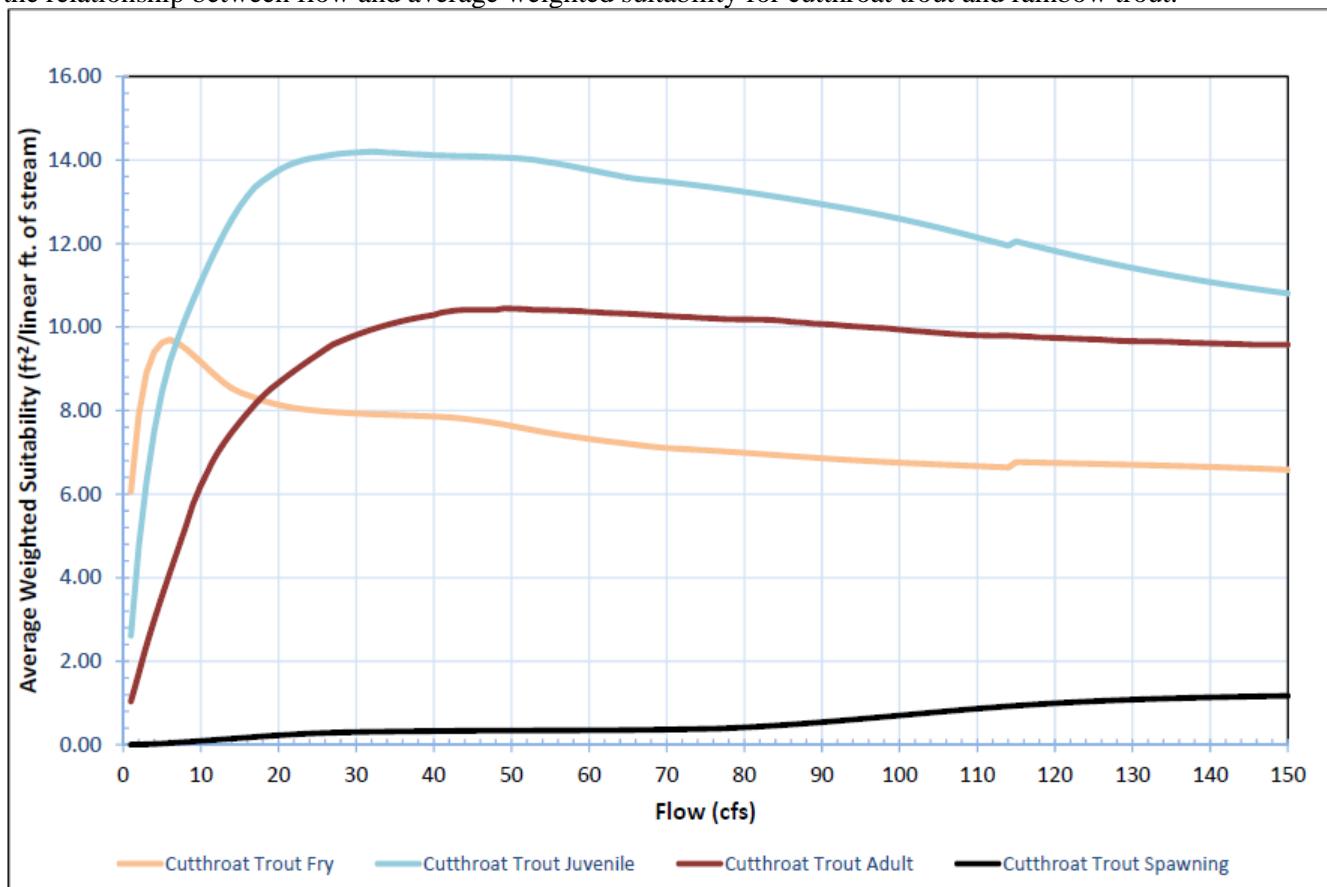


Figure 13: AWS and Flow for Cutthroat Trout in bypass reach

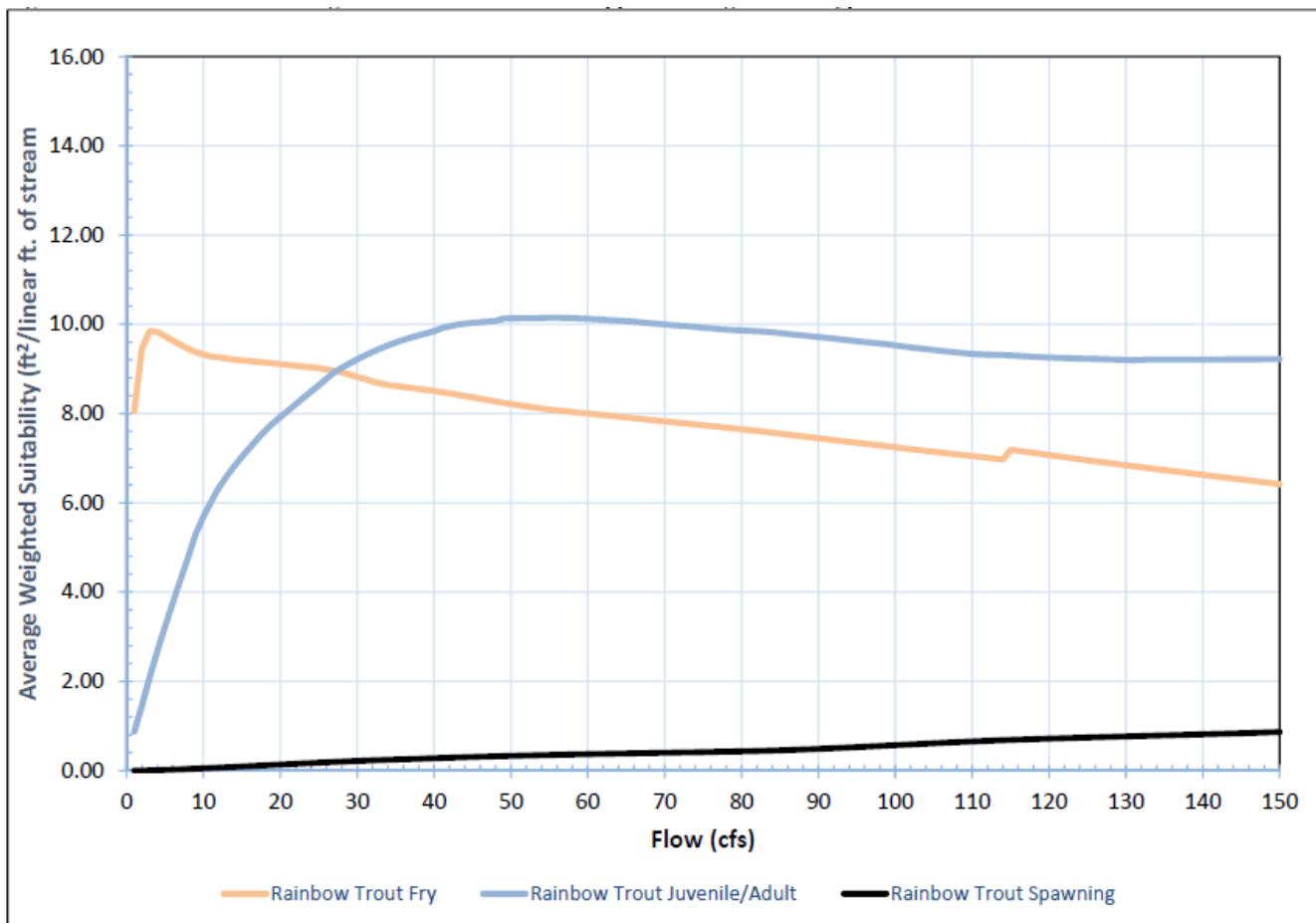


Figure 14: AWS and Flow for Rainbow Trout in the bypass reach

As seen in the figures, the AWS peaks at about 5 cfs for both cutthroat and rainbow fry. The AWS peaks for cutthroat juveniles at about 30 cfs and at about 50 cfs for rainbow trout juveniles and adults.

ODFW notes that current streamflow requirements in the bypass reach are inadequate to optimize fish populations and their habitat (ODFW, May 2017. Page 5). ODFW notes, “Under the present license, PacifiCorp is entitled to divert almost all stream flow, usually during summer and early fall months. As a consequence, most of the natural streambed is exposed or rendered marginal for support of aquatic life with very little streamflow remaining in the diverted reach. This is at a time of the year when maximum biological production should be occurring” (ODFW. May 2017. Page 18). ODFW’s proposes the following flows:

Time Period	Minimum Flow
March 1 – October 1	30 cubic feet per second
November 1- February 28	20 cubic feet per second

ODFW notes flow of 30 cubic feet per second August 1 through October 31 provides much needed protection for fry and smaller juvenile trout. These two smaller sized life history stages are very vulnerable during low flow months. At this life history stage, the fry are poor swimmers and must rely on riverbank and edge habitats for survival. Increasing the amount of usable bank habitat clearly provides an increased chance of survival. Fish 100 mm and larger also benefit from increased amounts of usable bank and pool habitats. Increased flows provide access to larger cobbles and boulders that provide hiding cover from predation by larger piscivorous trout. ODFW recommends this minimum flow because it creates more usable area and keeps the juveniles in sufficient habitat, allowing more juveniles to survive to the adult life stage.⁴

⁴ David A. Harris, ODFW, West Region Hydropower Coordinator personal communication, August 28, 2017.

As seen in Figure 12, flow in the bypass reach is still low in August, September and October, prior to increased precipitation. These low flow months reduce the overall amount of habitat for larger sub yearlings sized trout (110mm-200mm), as measured by average weighted suitability. Trout of this size-class are close to the adult spawning age/size and are extremely vulnerable to loss. A lack of habitat at a crucial life history stage as young trout become spawning adults may cause this loss. ODFW's recommendation maintains the 30 cubic feet per second flows through October so that higher flow is available to juveniles until the rainy season begins and usable habitat increases with rainfall.

ODFW notes "Restoration of flows will sustain well-connected and functional riparian and aquatic habitats, to which the native aquatic and riparian communities are adapted" (ODFW. May 2017. Page 18).

Applicant's Position

PacifiCorp proposes to continue to operate the Project in run-of-river mode with a maximum diversion of 150 cubic feet per second from the South Fork Rogue River. PacifiCorp proposes to increase the minimum flow below the diversion dam to 30 cubic feet per second from March 1 through July 31 and 20 cubic feet per second from August 1 through February 28 to maximize incremental gains in fish habitat from proportionate increases in flow (PacifiCorp. Feb. 2018. Page 18). These values are based on an instream flow analysis that analyzed the bypass reach from river mile 10.5 downstream to river mile 7.0 (at the Butte Falls Highway Bridge). This upper section represents the portion of the bypass reach directly influenced by Project operations, prior to any downstream tributary input. The analysis did not extend below RM 7.0 because major tributaries add flow below river mile 7.

PacifiCorp notes that the flows were selected based on the periodicity of life stages in the river and the natural attenuation of flows, which drop off significantly between July and August (i.e., not between October and November, when natural flows are rising). PacifiCorp notes that upstream migration peaks in July and proposes to provide more flow in the river for adult migrating trout in this period.⁵ PacifiCorp also notes that they are trying to balance protection of the different life stage requirements, prioritizing the higher AWS at lower flows (the peak for cutthroat and rainbow is 6 and 3 cubic feet per second, respectively) for fry during the critical emergence and development period. Less successful fry results in less juveniles and adults.⁶ PacifiCorp also noted that the analysis indicates that there is a lack of suitable trout spawning habitat, and this may be an important limiting factor to native trout in the bypassed reach (PacifiCorp. Dec. 2016. Page E-66).

PacifiCorp proposed four actions to benefit both resident and anadromous fish, including threatened coho salmon, by eliminating five barriers to fish passage. Replacement of the two culverts, which are upstream barriers to native resident trout, would provide resident trout and other native fish in the immediate vicinity of the Prospect Project with access to approximately an additional 14 miles of habitat in Big Ben Creek, Imnaha Creek, and their respective tributaries. The Harboldt Dam Removal Project would restore upstream fish passage to approximately 15 miles of habitat in Slate and Welter Creeks for native fish, including anadromous coho and steelhead, resident trout, and lamprey. In addition, the Nye Ditch screen will reduce habitat fragmentation, fry mortality, and reduced interactions, thereby increasing genetic exchange, fitness, and population viability.

DEQ Evaluation

DEQ concurs that increased flow to the bypass reach protects beneficial uses by protecting habitat for rainbow trout and cutthroat trout. PacifiCorp proposes 30 cubic feet per second from March 1 through July 31 and 20 cubic feet per second from August 1 through February 28 to provide sufficient flow to protect the fry life stage. ODFW proposes 30 cubic feet per second from March 1-October 31, and 20 cubic feet per second from November 1- February 28 to provide sufficient flow to protect the juvenile life stage to increase the likelihood that the fish will survive to adulthood. The data suggests that both of these life stages are critical to a healthy population, as fry need year round protection provided by increased minimum flows to survive to the sub yearling group (100mm to 200mm). The sub yearling group would also benefit from these flows to reach spawning adult

⁵ Steve Albertelli, PacifiCorp, personal communication, August 29, 2017.

⁶ Steve Albertelli, PacifiCorp, personal communication via email, 12/5/2017.

size. Adult trout (200mm and greater) only comprise 9.2% of the overall trout population below the dam. ODFW proposed flows would mitigate adverse impacts to trout populations over current and applicant-proposed stream flows.

DEQ concurs that PacifiCorp's proposed actions benefit both resident and anadromous fish, including threatened coho salmon, by eliminating five barriers to fish passage to increase available habitat.

DEQ Findings

DEQ is reasonably assured that operation of the proposed Project under a new FERC License will comply with the applicable narrative criteria, provided the following conditions are implemented:

- Minimum instream flow of 30 cubic feet per second from March 1- July 31 and 20 cubic feet per second from August 1- February 28, in the South Fork. Rogue River.
- Measure the minimum flow at USGS gauge station (RM 10.25) located at the upstream end of the bypass reach immediately below the South Fork Diversion Dam.
- If natural inflow to the Project is less than the minimum flow requirement, discharge all the flow into the bypass reach.

Ramping

Ramping occurs when water levels rise or fall in association with the release of flows through a water control structure. Rapid down ramping of flows causes stranding of fry and juvenile salmonids along sloping bars and in side-channels and stream margin areas (Hunter, 1992). FERC notes that "While adults can also be stranded during rapid flow reductions, younger salmonid life stages such as emergent alevins, fry, and smaller juveniles are most susceptible to stranding mortality due to their poorer swimming abilities. Flow reductions that occur between the start of the spawning period and period of fry emergence can result in dewatered redds, which can lead to egg desiccation and mortality depending on the duration of the flow reduction and whether the spawning gravel remains wetted during the period of lower flows (Reiser and White, 1983)" (FERC, 2017, Page 67). DEQ concurs that flow fluctuations due to project operations can have a wide variety of adverse impacts to aquatic ecosystems.

Available Data

PacifiCorp noted "A total of eighteen operational ramping events (five planned outage up-ramps and thirteen return-to-service down-ramps) were observed in the bypassed reach during a four-year study period, resulting in an average of 4.5 operational ramping events per year (PacifiCorp, 2015). Eleven of the eighteen recorded operational ramping events (61 percent) did not exceed 0.2 feet per hour from May 1 through September 30 or 0.3 feet per hour from October 1 through April 30, ramp rates similar to those identified as protective of aquatic life, including sensitive life stages of native fish in the South Fork watershed (PacifiCorp, 2003). The majority of planned outages (55 percent) did not result in ramping in excess of these rates in the bypassed reach. When generation was resumed after an outage, ramping in excess of these rates was avoided on seventy percent of all occasions" (PacifiCorp 2016, page E-73). The current license does not specify any daily or seasonal ramping rates.

Applicant's Position

The Project is capable of increasing and decreasing flow volumes in the bypassed reach downstream of the diversion via operation of the diversion headgate intake. PacifiCorp proposes a ramping rate based on the ramping rate for the Prospect 1, 2, 4 project for Red Blanket Creek and Middle Fork Rogue River. PacifiCorp notes that the ramp rates "were identified as protective of aquatic life, including sensitive life stages of native fish, based on a comprehensive ramping study" (PacifiCorp, Feb. 2018. Page 18). The South Fork Rogue River is similar to Middle Fork Rogue River, in terms of discharge, hydrograph shape, and channel shape (PacifiCorp. Dec. 2016. Page E-82). Table 3 identifies the proposed seasonal operational ramp rates. PacifiCorp notes that the ramping rates "would be adhered to during any planned operational adjustment of the turbine wicket gates, pressure relief valve, turbine isolation valve, canal headgate, and/or fish screen backwater gate" (PacifiCorp Dec. 2016. Page E-82).

PacifiCorp has noted that the interplay between generation flow, the forebay, canal flow and the canal head gate is difficult to assess. They note that with current operations, there is inherent noise in the operations not related to any deliberate ramp in generation.

DEQ Evaluation

PacifiCorp based the proposed ramping rates on the Prospect 1, 2, 4 certification, with the ramp rates rounded to the nearest tenth of a foot to correlate compliance units with units of the gage (USGS gage number 1432000)(i.e., the compliance point) and reflect the level of operational control (PacifiCorp, Feb. 2018, Page 54). PacifiCorp's proposed ramping rates of not to exceed 0.2 foot/hour (May 1 through September 30) and not to exceed 0.3 foot/hr. (October 1 through April 30) converts to 2.4 inch/hour and 3.6 inch/hour, respectively. These ramping rates are higher than required at Prospect 1, 2, 4, which are a target of 1 inch per hour, not to exceed 2 inches per hour from May 1 – September 30, and a target of 2 inches per hour, not to exceed 3 inches per hour. The ramping rates for Prospect 3 are based PacifiCorp's ability to read the gage (USGS 14332000) and report the ramping rate without need to convert units, reducing the likelihood for error. PacifiCorp notes that they "believe a ramping rate of 0.2 foot/hour is attainable considering the level of operational control and natural variability in the system."⁷

ODFW's proposed rates are (1) one inch per hour during the period of May 1 – September 30 and (2) two inches per hour during the period of October 1 to April 30. ODFW notes that the proposed ramping rates are consistent with FERC conditions at other hydroelectric projects and based in part on the results of PacifiCorp's Ramp Rate Study and recommendations from Hunter (1992). (ODFW. May 2017. Page 22). ODFW relies on the report produced by Hunter (1992) to help determine the ramping rate at hydroelectric facilities. Hunter recommended a ramping rate of 1 inch per hour to help protect salmon and steelhead fry. ODFW proposes 1 inch/hour from May 1 through September 30 to protect vulnerable emergent fry. After this date, the fish are larger and not as susceptible to stranding and thus the ramping rate can increase to 2 inch/hour.

The frequency of ramping events under the new FERC license is unknown; therefore, DEQ will require annual reporting to determine the frequency of operational ramping events. DEQ also has determined that implementing a year round operational ramping rate of 0.2 foot/hour will address PacifiCorp's concern that there is "noise" at the stage gage (USGS 14332000) that may be as high as 0.1 foot/hour.

DEQ Findings

DEQ is reasonably assured that the proposed Project under a new FERC License will comply with the applicable narrative criteria, provided the following measures are implemented:

- PacifiCorp shall implement an operational ramping rate of 0.2 foot per hour all year.
- PacifiCorp shall report any operational ramping rates in excess of the defined rates within 24 hours of discovery to DEQ and ODFW.

Annual Reporting

PacifiCorp shall submit an annual report to DEQ and ODFW by January 31 of each year summarizing the frequency of operational ramping events exceeding 0.2 foot per hour. Following DEQ and ODFW review of the annual report, DEQ may request PacifiCorp meet with DEQ and ODFW to discuss the ramping events.

Adaptive Management and Implementation Plan

Following the meeting, if requested by DEQ, PacifiCorp shall evaluate, develop and implement measures to reduce the frequency of operational ramping events exceeding 0.2 foot per hour as part of an adaptive management plan. Following DEQ approval, PacifiCorp shall implement the plan.

Fish Passage

Available Data

Resident migratory fish in the Project area include rainbow trout (*Oncorhynchus mykiss*), cutthroat trout (*O. clarkii*), brown trout (*Salmo trutta*), and brook trout (*Salvelinus fontinalis*). ODFW notes, "Rainbow and cutthroat trout are indigenous to the upper Rogue River and its tributaries, while brown and brook trout are introduced species" (ODFW, May 2017, Page 10). ODFW classifies rainbow and cutthroat trout as native migratory species

⁷ Steve Albertelli, PacifiCorp, personal communication via email, 12/6/2017.

meaning that both species migrate to complete their life cycle needs and passage for these species must be provided at artificial obstructions.

The Rogue River watershed is different from other watersheds in western Oregon. The Rogue is ecologically similar to northern California, and is much hotter and drier in summer than the rest of coastal Oregon. Rogue fish have adapted to extreme conditions by moving out of a natal stream and into other streams as juvenile fish. ODFW observed a pronounced upstream migration during summer months in places like mainstem Bear Creek⁸. Juvenile salmonids under 100mm struggle to move upstream at weirs and fish ladders.

The Project has both upstream and downstream fish passage facilities. The upstream fish passage facility includes an 86-foot-long, 15-pool, concrete, pool-and-weir-type fish ladder. The current downstream fish passage facility consists of a fish screen constructed in 1996 to prevent fish entrainment within the Project waterway and generating unit. Fish move past the fish screen to an 18-inch diameter bypass pipe that transports them to pool six of the fish ladder, as opposed to directly into the river. Because the bypass pipe enters the fish ladder in the sixth pool, it creates inconsistent flow throughout the fish ladder. Ideally, a fish ladder has a set flow and operates at that flow most of the time. Constructed several decades ago, the fish passage facilities do not meet ODFW's current design criteria. The jump height between pools in the fish ladder in lower flow cases exceed 9-inch jump heights for juvenile fish.

In June 2015, PacifiCorp conducted a study to determine upstream passage success rate and travel time. Thirty-five naturally produced rainbow trout were captured, tagged with passive integrated transponder (PIT) tags, and released into pool 1 of the fish ladder. All test fish were greater than or equal to 65 mm in fork length. PacifiCorp notes "Results also show that travel time to successfully ascend the ladder (once actively migrating upstream) ranges from a few hours to approximately one day (median = 16 hours). Overall, results show that relatively small fish (as small as 110 mm fork length during this study) can successfully ascend the fish ladder in less than 24 hours" (PacifiCorp. Dec. 2016. E-61). PacifiCorp noted four of the five upstream-origin test fish successfully ascended the fish ladder, while three of the thirty downstream-origin fish successfully ascended the fish ladder (PacifiCorp. Dec. 2016. Page E-63). The overall passage rate was 20% (7 out of 35 released fish successfully ascended the ladder).

FERC noted that the "The smallest fish that successfully ascended the fish ladder was 110 mm (4.3 inches), while the largest was 207 mm (8.1 inches). Seventy-three percent (i.e., 719 individuals) of trout observed during snorkel surveys of the bypassed reach were categorized in the 100-200 mm size class; only seventeen percent (i.e., 170 individuals) of trout observed during snorkel surveys were categorized in the 0-100 mm size class. Therefore, the ladder would effectively provide passage for the majority of trout in the bypassed reach" (FERC, Oct. 2017, Page 48). ODFW disagrees with this assertion, noting, "because of the existing ladder design, smaller fish are currently unable to use the ladder, and therefore would not have been documented during the relicensing studies" (ODFW, Nov. 2017, Page 30).

In July 2015, PacifiCorp conducted a downstream fish passage safety and effectiveness test to determine (1) downstream passage effectiveness for hatchery trout released into the bypass canal upstream of the fish screen and (2) injury of hatchery trout successfully screened into the fish bypass system. PacifiCorp noted there were no apparent injury on recaptured fish and all were alive. The bypass canal was then de-watered and fish salvaged from the canal upstream of the fish screen via electrofishing. All fish salvaged from the canal upstream of the fish screen were alive and in good condition. No fish impinged on the fish screen (PacifiCorp. Dec. 2016. E-62).

Applicant's Position

PacifiCorp proposed to continue operating and maintaining the existing concrete pool and weir fish ladder. PacifiCorp also proposes to construct an auxiliary bypass flow system "consisting of an automated, 3'-wide weir gate, 8' x 5' plunge pool, and 130'-long, 2'-diameter pipe, from the intake canal to a plunge pool at the base of the fish ladder to reliably provide increased minimum flows to the bypassed reach (PacifiCorp. Feb. 2018. Page 19).

⁸ Dan Van Dyke, ODFW Rogue District Fishery Biologist, personal communication via email received 1/4/2018.

PacifiCorp notes, “The ladder is effective for the majority of fish in the bypassed reach. Additionally, fish smaller than 110 mm are more likely to hold localized positions in the river and not migrate upstream due to physical constraints and life history needs. None of the evaluation fish recovered in the downstream bypass return system exhibited signs of injury from the screen, and physical inspection of the screen components, including rubber seals, indicates that the screen forms an effective barrier to entrainment in the Project waterway” (PacifiCorp. Feb. 2018. Page 57). PacifiCorp concludes, “Upgrades and/or replacements of existing facilities are anticipated to yield limited, incremental benefits compared to the existing facilities and, therefore, are unjustified in light of their estimated cost” (PacifiCorp. Feb. 2018. Page 57).

PacifiCorp proposed four actions to benefit both resident and anadromous fish, including threatened coho salmon, by eliminating five barriers to fish passage. Replacement of the two culverts, which are upstream barriers to native resident trout, would provide resident trout and other native fish in the immediate vicinity of the Prospect Project with access to approximately an additional 14 miles of habitat in Big Ben Creek, Imnaha Creek, and their respective tributaries. The Harboldt Dam Removal Project would restore upstream fish passage to approximately 15 miles of habitat in Slate and Welter Creeks for native fish, including anadromous coho and steelhead, resident trout, and lamprey. In addition, the Nye Ditch screen will reduce habitat fragmentation, fry mortality, and reduced interactions, thereby increasing genetic exchange, fitness, and population viability.

DEQ Evaluation

FERC states “smaller size classes of trout such as fry and juveniles do not typically make long upstream movements. Rather, fry and juvenile salmonids tend to disperse downstream from spawning areas (Anderson, 2016) to find unoccupied habitats and then establish localized positions in the river for feeding and growth” (FERC, Oct. 2017, Page 48). FERC further notes there would be no benefit to fry or juvenile trout to modifying the fish ladder. DEQ disagrees with these assertions for several reasons. First, ODFW finds that the scientific literature supports the need for fish passage for resident trout. Behnke (1992) states that “Resident stream trout may undertake considerable movement (or migration) in some circumstances.”

Second, ODFW finds that juveniles do typically make upstream migrations. Everest (1973) found marked summer steelhead fry in the river up to 3 miles upstream and 15 miles downstream of the tributary from which they were marked during summer. Some fry marked in one stream were recovered after migrating upstream in October into other tributaries of the Rogue. Rainbow trout in the South Fork Rogue are most likely descendants of migratory steelhead. A pronounced upstream migration is even more noticeable with fall rains in October through December. ODFW has operated upstream migrant traps on many tributaries of the Rogue. Many of the fish caught while migrating upstream are 100 mm or smaller.

ODFW also notes that the primary benefits to providing adequate passage at the South Fork Dam would be to mitigate for habitat fragmentation and connect the rainbow and cutthroat trout populations within the South Fork (allow genetic exchange and interaction between them), and improve the opportunity for expression of fluvial (migratory) life histories. This would allow downstream populations to have greater connectivity to upstream habitats and allow greater interactions among currently separated up and downstream populations. The increase in genetic fitness and population viability will make the population less susceptible to catastrophic events such as drought, and lead to an overall healthier population.⁹ DEQ concurs with ODFW’s findings.

ODFW recommends that PacifiCorp improve jump height at weirs, and provide uninterrupted consistent flows through the length of the ladder.

The Fish Screening Oversight Committee (FSOC) a committee consisting of fish agencies from the Pacific Northwest recommends six to nine inch jump heights for movement of juvenile redband/rainbow trout and cutthroat trout¹⁰. ODFW notes that PacifiCorp should manage all weirs in the pool to not exceed nine-inch jump heights throughout the ladder.

⁹ Ken Homolka, ODFW, email communication, 9/24/2018.

¹⁰ Ibid.

Inflow to the ladder from the reservoir should provide a consistent annual flow throughout the ladder. ODFW notes that consistent flow would ensure level jump heights. Plunge flows and eddies provide cues to fish to jump, so inconsistent flow effectively modifies the jump height by affecting both the plunge and eddies, i.e., affecting the cue to jump.

DEQ also finds that a 20% passage rate is not sufficient to protect the beneficial use. Studies have documented fish passage at ladders ranging from 80% (EWEB 2013) to “essentially 100% efficient in passing salmonids” (Michigan Department of Natural Resources 1986). A quantitative assessment of fish passage efficiency suggested that on average salmonids had an upstream passage efficiency of 61.7%, with passage in pool and weir ladders (such as the Prospect 3 ladder) at approximately 70% (Noonan et al. 2012). Upstream passage facilities should allow 90-100% of migrating adult fish to pass (Ferguson et al. 2002; Lucas and Baras 2001).

As part of the North Umpqua Hydroelectric Project Settlement Agreement and in consultation with resource agencies (ODFW, USFWS, USDA Forest Service, and NMFS), PacifiCorp designed modifications to the Lemolo No. 2 fishway. Following evaluation of the fishway, PacifiCorp noted “Longer passage times for smaller fish were suggested, but were not universally and consistently observed; some smaller fish passed as quickly as larger fish. No ladder deficiencies were observed, other than some loose vertical-slot flashboards that were immediately corrected. Based on this biological evaluation, the modified Lemolo No. 2 fishway is properly configured and is operating at “optimum performance” (PacifiCorp. 2007. Page 13). ODFW reports 71% of the tagged trout migrated through the Lemolo 2 fish ladder on the North Umpqua project.

ODFW notes that the bypass pipe location out flow in pool 6 of the ladder increases fry mortality, results in delayed or blocked migration and increased associated mortality and reduced productivity. Sub adult and adult sized trout hold in this pool and can consume fry as they exit the pipe. Bypass outfalls must be located to minimize predation by selecting an outfall location free of eddies, reverse flow, or known predator habitat. Bypass outfalls should be located to provide good egress conditions for downstream migrants. Bypass outfalls must be located where the receiving water is of sufficient depth (depending on the impact velocity and quantity of bypass flow) to ensure that fish injuries are avoided at all river and bypass flows. The bypass outfall discharge into the receiving water must be designed to avoid attraction of adult fish thereby reducing the potential for jumping injuries and false attraction.

Moving the bypass pipe out of the ladder eliminates a “food source” for larger trout. ODFW believes that the majority of the downstream migrating fish would exit via the canal based on attraction and capture flows. The only other downstream migration path would be through the ladder “exits” into the reservoir, through one or both of the submerged orifices.

ODFW notes, that numerous literature citations (NMFS. 2011, Tabor, et al. 2014., Hawkins, et al. 1999) describe large piscivorous fish taking up feeding stations and ambushing smaller fry. Anywhere fish concentrate, larger fish may prey on smaller fish. For example, in the Soda Springs reservoir, ODFW staff have observed brown trout stage in front of the outlet screen and prey on passing fry.

DEQ concurs that upstream passage of juvenile fish is well documented for trout as well as anadromous fish. The upstream movement of juveniles is the basis for ODFW’s road crossing criteria and design criteria for fish ladders that recommends a design of 9 inches or less jump height between pools. DEQ also concurs with ODFW that trout in the project area need to move to find food, suitable spawning habitats, and rearing habitats.

DEQ concurs that PacifiCorp’s proposed actions benefit both resident and anadromous fish, including threatened coho salmon, by eliminating five barriers to fish passage to increase available habitat.

DEQ Findings

DEQ is reasonably assured that the proposed Project, including proposed actions described in Section 4.2 above, will comply with the applicable narrative criteria, provided the following measures are implemented:

- Within 18 months of FERC license issuance, PacifiCorp must update the Fish Passage Facilities Operations and Maintenance Plan, which must include among others components, the design, operation, and construction of an auxiliary bypass flow system.
- After approval of the Fish Passage Facilities Operations and Maintenance Plan PacifiCorp shall operate and maintain the fish passage facilities in accordance with the approved terms of that Plan, including but not limited to the operation of the auxiliary bypass flow system.

Antidegradation

Water quality standards have three elements: the beneficial uses protected by the standard, numeric and narrative criteria that support these uses, and an antidegradation policy that governs how and when existing water quality may be lowered. EPA recently updated the antidegradation policy, as described in 40 CFR 131.12.

§ 131.12 Antidegradation policy and implementation methods.

(a) The State shall develop and adopt a statewide antidegradation policy. The antidegradation policy shall, at a minimum, be consistent with the following:

(1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

(2) Where the quality of the waters exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

(i) The State may identify waters for the protections described in paragraph (a)(2) of this section on a parameter-by-parameter basis or on a water body-by-water body basis. Where the State identifies waters for antidegradation protection on a water body-by-water body basis, the State shall provide an opportunity for public involvement in any decisions about whether the protections described in paragraph (a)(2) of this section will be afforded to a water body, and the factors considered when making those decisions. Further, the State shall not exclude a water body from the protections described in paragraph (a)(2) of this section solely because water quality does not exceed levels necessary to support all of the uses specified in section 101(a)(2) of the Act.

(ii) Before allowing any lowering of high water quality, pursuant to paragraph (a)(2) of this section, the State shall find, after an analysis of alternatives, that such a lowering is necessary to accommodate important economic or social development in the area in which the waters are located. The analysis of alternatives shall evaluate a range of practicable alternatives that would prevent or lessen the degradation associated with the proposed activity. When the analysis of alternatives identifies one or more practicable alternatives, the State shall only find that a lowering is necessary if one such alternative is selected for implementation.

(3) Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

(4) In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with section 316 of the Act.

(b) The State shall develop methods for implementing the antidegradation policy that are, at a minimum, consistent with the State's policy and with paragraph (a) of this section. The State shall provide an opportunity for public involvement during the development and any subsequent revisions of the implementation methods, and shall make the methods available to the public.

340-041-0004

The applicable standard is in OAR 340-041-0004. The purpose of the antidegradation policy follows:

Antidegradation

(1) *Purpose. The purpose of the Antidegradation Policy is to guide decisions that affect water quality such that unnecessary further degradation from new or increased point and nonpoint sources of pollution is prevented,*

and to protect, maintain, and enhance existing surface water quality to ensure the full protection of all existing beneficial uses. The standards and policies set forth in OAR 340-041-0007 through 340-041-0350 are intended to supplement the Antidegradation Policy.

Application of Standard

Under the federal Clean Water Act, states are required to adopt water quality standards and these standards must include an antidegradation policy. By regulation, EPA requires that antidegradation policies must maintain and protect existing uses. Where water quality is better than what is required to support existing and designated beneficial uses, the state may allow additional degradation of waters only after satisfying specified procedural and substantive requirements.

DEQ's antidegradation policy provides a means for maintaining and protecting water quality of surface waters by requiring that all activities with the potential to affect existing water quality undergo review and comment prior to any decision to approve or deny a permit or certificate for the activity. The antidegradation policy complements the use of water quality criteria. View DEQ's antidegradation policy implementation document and other associated documents:

<http://www.oregon.gov/deq/wq/Pages/WQ-Standards-Antidegradation.aspx>

Applicant's Position

PacifiCorp notes that the proposed Project changes will have a neutral or positive effect on water quality (PacifiCorp. Feb. 2018. Page 32). Some proposed enhancements, such as the flowline replacement, may cause short-term degradation associated with construction activities.

DEQ Evaluation and Findings

DEQ implements the antidegradation policy via the antidegradation review. Tier 1 and Tier 2 reviews are included in this antidegradation review.

- Tier 1: The EPA Tier 1 antidegradation regulations are for protection of existing uses defined in EPA's regulations as "those uses actually attained in the waterbody on or after November 28, 1975." The basic protection provided by Tier 1 applies to all waters, regardless of use designation. There have been no changes to the South Fork Rogue River since DEQ updated the designated uses in 2003. The existing uses in the South Fork Rogue River through the Project are equivalent to the designated uses. DEQ has determined that the Project operations, following implementation of the section 401 water quality certification with conditions, will protect designated uses, which are equivalent existing uses. This Tier 1 analysis results in a finding that Tier 1 protection is achieved
- Tier 2 protection ensures that an activity in Oregon waters will not result in a lowering of water quality. If DEQ finds that the activity will result in a lowering of water quality, DEQ must demonstrate in an in-depth Tier 2 review that such a lowering meets antidegradation requirements set out in 340-041-0004(6), for high quality waters, or 340-041-0004(9), for water quality limited waters, whichever is applicable. DEQ has evaluated the proposed operating conditions of the Project under a new license. DEQ has determined that there is reasonable assurance that proposed Project operations under the new license will not lower water quality, if the conditions required under the section 401 certification are met. DEQ is therefore reasonably assured that the antidegradation policy will be supported. Because the proposed Project operations, with the section 401 conditions implemented will not result in lowering of water quality, DEQ may proceed with the review of the section 401 application. DEQ does not need to conduct an in-depth Tier 2 Review.

Based on the antidegradation review DEQ finds that federal requirements at 40 CFR 131.12 have been met; that state requirements at OAR 340-041-0004 have been met and that the Proposed Action subject to the conditions in the section 401 water quality certification is consistent with antidegradation requirements.

DEQ is reasonably assured that Project operation, including proposed actions described in Section 4.2 above, will comply with the antidegradation policy provided the following measures are implemented:

- Develop and implement a dissolved oxygen-monitoring plan for the South Fork Rogue River below the diversion dam.
- Develop and implement an adaptive management plan if the monitoring indicates the project causes or contributes to a violation of the applicable dissolved oxygen criteria.
- Develop a macroinvertebrate monitoring plan for the South Fork Rogue River below the diversion dam, which will include standard bioassessment metrics including densities, abundance, richness and tolerance as well as identify monitoring locations.
- Develop and implement an adaptive management plan if the monitoring indicates impairment to the macroinvertebrate community in the South Fork Rogue River below the diversion dam.
- Submit an annual report to DEQ by January 31 of each year summarizing the frequency of spill events.
- If requested by DEQ, develop and implement a total dissolved gas monitoring plan for spill events.
- If requested by DEQ, develop and implement a plan to implement measures if monitoring indicates non-attainment of the total dissolved gas criterion.
- The minimum flow released to the South Fork Rogue River shall be equal to or greater than 30 cubic feet per second from March 1 through July 31 and equal to or greater than 20 cubic feet per second from August 1 through February 28 as measured at the United States Geological Survey gage (14332000) at RM 10.25.
- Implement an operational ramping rate of 0.2 foot per hour all year.
- Report any operational ramping rates in excess of the defined rates within 24 hours of discovery to DEQ and ODFW.
- Report on the frequency of operational ramping events in excess of 0.2 foot per hour.
- Develop and implement an adaptive management plan to reduce the frequency of ramping events in excess of 0.2 foot per hour, if requested by DEQ.
- Within 18 months of FERC license issuance, PacifiCorp must update the Fish Passage Facilities Operations and Maintenance Plan, which must include among others components, the design, operation, and construction of an auxiliary bypass flow system.
- After approval of the Fish Passage Facilities Operations and Maintenance Plan PacifiCorp shall operate and maintain the fish passage facilities in accordance with the approved terms of that Plan, including but not limited to the operation of the auxiliary bypass flow system.

7. Evaluation of Compliance with Sections 301, 302, 303, 306 and 307 of the Federal Clean Water Act

In order to certify a project pursuant to §401 of the federal Clean Water Act, DEQ must find that the project complies with applicable provisions of Sections 301, 302, 303, 306 and 307 of that Act and state regulations adopted to implement these sections. Sections 301, 302, 306 and 307 of the federal Clean Water Act address effluent limitations, water quality related effluent limitations, national standards of performance for new sources and toxic and pretreatment standards. All of these requirements relate to point source discharges and are the foundation for conditions incorporated in National Pollution Discharge Elimination System permits issued to the point sources. Point source discharges at hydroelectric projects may include cooling water discharges, stormwater, and sewage discharges.

Section 303 of the Act relates to Water Quality Standards and Implementation Plans. The federal Environmental Protection Agency has adopted regulations to implement Section 303 of the Act. The EQC has adopted water quality standards consistent with the requirements of Section 303 and the applicable EPA rules. The EQC

standards are in OAR Chapter 340, Division 41. EPA has approved the Oregon standards pursuant to the requirements of Section 303 of the Act. Therefore, the Project must comply with Oregon Water Quality Standards to qualify for certification. As discussed above in this report, the DEQ is reasonably assured that the proposed Project will comply with Oregon Water Quality Standards and therefore Section 303 of the Clean Water Act, provided the conditions to the §401 Certification are satisfied.

Required NPDES Permits

Facilities engaged in upland construction activities which will disturb more than one acre of land and which may reasonably result in surface water discharge to waters of the state must obtain a construction stormwater permit from DEQ. Certain actions required of PacifiCorp pursuant to a new FERC License may require that PacifiCorp obtain a NPDES 1200-C construction stormwater permit prior to construction. DEQ will condition this §401 water quality certification to require PacifiCorp to obtain all applicable permits prior to engaging in activities which may result in discharge to waters of the state.

8. Evaluation of Compliance with Other Requirements of State Law

Once a Project is determined to qualify for §401 certification, additional conditions may be identified that are appropriate in a certification to assure compliance with other appropriate requirements of state law, pursuant to §401(d) of the Clean Water Act. Such requirements are “appropriate” if they have any relation to water quality, see *Arnold Irrigation Dist. v. DEQ*, 79 Or App 136 (1986); *PUD No.1 of Jefferson Co. v. Washington Dept. of Ecology*, 511 U.S. 700 (1994); *S.D. Warren v. Maine Board of Envtl. Prot., et. al.*, 547 U.S. 370 (2006).

DEQ Evaluation

The Environmental Protection Agency’s (EPA) policies, rules and regulations pertaining to implementation of the Federal Clean Water Act clarify that ODEQ’s responsibility for protection of water quality “involves far more than just addressing water chemistry.” See Letter from EPA Assistant Administrator, LaJuana S. Wilcher, to Lois D. Cashell, Secretary to Federal Energy Regulatory Commission (Jan 18, 1991) (Attachment A to Evaluation and Findings Report).

Specifically, the EPA has explained

protection of water quality includes protection of multiple elements which together make up aquatic systems including the aquatic life, wildlife, wetlands and other aquatic habitat, vegetation, and hydrology required to maintain the aquatic system. Relevant water quality issues include the toxicity and bioaccumulation of pollutants, the diversity and composition of the aquatic species, entrapment of pollutants in sediment, stormwater and nonpoint source impacts, habitat loss, and hydrologic changes. A State may need to address any one or combination of these factors in particular circumstances in order to meet the mandates of the Clean Water Act (CWA) articulated in Section 101(a) ‘to restore and maintain the chemical, physical, and biological integrity of the nation’s waters.’

Id. Consistent with that goal of the Federal Clean Water Act to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters,” 33 U.S.C. 1251(a), Oregon law provides for the restoration of native fish populations (and the aquatic systems that support them) to productive and sustainable levels that will provide environmental, cultural and economic benefits. ORS 541.895-898. Further, consistent with the objectives of the Federal Clean Water Act to provide “for the protection and propagation of fish, shellfish, and wildlife and [] for recreation in and on the water,” Oregon law also requires measures be taken to prevent serious depletion of any indigenous species and requires measures to maintain all species of fish and wildlife at optimum levels for the benefit of present and future generations. ORS 496.012; OAR 635-007-0502 – 0505; *see also* ORS 496.435 (providing for the promotion of rehabilitation and restoration of salmon and trout species to historic levels of abundance); ORS 509.585 – 509.645 (requiring all owners of artificial obstructions to provide for upstream and downstream passage where migratory native fish are currently or have historically been present); OAR 635, Division 412 (same).

Further, it is public policy of the state of Oregon

to protect, maintain and improve the quality of the waters of the state for * * * the propagation of wildlife, fish and aquatic life and for * * * recreational and other legitimate beneficial uses.

ORS 468B.015(2). Specifically, ODEQ is charged with abating pollution, which is defined as including “other alteration of the physical * * * properties of any waters of the state * * * [that] can reasonably be expected to [be] injurious to * * * fish [and] aquatic life or the habitat thereof.” OAR 340-041-0002(45). *See also* 33 USC 1362(19) (defining “pollution” as “man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water.”). Thus, the above state laws pertaining to, among other goals, restoration of

native fish populations and provision of passage for native migratory fish species, are both consistent with the Federal Clean Water Act's provisions and state-water quality laws and standards. These state laws are also water-quality related laws, because DEQ finds that water quality includes overall protection of the multiple elements that together make up aquatic ecosystems, including resident biological communities and aquatic life and habitat. *See Arnold.* Accordingly, these water-quality-related laws constitute other appropriate requirements of state law that DEQ may consider in its certification process. *See 468B.040; 33 U.S.C. 1341(d).*

8.1 Department of State Lands

ORS 196.810 requires permits from the Oregon Department of State Lands prior to any fill and removal of material from the bed or banks of any stream. Such permits, if issued, may contain conditions to assure protection of water quality to protect fish and aquatic habitat.

DEQ Findings

The proposed new license will include construction activities which may require a removal-fill permit from DSL, a dredge and fill permit from the Corps pursuant to § 404 of the Clean Water Act, and a §401 water quality certification from DEQ. PacifiCorp must first obtain all applicable permits, certificates, and authorizations prior to engaging in activities required under the terms of a new FERC License.

8.2 Department of Fish and Wildlife

Oregon Department of Fish and Wildlife administers the state laws summarized below which pertain to providing and maintaining passage around artificial obstructions, protecting aquatic habitat and protecting and restoring native fish stocks. ODFW submitted the Federal Power Act Section 10(j) recommendations to the Federal Energy Regulatory Commission in May 2017 to implement these laws.

- **ORS 541.405** Oregon Plan for Salmon and Watersheds
Restore native fish populations and the aquatic systems that support them, to productive and sustainable levels that will provide environmental, cultural and economic benefits.
- **ORS 496.012** Wildlife Policy
This statute establishes ODF&W's primary directive to prevent serious depletion of any indigenous species and to maintain all species of fish and wildlife at optimum levels.
- **ORS 496.435** Policy to Restore Native Stocks
Restore native stocks of salmon and trout to historic levels of abundance.
- **ORS 509.580 - 509.645** ODF&W's Fish Passage Law
Provide upstream and downstream passage at all artificial obstructions in Oregon waters where migratory native fish are currently or have historically been present.
- **OAR 635-007-0502 through -0509** Native Fish Conservation Policy
- **OAR 635-500-0100 through -0120** Trout Management
Maintain the genetic diversity and integrity of wild trout stocks; and protect, restore and enhance trout habitat.
- **OAR 635-415-0000 through -0030** Fish and Wildlife Habitat Mitigation Policy

DEQ Findings

As discussed above in this report, the present condition of passage facilities and project operations create a deleterious condition to fish and cause a detrimental change to resident biological communities. However, DEQ conditions set forth above, especially those specified for compliance with narrative

criteria, ensure adequate protection and restoration of Oregon's native fish populations by ensuring sufficient genetic diversity and access to available habitat.

8.3 Department of Land Conservation and Development

ORS Chapter 197 contains provisions of state law requiring the development and acknowledgement of comprehensive land use plans. This chapter also requires state agency actions to be consistent with acknowledged local land use plans and implementing ordinances. PacifiCorp provided a Land Use Compatibility Statement in Appendix C to the Application for Section 401 Water Quality Certification. In the Land Use Compatibility Statement dated August 22, 2016, Jackson County affirmed that the Project is located outside the Urban Growth Boundary and that the Project use is allowed outright as a pre-existing use.

8.4 Department of Environmental Quality

Onsite Septic Systems

On-site disposal of sewage is governed by ORS 454.705 et. seq. and OAR Chapter 340, Divisions 71 and 73. The purpose of these rules is to prevent health hazards and protect the quality of surface water and groundwater.

The Project does not have any on-site sewage treatment or disposal systems.

Hazardous Materials

ORS 466.605 et. seq. and ORS 468.780-815 establish requirements for reporting and cleanup of spills of petroleum products and hazardous materials. ORS 468.742 requires submittal of plans and specifications for water pollution control facilities to DEQ for review and approval prior to construction.

PacifiCorp addresses these requirements in the existing spill prevention control and countermeasure (SPCC) plan and other environmental plans for the Project. PacifiCorp notes that a registered professional engineer certified the current SPCC plan, dated December 6, 2011. (PacifiCorp. Feb. 2018, Page 65).

NPDES Permits

Oregon rule (OAR 340-045-0015) requires facilities that discharge to water to secure NPDES permits for discharges of pollutants to surface water.

DEQ Findings

Prior to engaging in future construction activities which may disturb more than one acre and which will result in stormwater discharge to surface waters, PacifiCorp must first obtain an NPDES 1200-C construction stormwater permit from DEQ.

8.5 Water Resources Department

Under ORS 468.045(2) DEQ is required to make findings that its approval or denial is consistent with the standards established in ORS 543A.025(2) to (4).

The following list summarizes these standards:

1. Standards that mitigate, restore and rehabilitate fish and wildlife resources adversely affected by the Project;
2. Any plan adopted by the Pacific Northwest Power and Conservation Planning Council; the Environmental Quality Commission's water quality standards;
3. Operational standards that ensure the Project does not endanger public health or safety, including "practical protection from vulnerability to seismic and geologic hazards,";
4. Standards that protect, maintain, or enhance wetland resources such that the Project may not result in a net loss to existing wetland resources; and

5. Standards that protect, maintain, or “enhance other resources in the Project vicinity including recreational opportunities, scenic and aesthetic values, historic, cultural and archaeological sites, and botanical resources” such that reauthorization may not result in net loss to these existing resources.

PacifiCorp holds an Oregon Certificate of Water Right (Certificate No. 9688, State Engineer Permit No. 7861) in perpetuity for the purposes of power generation at the Project. Hydroelectric water rights issued before 1931 do not expire¹¹. The certificate allows for a maximum of 150 cubic feet per second diversion from the South Fork Rogue River. According to the Oregon Water Resources Department (OWRD) “Water Rights Information Query” website (OWRD, 2012), there are not any known existing or proposed uses of Project waters that would impose downstream constraints on Project operations. Other than the Project itself, there are no known in-stream flow uses, existing water rights or pending water rights upstream of the confluence of the Middle and South Fork Rogue River affected by continued operation of the Project.

¹¹ Mary Grainey. Oregon Water Resources Department. Personnel Communication. Phone Call. 10/30/2018.

9. Public Comment

On December 31, 2019, DEQ issued a notice inviting public review and comment on the proposed certification decision. The public comment period concluded at 5:00 pm on February 4, 2020. DEQ held a public hearing on January 22, 2020. No one attended the public hearing.

DEQ received comments from Oregon Wild.

Commentor: Doug Heiken, Oregon Wild

Comment: Oregon Wild continues to support adequate minimum instream flows and limited ramping rates, as well as wood and gravel supplementation to meet biocriteria, as described in our 18 December 2018 comments.

Response: ODEQ consulted with ODFW to develop the requirements for minimum flow and ramping rates. ODEQ determined that these requirements were needed to demonstrate compliance with biocriteria and other narrative water quality standards.

Comment: Oregon Wild also strongly supports all of the proposed mitigation conditions intended to resolve contested issues [between DEQ and ODFW].

Response: ODEQ notes that PacifiCorp filed a request for contested case hearing. As part of a settlement agreement to resolve the contested conditions, PacifiCorp proposed actions, as described in Section 4.2 of this document.

10. Conclusions and Recommendation for Certification

DEQ has evaluated PacifiCorp's application for §401 water quality certification and related supporting documents. DEQ has determined that the proposed Project will comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act, OAR Chapter 340, Division 41 and other appropriate requirements of state law provided PacifiCorp implements the conditions proposed in this document.

Based on the preceding analysis and findings, it is recommended that pursuant to §401 of the Federal Clean Water Act and ORS 468B.040, the Director, or assigned signatory, conditionally approve the application for certification of the Prospect 3 Hydroelectric Project, FERC Project No. P-2337, consistent with the findings of this document.

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Attachment A



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 13 1991

OFFICE OF
WATER

Honorable Lois D. Cashell
Secretary
Federal Energy Regulatory Commission
825 North Capitol Street, NE
Washington, D.C. 20426

Dear Ms. Cashell:

I am writing on behalf of the Environmental Protection Agency's (EPA) Office of Water to help clarify issues regarding the application of Clean Water Act Section 401 state water quality certification to Federal Energy Regulatory Commission (FERC) licenses. This letter was precipitated by FERC documents addressing Section 401 certification: a letter of July 25, 1990, to James Elder, Director, Office of Water Enforcement and Permits, from Fred Springer of your staff; and portions of a June 5, 1990, Report of the Staff of the Federal Energy Regulatory Commission to the Water and Power Subcommittee of the U.S. Senate Energy and Natural Resources Committee.

The FERC report (page 4) asserts that state Section 401 certification conditions on FERC licenses related to "fish, wildlife, vegetation and recreation" are inappropriate. However, protection of water quality involves far more than just addressing water chemistry. Rather, protection of water quality includes protection of multiple elements which together make up aquatic systems including the aquatic life, wildlife, wetlands and other aquatic habitat, vegetation, and hydrology required to maintain the aquatic system. Relevant water quality issues include the toxicity and bioaccumulation of pollutants, the diversity and composition of the aquatic species, entrapment of pollutants in sediment, stormwater and nonpoint source impacts, habitat loss, and hydrologic changes. A State may need to address any one or combination of these factors in particular circumstances in order to meet the mandates of the Clean Water Act (CWA) articulated in Section 101(a) "to restore and maintain the chemical, physical, and biological integrity of the nation's waters."

State water quality standards form the backbone for formulating Section 401 decisions. EPA regulations (40 CFR Part 131) implementing Section 303(c)(2)(A) of the CWA require that States adopt water quality standards having three basic components: use designations, criteria to protect those uses, and an antidegradation policy. EPA regulations direct that, where attainable, States must designate uses to meet the CWA goal in Section 101(a)(2) of water quality which "provides for the protection and propagation of fish, shellfish, and wildlife, and provides for recreation in

and on the water." States must develop criteria designed to protect and maintain these designated water uses. States are not limited to adopting chemical-specific criteria, but are exhorted to adopt narrative and numerical criteria (40 CFR 131.11(b)). In addition, EPA's Fiscal Year 1991 Operating Guidance provides that by September 30, 1993, all States are to adopt biological criteria into their water quality standards. EPA regulations also require that States adopt antidegradation policies providing for protection of existing uses and the level of water quality necessary to maintain those uses. In the case of fill activities in wetlands, existing use requirements are met if the activity does not cause or contribute to significant degradation of the aquatic environment as defined in the guidelines developed under Section 404(b)(1) of the CWA.

In its letter, FERC expressed concern that States may be imposing conditions in hydropower licenses which go beyond EPA water quality standard requirements. As we explained above, water quality standards go well beyond chemical-specific criteria. In addition, Section 510(1) of the CWA expressly reserves the right of States to adopt or enforce "(A) any standard of limitation respecting discharges of pollutants, or (B) any requirement respecting control or abatement of pollution" that are equal to or more stringent than Federal standards or limitations. If a State imposes conditions or denies certification beyond the bounds of its authority, such conditions or denials may be challenged through the State administrative and judicial system.

The FERC letter inquires about EPA's authority to limit State Section 401 decisions. As noted earlier, States have the authority to impose more stringent environmental standards. In addition, EPA's authority under Section 401 is limited. While EPA approves State water quality standards and, if necessary, promulgates Federal water quality standards, we do not have the authority to countermand State Section 401 certification decisions. The only exception is that EPA regulations (40 CFR Section 124.55(c)) provide for EPA to disregard State certification conditions or

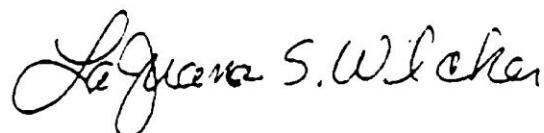
¹ We acknowledge some divergence in State Court decisions interpreting Section 401 certification authority. Compare In re Lava Diversion Project, 717 P. 2d 1274 (Ore. App. 1986) (allowing consideration of State land use planning in the State's 401 certification conditions) with Fourth Branch Associates v. Department of Environmental Conservation, 550 N.Y.S. 2d 769 (Albany Co., 1989) (limiting State certification decision to whether project will violate water quality standards). These decisions, however, were reached without any consideration of the views of EPA, the primary Federal agency responsible for implementation of the CWA. In any case, Section 401(d) of the CWA gives the States authority to place any conditions on water quality certification that are necessary to assure that the applicant will comply with effluent limitations, water quality standards, standards of performance, or pretreatment standards (Sections 301, 302, 303, 306, and 307 of the CWA) and with "any other appropriate requirements of State law."

certification denials when the grounds for the decision is that State law allows a less stringent permit condition. Under Section 401(a)(1), EPA has authority to conduct Section 401 certification decisions in cases where the State does not have the authority. For example, EPA issues certifications for South Dakota and for some Indian Tribes. In addition, Section 401(a) gives EPA specific responsibilities for notification and recommendations in cases where a discharge may affect the waters of any State other than the State in which the discharge originates.

EPA has issued, and will continue to issue, guidance and technical assistance for States to use in developing water quality standards and in implementing their Section 401 programs. Guidance on implementing water quality standards is included in EPA's Water Quality Standards Handbook. Recently, EPA issued program guidance on biological criteria (April 1990), and guidance on water quality standards for wetlands (July 1990). In addition, EPA is developing sediment criteria guidance and biological effects-based testing procedures for contaminated sediments, revisions to the water quality standards regulation, and other guidance as needed. In April 1989, we issued a handbook for States on the application of Section 401 certification to wetlands. Finally, as the principal agency responsible for administering the CWA, EPA routinely communicates its interpretation of statutory provisions such as those under Section 401 to State and Federal agencies.

I hope that this letter has clarified EPA's position on the broad range of elements that States need to include in their water quality standards to protect the quality of the nation's waters, the application of these and other considerations in Section 401 certification, and EPA's role in the certification process. If you have any questions regarding this letter or wish to meet to discuss water quality issues as they relate to your agency, please call me or have your staff contact Martha Prothro, Director, Office of Water Regulations and Standards (382-5400).

Sincerely yours,



LaJuana S. Wilcher
Assistant Administrator