

Hydropower Project Summary

PEND OREILLE RIVER, WASHINGTON

BOUNDARY HYDROELECTRIC PROJECT (P-2144)



Photo: Rich Bowers, HRC

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Hydropower Reform Coalition

and

River Management Society

PEND OREILLE RIVER, WASHINGTON

BOUNDARY HYDROELECTRIC PROJECT (P-2144)

DESCRIPTION:

The Boundary hydroelectric project is located in a narrow canyon in the Selkirk Mountains in the northeast corner of Washington, about 10 miles north of the city of Metaline Falls and one mile south of the U.S.-Canada border. The Pend Oreille River is about 120 miles long from its origin at Lake Pend Oreille in Albeni Falls, Idaho to its confluence with the Columbia River in British Columbia, Canada. The Pend Oreille River system is highly regulated, with flows controlled by seven hydroelectric and storage projects upstream from Boundary dam, and two in Canada downstream from the project.

The license for this project was issued in conjunction with the license surrender for the Sullivan Creek Project (P-2225) based on a comprehensive settlement. The Sullivan Creek project is located on Sullivan Creek, a tributary of the Pend Oreille River and is being decommissioned and the dam removed. The comprehensive agreement was signed by: City of Seattle (Seattle City and Light), Public Utility District No. 1 of Pend Oreille County (owner of the Sullivan creek project), US Forest Service (USFS), US Fish and Wildlife Service (USFWS), National Park Service (NPS), Bureau of Land Management (BLM), Bureau of Indian Affairs (BIA), Washington Department of Fish & Wildlife (Washington DFW), Washington Department of Ecology (Ecology), Kalispel Tribe, Selkirk Conservation Alliance, The Lands Council, American Whitewater, Town of Cusack, Washington, Rick Larsen, and Al Six.

This summary only pertains to the license issued for the Boundary dam hydroelectric project.

A. SUMMARY

1. License application filed: September 29, 2009
2. License issued: March 20, 2013
3. License expiration: Feb 28, 2055
4. Settlement Agreement Filed: March 29, 2010
5. Waterway: Pend Oreille River
6. Capacity: 1003.53 MW
7. Licensee: City of Seattle (Seattle City Light Department)
8. Licensee contact: 700 5th Avenue
Suite 3200
P.O. Box 34023
Seattle, WA 98124
9. Counties: Pend Oreille County

10. Project area: 609.24 acres of federal land managed by US Forest Service (USFS) within the Colville National Forest, and 329.35 acres of federal land managed by US Bureau of Land Management (BLM)

11. Project website: <http://www.seattle.gov/light/tours/boundary/>

12. Project Facilities:

a. Boundary dam

- A 340-foot-high, 740-foot-long concrete arch dam,
- A 1,794-acre reservoir at a normal full pool elevation of 1,994 feet,
- Two 50-foot-wide, 45-foot-high spillways fitted with radial gates,
- An approximately 800-foot-long, 300-foot-wide forebay,
- an underground powerhouse containing six Francis turbine/generator units with a total authorized generating capacity of 1,003.253 MW,
- six 230-kilovolt (kV) transmission lines extending approximately 60 feet up the vertical face of the left abutment of the dam, and continuing horizontally for approximately 2,850 feet to an interconnect with Bonneville Power Administration’s (BPA) substation, and
- appurtenant facilities

B. IMPORTANT PROVISIONS AND REQUIREMENTS IN LICENSE

The Washington Department of Ecology (Ecology) and US Forest Service (USFS) require Seattle City and Light to prepare a number of plans in consultation with various stakeholders and working groups. The table below identifies the plans required, the responsible working group and due date for the plan.

| Description (Name of Plan) | Consultation Entity | Due Date | Required By |
|--|-------------------------------------|--|----------------------|
| Revised Terrestrial Resource Management Plan | Terrestrial Resources Working Group | Every 5 years from license issuance (First plan due on Feb 28, 2018) | USFS Condition 3 (3) |
| Adaptive Management Plan to monitor effectiveness of terrestrial resource measures | Terrestrial Resources Working Group | Feb 28, 2014 | USFS Condition 3 (3) |
| Long-Term Erosion Control Monitoring Program | Terrestrial Resources Working Group | Feb 28, 2014 | USFS Condition 3 (3) |
| Riparian Habitat Management Plans for Everett Creek and Boundary Wildlife Preserve (BWP) | Terrestrial Resources Working Group | Feb 28, 2017 | USFS Condition 3 (3) |
| Upland Habitat Management Plan for BWP, BWP Addition, Tailrace East, and Everett Creek | Terrestrial Resources Working Group | Feb 28, 2017 | USFS Condition 3 (3) |
| Road Maintenance Plan | Recreation Resources Working Group | Feb 28, 2014 | USFS Condition 3 (5) |
| Final Multi- Resource Interpretation and | Recreation Resources Working | Feb 29, 2016 | USFS Condition 3 (5) |

| Education Program | Group | | |
|---|--------------------------------|---|-----------------------|
| Mill Pond Dam Site Monitoring and Maintenance Plan | Fish and Aquatic Working Group | Within one year of the Commission ending its jurisdiction over the Sullivan Creek Project No. 2225. | USFS Condition 3 (9F) |
| Tributary Delta Predation Study Plan | Fish and Aquatic Working Group | Feb 29, 2016, and Feb 28, 2027 | USFS Condition 3 (9A) |
| Forebay Hydraulic Study Plan | Fish and Aquatic Working Group | Feb 29, 2028 | USFS Condition 3 (9C) |
| Design Plans for Native Fish Conservation [Propagation] Facility | Fish and Aquatic Working Group | Feb 28, 2017 | USFS Condition 3 (9G) |
| Section 5.46 of Tributary Management Plan (TMP) Section 5.47 of TMP Section 5.48 of TMP | Fish and Aquatic Working Group | Feb 28, 2014 | Ecology Condition 3.5 |

Note:

The Fish and Aquatic Working Group (FAWG) consists of Seattle City Light (SCL), and to the extent of their interests in participating, the USFS, U.S. Fish and Wildlife Service (FWS), U.S. Bureau of Indian Affairs (BIA), the Kalispel Tribe of Indians (Kalispel Tribe), Ecology, Washington Department of Fish and Wildlife (Washington DFW), and the Selkirk Conservation Alliance (SCA).

The Terrestrial Working Group consists SCL, and to the extent of their interests in participating, the Forest Service, FWS, Washington DFW, Ecology, and SCA.

The Recreation Working Group consists of SCL, and to the extent of their interests in participating, the Forest Service, and U.S. National Park Service.

The license requires SCL to submit the following resource management plans:

1. Bull Trout Protection Plan [Reference: License Article 405; License Appendix D- RPM Measures and Terms and Conditions included in FWS’ Biological Opinion]

By September 16, 2013, SCL is required to file a plan detailing how it will implement the incidental take terms and conditions of the FWS’ Biological Opinion to minimize take of the threatened bull trout. The FWS required the following reasonable and prudent measures (RPM) to minimize impacts of incidental take on bull trout:

- Minimize the likelihood of bull trout outbreeding depression and loss of local adaptation from passing Salmon River bull trout over Boundary Dam.
- Minimize and monitor incidental take caused by handling related to fish capture and removal operations including electrofishing, excluding the trap and haul facility.

- Minimize effects to bull trout from chemical fish eradication activities.
- Minimize effect to bull trout from increased sedimentation input from in-water project activities.
- Monitor and report on the effectiveness and impacts of implementing all reasonable and prudent measures.

Specific actions are required to implement the above mentioned terms and conditions and are described in the Appendix referenced above. These are not included in the summary for brevity.

The plan should be prepared in consultation with FWS and Washington DFW.

2. Recreation Resource Management Plan [Reference: License Article 407]
SCL filed a recreation plan in March 2010 which identified various recreation improvements in the area. The license approved the recreation plan and required SCL to:

- Complete recreational facility improvements by February 28, 2018.
Build the new Peewee.
- Falls Viewpoint and Trail, the new Riverside Mine Canyon Viewpoint and Trail, and the new Metaline Falls Portage Trail and Boater Access Site by Feb 28, 2020.
- Complete the recreation facility improvements at the Vista House Recreation Area, at the Tailrace Recreation Area/Machine Hall Visitors’ Gallery, and Eastside Trail by Feb 28, 2023.

3. Water Quality [Reference: Appendix A: Water Quality Certification]
The WA Department of Ecology, under it Water Quality Certification, has required that the Boundary project meet standards for various parameters as shown in the table below:

| Parameter | Standard | |
|-----------------------|--|---|
| | Pend Oreille River | Sullivan Creek, Slate Creek and its tributaries |
| Temperature | Temperature shall not exceed a 1-DMax of 20.0°C due to human activities. When natural conditions exceed a 1-DMax of 20.0°C, no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3°C; nor shall such temperature increases, at any time, exceed $t=34/(T+9)$. | 12°C Highest 7- DADMax |
| Dissolved Oxygen (DO) | Lowest 1-day minimum of 8.0 mg/L | Lowest 1-day minimum of 9.5 mg/L |
| Turbidity | Should not exceed either a 5 NTU increase over background when the background is 50 NTU or less; or a 10 percent increase in turbidity when the background is more than 50 NTU. | Same |
| Total Dissolved Gas | Total dissolved gas shall not exceed 110 percent of saturation at any point of sample | Same |

| | | |
|--------------------|---|--|
| | collection. | |
| pH | pH shall be within the range of 6.5 to 8.5, with a human caused variation within the above range of less than 0.5 units. | pH shall be within the range of 6.5 to 8.5, with a human caused variation within the above range of less than 0.2 units. |
| Bacteria Indicator | Fecal coliform organism levels must not exceed a geometric mean value of 100 colonies /100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 200 colonies /100 mL. | Fecal coliform organism levels must not exceed a geometric mean value of 50 colonies /100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 100 colonies /100 mL. |

1-Dmax or 1 day maximum temperature is the highest water temperature reached on any given day.

“**7-DADMax**” or “7-day average of the daily maximum temperatures” is the arithmetic average of seven consecutive 1-DADMax for any individual day is calculated by averaging that day’s daily maximum temperature with the daily maximum temperature 7 days after that date.

mg/L means milligrams per liter.

NTU or nephelometric turbidity units is a unit to measure turbidity.

The Water Quality Certification prohibits SCL from discharging oil, fuel or chemicals into the river or adjacent land and requires SCL to contain wash water with oils, grease or other hazardous materials resulting from wash down of equipment or working areas for proper disposal. In the event of a discharge of oil, fuel or chemicals in waters of the State, or onto land with a potential for entry into waters of the State, SCL shall immediately begin and complete containment and clean-up efforts of the spilled material. Cleanup work shall take precedence over normal work and shall include proper disposal of any spilled material and used clean-up materials. Such spill must be reported to Ecology within an hour.

4. Fish Passage [Reference: Appendix C- Department of Interior Fishway Prescription]

Based on the settlement agreement, the US Department of Interior (Interior) requires SCL to install, operate, maintain and monitor a single upstream trap and haul fishway facility (upstream fishway or fishway) in the Boundary Project tailrace. The fishway would provide safe, timely and effective passage for bull trout, cutthroat trout, and mountain whitefish.

By Feb 28 2015, SCL is required to file with the Commission a Fishway Development Plan (FDP) to be prepared collaboratively with the Fish and Aquatics Work Group (See above for membership.)

The table below shows the implementation schedule for the upstream passage program.

| Protection, Mitigation, and Enhancement (PM&E) Measure Activity | Schedule | Tentative Date |
|--|---|----------------------------------|
| Implementation Plan | Within two years of license issuance | By Feb 2015 |
| Fishway Design Research | In the third through the tenth years following license issuance | Feb 2016-Feb 2023 |
| Fishway Design | In the tenth through the 12th years following license issuance | Feb 2023-Feb 2025 |
| Fishway Design Submittal to the Commission | Within 12 years of license issuance | By Feb 2025 |
| Fishway Construction | Within two years of receiving the Commission’s approval of fishway design | Dependent on Commission approval |
| Fishway Operation | Within two years of receiving the Commission’s approval of fishway design | Dependent on Commission approval |
| Status Report | Annually following license issuance | -- |

C. MAP

There are two convenient ways to become familiar with this project on the Hydropower Reform Coalition website, www.hydroreform.org.

- Go directly to the project page <https://hydroreform.org/hydro-project/boundary-p-2144/>
- To understand the geographical context of the project, visit the *On Your River* section of the site. Zoom in toward the north-eastern corner of Washington State. Of the four balloons you see, Boundary dam project is the project north and east of the Abercrombie Mountain on the Pend Oreille River, right before it enters Canada.

D. Update

The most current information on ongoing, post-license activities for this project, FERC # P-2144, may be found in FERC’s ELibrary. <https://www.ferc.gov/docs-filing/elibrary.asp>. For a general search, you will be expected to provide: Project – P-____; Check “Hydropower” box; enter a date range; and “text” (keywords) as applicable. Typically, the most effective searching method is to browse the latest 1st quarter filings with key words: “annual report”, “monitoring”, “status”, etc.

Post-license Activities: Seattle Light files Annual Reports with FERC each year, usually in the March timeframe. FERC ELibrary general search for “Annual Report”, 01/01/____ – 03/30/____ date range. The last annual reports were for 2018 and were filed March 19, 2019. These reports include the status of the following programs:

- Fish and Aquatic Resources
- Recreation Resources Management Plan
- Historic Properties
- Terrestrial Resources
- Water Quality

These reports are comprehensive and cover compliance and implementation milestones and current work plans.