

Hydropower Project Summary

CLACKAMAS RIVER, OREGON

CLACKAMAS HYDROELECTRIC PROJECT (P-2195)



Photo: Water Watch of Oregon, courtesy of Hydropower Reform Coalition

This summary was produced by the

Hydropower Reform Coalition

and

River Management Society

CLACKAMAS RIVER, OREGON

CLACKAMAS HYDROELECTRIC PROJECT (P-2195)

Description:

The Clackamas River Project is located within the Clackamas River Basin which drains more than 940 square miles. It flows west from the Cascade Mountain Range for 83 miles to its confluence with the Willamette River at Oregon City, Oregon. Most of the headwaters are located within the Mt. Hood National Forest, and approximately 47 miles of the Clackamas River are designated as a federal Wild and Scenic River. The Clackamas River provides significant recreational opportunities for fishing, whitewater boating, and camping in relatively close proximity to the Portland, Oregon metropolitan area. The river supports regionally important fish populations, including Endangered Species fall- and spring-run Chinook salmon, Coho salmon, and steelhead trout.

The project is situated on the lower 16 miles of the Oak Grove Fork and on the mainstem of the Clackamas River between river miles 46.8 and 22.3. The Clackamas River Project consists of four developments in the following sequence, from upstream to downstream:

- Oak Grove: facilities are located on the Clackamas River and its tributary, Oak Grove Fork
- North Fork, Faraday, and River Mill: three developments and their facilities are located on the Clackamas River, and were constructed between 1902 and 1958 with prior licenses.

The new Clackamas River Project combines the four developments under a single license, which authorizes 173 MW of renewable energy, and requires a number of measures to protect and enhance fish, wildlife, recreation, cultural, and aesthetic resources at the project.

The 33 signatories to the Settlement Agreement are: Portland General Electric (PGE); the U.S. Fish and Wildlife Service (FWS); Bureau of Land Management (BLM); U.S. Department of Commerce's National Marine Fisheries Service (NMFS); Forest Service (FS); Oregon Department of Environmental Quality (Oregon DEQ); Oregon Department of Fish and Wildlife (Oregon DFW); Oregon Water Resources Department (Oregon WRD); Oregon Parks and Recreation Department (Oregon PRD); Oregon State Marine Board (Oregon MB); the Confederated Tribes of the Warm Springs Reservation of Oregon (Warm Springs); Confederated Tribes of Siletz Indians of Oregon (Siletz Indians); Confederated Tribes of the Grande Ronde Community (Grande Ronde); City of Estacada, Oregon; Clackamas River Water; Sunrise Water Authority; South Fork Water Board; North Clackamas County Water Commission; Oak Lodge Water District; Alder Creek Kayak and Canoe; All Star Rafting; American Rivers; American Whitewater; Blue Sky Rafting; Clackamas River Basin Council; Destination Wilderness; Oregon Trout;

The Native Fish Society; Association of Northwest Steelheaders; Playboatingnorthwest.com; River Drifters Whitewater Tours; Trout Unlimited; and Waterwatch of Oregon.

A. SUMMARY

1. License application filed: August 26, 2004
2. License Issued: December 21, 2010
3. License expiration: December 31, 2050

The original license for the North Fork Development (formerly the North Fork Hydroelectric Project No. 2195) was issued on January 18, 1957 with a term expiring on August 31, 2006. The North Fork Project license was later amended on April 23, 1965 to include the Faraday and River Mill Developments. On April 9, 1980, an original license was issued for the Oak Grove Development (formerly the Oak Grove Project No. 135) with a term expiring on August 31, 2006, to coincide with the license expiration date of the North Fork Project. The Oak Grove Project was later combined with the North Fork Project under one license, renaming the combined projects as the Clackamas River Project No. 2195. Since the expiration of the Clackamas River Project license on August 31, 2006, Portland General Electric (PGE) has operated the project under an annual license pending the disposition of its new license application.

4. Waterway: Clackamas River and its upstream tributary, Oak Grove Fork
5. Capacity: 173.00 MW combined (Faraday, North Fork, Oak Grove and River Mill)
6. Licensee: Portland General Electric (PGE)
7. Counties: Clackamas
8. Project area: The Clackamas River Project is located within the Clackamas River Basin. The project boundary extends for approximately 23 miles along the Oak Grove Fork and the Clackamas River. The project is situated on the lower 16 miles of the Oak Grove Fork and on the mainstem of the Clackamas River between river miles 46.8 and 22.3. The existing project boundary encompasses about 3,596 acres. About 2,423 acres are federal lands under the jurisdiction of the Forest Service and BLM.
9. Project Facilities
The Clackamas River Project with all four developments has a total installed capacity of 173 MW and generates about 755,591 megawatt-hours (MWh) of electricity annually. The Clackamas River Project also includes numerous recreation sites at Timothy Lake, Lake Harriet, the North Fork reservoir, Faraday Lake, and Estacada Lake. Recreation facilities at these sites include: campgrounds, boat launches, trails, day use areas, and fishing docks.
 - a. Oak Grove Development is the most upstream development and contains a system of storage reservoirs and pipelines located on the Oak Grove Fork and the Clackamas River. Water released from Timothy Lake dam flows down the Oak Grove Fork approximately 10 miles to Lake Harriet. From Lake Harriet,

water is diverted through 4.1-mile-long pipeline to Frog Lake with the Oak Grove powerhouse. Water is discharged into the mainstem Clackamas River about 5 miles downstream of the Oak Grove Fork confluence and bypasses about 4 miles of the Oak Grove Fork.

- b. North Fork Development is located about 14 miles downstream of the Oak Grove powerhouse and is the most upstream of the three developments on the Clackamas River. The powerhouse is integral to the concrete arch North Fork dam. The North Fork Development includes the upstream terminus of the 1.9-mile-long North Fork fish ladder that contains an existing adult fish trap and sorting facility. It also includes a juvenile fish collection that screens and bypasses downstream migrating fish around the dam and powerhouse and into the North Fork fish ladder. The bypassed fish travel about 1.5 miles downstream through the fish ladder to a downstream separator where they are diverted into a holding tank, identified, and counted. Downstream migrants are then released into a 5.1-mile-long bypass pipe that carries them downstream to where they are released into the Clackamas River below River Mill Dam.
- c. Faraday Development bypasses flow from about 3 miles of the mainstem Clackamas River. It has a storage reservoir on the Clackamas River about 1.6 miles downstream of the North Fork Development. Flows are diverted through a 0.5-mile-long tunnel and 0.67-mile-long Faraday Lake, the forebay for the Faraday powerhouse. Flows from the Faraday powerhouse discharge back to the mainstem Clackamas River. No passage for fish is included in the Development owing to the fish ladder bypass location from the upstream North Fork Development.
- d. River Mill Development combines discharges from the Faraday powerhouse and the Faraday bypass into Estacada Lake about 3 miles down the Clackamas River.

B. IMPORTANT PROVISIONS AND REQUIREMENTS IN LICENSE

The license requires a number of measures to protect and enhance fish, wildlife, recreation, cultural, and aesthetic resources at the project. In order to protect fish and aquatic resources in the Oak Grove Fork and the Clackamas River, the license requires extensive instream flow monitoring, lake level, water quality monitoring, fish passage monitoring and improvements for fish passage.

The license requires the revision and implementation of the following plans:

- Water Quality Monitoring and Management Plan;
- Recreation Resources Management Plan;
 - Implementation
 - Plans and Schedules
 - Updates
- Terrestrial Resource Management Plan;
- Vegetation Management Plan;

- Wetland Mitigation Plan;
- Historic Properties Management Plan; and
- Project-related Road Maintenance Plan.

The license also requires the establishment of committees and work groups composed of prescribed settlement members to work as consultants in developing, updating, coordinating and implementing the plans. This includes:

- A Fish Committee;
- A Terrestrial Resources Work Group;
- A Recreation Resources Work Group;
- A Blue-Green Team; and
- A Clackamas Fund Committee.

- 1. Water Quality Monitoring and Management Plan** [Reference: Appendix A- (*Clean Water Act § 401 Certification Conditions*); Appendix B Article 12]
The Water Quality Monitoring and Management Plan (WQMMP) includes three inter-related areas and provisions regarding water quality, water flow management, and the biological environment concerning fish habitat and passage.

Water quality provisions per Appendix A (*Clean Water Act § 401 Certification Conditions*) include:

- a. Dissolved Oxygen (DO) and Intergravel Dissolved Oxygen (IGDO) monitoring for spawning;
- b. Hydrogen Ion Concentration (pH) monitoring regarding taste and odors;
- c. Total Dissolved Gas (TDG) monitoring;
- d. Nuisance Algae; Taste, Odor and Toxic Algae Formation; Aesthetic Conditions to monitor the occurrence and causes of blue-green algae;
- e. Temperature; and
- f. Turbidity during ground-disturbing activities or instream work.

Biological criteria and protection of beneficial uses area also affected by water management including reservoir levels, stream flows, fish passage, and project operations. Appendix A and B of the license specifies stream flow, lake level, stage change limits and conditions, fall pulse flow releases, winter flow releases, and snow melt runoff releases. The following is a summary of water management provisions:

- a. Faraday Bypass [Reference: Appendix A]
A minimum flow of 270 cfs in the Faraday Bypass reach except when higher flows are required by the state instream water. In year 8 or later, PGE may lower the instream flow to 250 cfs after demonstrating reduced juvenile steelhead entrainment in North Fork Reservoir.

- b. Run-of-River Operations [Reference: Appendix A]
PGE will operate the North Fork Reservoir, Faraday Diversion Dam, Faraday Lake and bypass, and Estacada Lake so that outflow at River Mill Dam is equal to inflow to North Fork Reservoir.
- c. Operation of Timothy Lake [Reference: Appendix B Article 5]

Seasonal Drawdowns

Except during extraordinary conditions specified in the license, the following schedule provides for the timing and date of seasonal drawdowns and refills:

Date	Provision	Lake Level
By Memorial Day	Refill to	3189.0
By July 1	Refill to	3190 or higher, NTE 3191.5
Day after Labor Day through Memorial Day	Draw down to	3170.0 but NTE 3191.9

NTE = Not to Exceed

Flows below Timothy Lake

Date	Flow Releases, cfs	
	Minimum	Maximum
Memorial Day through Labor Day	60 cfs or inflow, whichever is less	Inflow + 70
Day after Labor Day through Sept. 30		Inflow + 100
Oct. 1 through Oct. 31		Inflow + 150
Nov. 1 through Nov. 30		Inflow + 300
Dec. 1 through Feb. 28/29	30 cfs or inflow, whichever is less	
Mar. 1 through day before Memorial Day	40 cfs or inflow, whichever is less	Inflow + 100

Except during system power emergencies or equipment failures at Timothy Lake Dam, PGE is not to allow more than three large-scale flow events, defined as a day or series of consecutive days in which Timothy Lake outflow exceeds inflow by 200 cfs or more during the November 1 through February 28/29 time frame.

- d. Operation of Lake Harriet Dam [Reference: Appendix B Article 7]

Lake Levels

PGE is required to maintain the water level in Lake Harriet at a reservoir elevation of 2039.0, PGE datum, except during spills or releases over the dam flashboards, when water levels will exceed 2039.0; during replacement of flashboards, when the minimum water level shall be elevation 2034.0, PGE datum; or during major repairs of Lake Harriet Dam or the Frog Lake intake structure, when the minimum water level shall be elevation 2020.0.

Flows below Lake Harriet

Date	Base Flow Release, cfs		
	Wet Year*	Normal Year*	Dry Year*
April 1 to Sept. 30	100	90	80
Oct. 1 to Oct. 15	100	100	100
Oct 16 to Dec. 15	80	80	80
Dec. 16 to March 31	70	70	70

*The definition of wet, normal, and dry water years is based on the forecasted April 1-September 30 inflows to Lake Harriet:

- Wet is <182,000 acre-ft.
- Normal is < 182,000 and > 123,000 acre-ft.
- Dry is < 123,000 acre-ft.

- e. Operation of Frog Lake and Oak Grove Powerhouse[Reference: Appendix B Article 10]

Frog Lake Levels

PGE is required to maintain Frog Lake between a maximum elevation of 1988.0, PGE datum, and an extreme minimum elevation of 1958.0.

Fish habitat and passage provisions include:

- a. Juvenile Salmonid Stranding Studies [Reference: Appendix B- Article 14];

- b. Fish Protection Measures at the Oak Grove Development [Reference: Appendix B- Article 15];
- c. Cutthroat Trout Measures [Reference: Appendix B- Article 16 and Appendix A];
- d. Upper Oak Grove Fork Flow Assessment [Reference: Appendix B- Article 17]
- e. Lower Oak Grove Mitigation Measures [Reference: Appendix B- Article 18 and Appendix A];
- f. Hatchery Spring Chinook Smolt Stocking [Article 403];
- g. Large Wood Management [Reference: Appendix B- Article 19 and Appendix A];
- h. Clackamas River Hydroelectric Project Mitigation and Enhancement Fund [Reference: Appendix B- Article 20]

Within 24 months of license issuance (by December 21, 2012), PGE will establish the Clackamas River Hydroelectric Project Mitigation and Enhancement Fund (the “Fund”) in the initial amount of a \$500,000 credit (2006 dollars) to fund enhancement projects for fish resources and habitats in the Clackamas River Basin. Following this initial credit, PGE will make periodic credits as specified below on the anniversary of the issuance date of the license:

Anniversary of License Issuance	Amount (2006 dollars)
5 th (2015)	\$ 3,000,000
10 th (2020)	\$ 3,000,000
20 th (2040)	\$ 1,500,000

2. Recreation Resources Management Plan- Implementation [Reference: License Article 407]

The Recreation Resources Management Plan (RRMP)-Implementation contains 14 recreation measures with varying implementation schedules ranging from within two years of license issuance (December 21, 2012) to up to ten years (December 21, 2020). The measures include operating and maintaining developed campgrounds (Timothy Lake and Harriet Lake), improving camp sites (Paradise Island), and improving disability (Faraday Lake day use) and angler access (Timber Park, Pine Point, Hood View and Oak Fork). Measures relevant to whitewater recreation include:

- a. Managing generation timing for the days of the annual Bob’s Hole Rodeo kayaking event (up to three days) to optimize whitewater boating opportunities (within two years, or by December 21, 2012);
- b. Managing the BLM boat-in day use site on the south shore of North Fork (within two years, or by December 21, 2012);

- c. Conducting a study of the feasibility of constructing a whitewater boating feature in either the Faraday diversion reach or below River Mill dam adjacent to Milo McIver State Park (within five years, or by December 21,2015);
- d. Upgrading the river gages at Carter Bridge (RM 40.8) and USGS gage 14209500, and installing a new USGS gage at Ripplebrook campground (within five years, or by December 21,2015); and
- e. Providing e a slide type launch for canoes/kayaks and/or improved angler access at Estacada Lake (within ten years, or by December 21,2020).

Additionally, BLM [Reference: Appendix C- Condition No. 2] requires provisions for the development, management, and monitoring of day-use recreation on BLM administered lands and management of dispersed recreation including the boat-in recreation site on the North Fork Reservoir.

3. Recreation Resources Management Plan- Plans and Schedule[Reference: License Article 408]

PGE is required to file detailed plans and schedules for twenty measures with varying implementation schedules ranging from within two years (by December 21, 2012) to within 14 and 29 years (by December 21, 2024 and December 21, 2039, respectively). Within the first year (by December 21, 2011), PGE is required to propose methods for tracking recreation user data.

Many of the recreation measures require site plans involving Timothy Lake:

- a. Existing (within five years, or by December 21,2015) and new campgrounds (within 9 years, or by December 21, 2019);
- b. Disbursed Site Management Plan, to include Harriet Lake (within 2 years, or by December 21, 2012);
- c. Campground upgrades including boat launches and water supply infrastructure (within nine years, or by December 21,2019); and
- d. Needs assessment for additional group campsites and site plans if additional sites are justified (within 14 and 29 years, or by December 21, 2024 and December 21, 2039, respectively).

Two measures are associated with the Springwater Corridor Trail involving feasibility assessments:

- a. Siting the Springwater Corridor Trail Extension across project lands years; and
- b. Development of a pedestrian bridge trail linkage between Timber Park and Milo McIver State Park.

The feasibility assessment of the Springwater Corridor Trail is required within one year of the final trail corridor being defined. The feasibility assessment for the pedestrian bridge trail linkage is to be implemented within two years of the City of Estacada identifying the linkage as a key component in its Parks and Recreation

Master Plan and Oregon PRD identifying the linkage as a priority in a park plan adopted for Milo McIver State Park or as a critical connectivity link through the Springwater Corridor/ Urban Link Trail Project Plan.

Additionally, two other measures of note require plans for:

- a. Identification of preferred locations for the development of improved river access sites, year-round toilets, and a seasonal toilet along the Three Lynx Reach of the Clackamas River; and
- b. Relocating or improving the Timothy Lake Trail for constructing four additional smaller loop trails and for converting the old road from Timothy Lake campgrounds to the Clackamas Lake Guard Station to a trail for hiking and mountain biking.

Within one year of license issuance (December 21, 2011), PGE is also required to file a schedule identifying when detailed site plans will be submitted for six measures identified in the RRMP that do not specify a timeframe for completion.

These measures include:

- a. Provisions for boat-in disbursed campsites at Paradise Island;
- b. Shoreline enhancements to the campgrounds and day use areas abutting Timothy Lake;
- c. Shoreline development including walkways, boat launch, parking, and fishing at Lake Harriet;
- d. Enhancing angler access below River Mill;
- e. Development of a whitewater boating feature based on the findings in the whitewater boating feasibility report per Article 407 (see **2. Recreation Resources Management Plan-Implementation** of this summary report); and
- f. Improvements for warnings to boaters at the Indian Henry boat launch site and at the Oak Grove powerhouse related to an emergency release of water.

4. Updates to the Recreation Resources Management Plan [Reference: License Article 409]

PGE is required to update the RRMP in years 15 (2025) and 30 (2030). The updated plans will be developed in consultation with the Clackamas River Recreation Work Group, U. S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife, and the Oregon State Historic Preservation Officer. The updated RRMP will include, but not be limited to, the following: (1) a discussion of the adequacy of the existing recreation facilities to meet current and future recreation demand at the Clackamas Project; (2) a description of the methods used to collect recreation data and a discussion of the adequacy of that data to accurately reflect use at the project; (3) documentation of recreation use at the project site; and (4) if there is a need for additional facilities, specify how it will be accommodated in the project area.

- 5. Terrestrial Resources Management Plan** [Reference: Appendix B- Article 21]
PGE will implement the Terrestrial Resources Management Plan per the Settlement Agreement.
- 6. Vegetation Management Plan** [Reference: Appendix B-Article 22 and Appendix C-Condition No. 1]
PGE will implement the Vegetation Management Plan per the Settlement Agreement. Within 180 days from the date of issuance of the license (June 19, 2011), PGE is required to develop and file a plan for the protection and utilization of Bureau of Land management (BLM) administered lands. The plan will include provisions for vegetation management, including pesticide use, that are consistent with BLM policy and guidance. The plan will include also include management of noxious and invasive species, native species, threatened, endangered, and sensitive species; and maintenance of soil productivity.
- 7. Wetlands Mitigation Plan** [Reference: Appendix B-Article 23]
Within 18 months of license issuance (June 21, 2012), PGE is required to file a Wetlands Mitigation Plan to implement, within three years of license issuance, wetlands restoration projects at
 - a. the Davis Ranch site owned by the Licensee within the Mt Hood National Forest; and
 - b. a wetland site owned by the Licensee near Promontory Park, above the North Fork Reservoir. The plan shall include provisions to bring the Davis Ranch and Promontory Park sites into the Project boundary.
- 8. Historic Properties Management Plan** [Reference: Article 406; Appendix B-Article 24]
PGE will implement the Historic Properties Management Plan per the license provisions.
- 9. Project-related Road Maintenance Plan** [Reference: Appendix B- Article 26]
Within 24 months of license issuance (by December 21, 2012), PGE will file a Project-related Road Maintenance Plan to provide for the shared maintenance, repair, and rehabilitation of USDA-FS roads in the vicinity of the Oak Grove Development.

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 <http://www.hydroreform.org/projects/clackamas-p-2195>

- To understand the geographical context of the project, visit the *On Your River* section of the site. This link (<http://www.hydroreform.org/on-your-river/Northwest>) will take you to the section for rivers in the Northwest. Zoom in until you can see the Portland area. Mouse over four markers east of Portland. P-2195 is the second from the left.