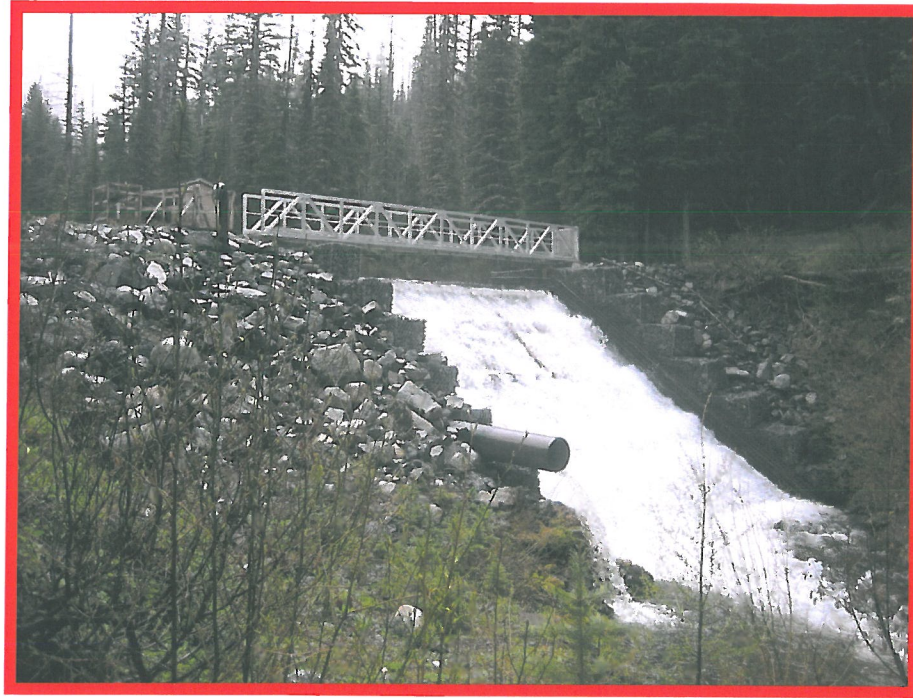


Wallowa Falls Hydroelectric Project FERC No. P-308



**Before the
United States of America
Federal Energy Regulatory Commission**

Final License Application for Minor Water Power Project Under 5MW

**Volume I of V
Initial Statement and Exhibits A and G**



February 2014

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Wallowa Falls Hydroelectric Project FERC No. P-308

**Before the
United States of America
Federal Energy Regulatory Commission**

Final License Application for Minor Water Power Project Under 5MW

**Volume I of V
Initial Statement and Exhibits A and G**

Prepared by:
PacifiCorp Energy
Hydro Resources
825 NE Multnomah, Suite 1500
Portland, OR 97232

February 2014

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**Wallowa Falls Hydroelectric Project
(FERC No. P-308)**

**FINAL LICENSE APPLICATION
FOR MINOR WATER POWER PROJECT UNDER 5MW**

CONTENTS OF VOLUMES

This final license application for the Wallowa Falls Hydroelectric Project (FERC No. P-308) consists of the following volumes:

Volume I

Initial Statement
Exhibit A – Project Description
Exhibit G – Project Maps

Volume II

Exhibit E – Environmental Report

Volume III

Exhibit E Appendices

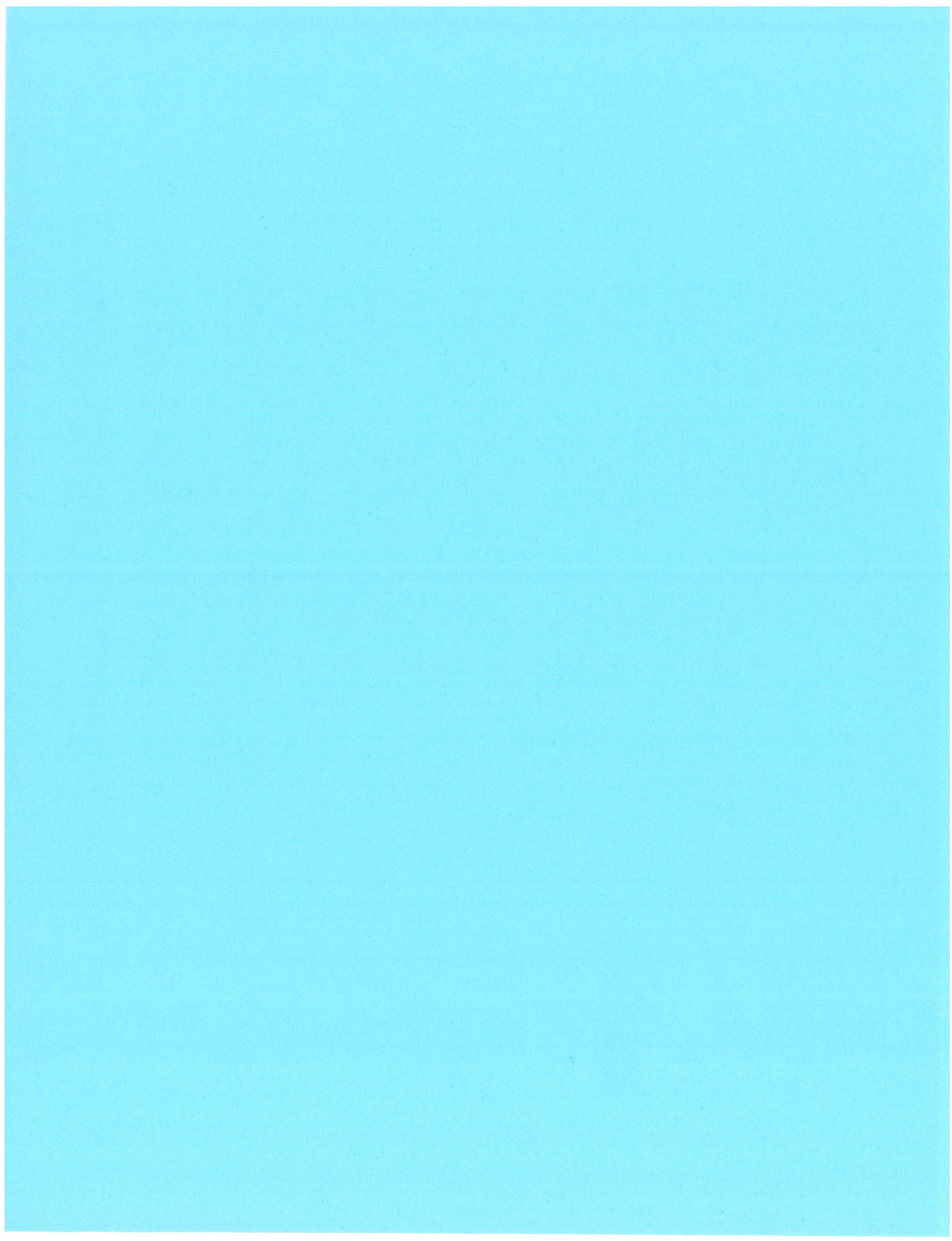
Volume IV

Exhibit F – General and Preliminary Design Drawings (**CEII**)

Volume V

Cultural Resources – Traditional Cultural Properties (**CONFIDENTIAL**)

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Initial Statement

**Wallowa Falls Hydroelectric Project
(FERC No. P-308)**

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

PacifiCorp Energy

Project No. 308

INITIAL STATEMENT FOR THE
WALLOWA FALLS HYDROELECTRIC PROJECT (FERC NO. 308)
FINAL LICENSE APPLICATION

(February 28, 2014)

- a. PacifiCorp Energy (PacifiCorp), a corporation under the laws of the State of Oregon and having its executive offices and principal place of business at Portland, in the State of Oregon, also referred to herein as “Applicant”, hereby makes application to the Federal Energy Regulatory Commission (FERC) for a new (subsequent) 50 year license for the Wallowa Falls Hydroelectric Project (Project) FERC Project No. 308, as described hereinafter. PacifiCorp requests a new license term of 50 years. The following license application has been prepared in accordance with Chapter 18 of the Code of Federal Regulations (CFR) Section 4.61, license for Minor Project, Existing Dam, and 18 CFR Section 5.18 Application Content.
- b. Date filed: February 28, 2014
- c. License expiration date: February 28, 2016
- d. Location: The Project is located in Wallowa County in northeast Oregon, on the East Fork Wallowa River, West Fork Wallowa River and Royal Purple Creek. The Project is approximately 7 miles south of the town of Joseph near Wallowa Lake and is partially within the Wallowa-Whitman National Forest.
- e. The exact name and business address of the applicant is:

PacifiCorp Energy
835 N.E. Multnomah – Suite 1500
Portland, Oregon 97232

As sole applicant, PacifiCorp Energy has or intends to obtain and will maintain all proprietary rights necessary to construct, operate, or maintain the Project.

- f. Applicant Contacts and Authorized Agents are:

Russ Howison,
Relicensing Project Manager,

PacifiCorp Energy,
825 N.E. Multnomah, Suite 1500,
Portland, OR 97232;
(503) 813-6636,
russ.howison@pacificorp.com

Todd Olson
Director, Compliance Hydro Resources
PacifiCorp Energy,
825 N.E. Multnomah, Suite 1500,
Portland, OR 97232;
(503) 813-6657,
todd.olson@pacificorp.com

- g Pursuant to 18 CFR Section 5.18(a)(2), Applicant is providing the names and mailing addresses of:

- i. *Every county in which any part of the project is located, and in which any Federal facility that is used or to be used by the project is located:*

The Project is located in Wallowa County, which has the following mailing address:

Wallowa County Planning Dept.
County Commissioners
101 S. River Street, Room B-1
Enterprise, OR 97828

The Project is located on lands of the Wallowa Whitman National Forest:

Wallowa-Whitman National Forest
P.O. Box 907
1550 Dewey Avenue
Baker City, Oregon 97814
541- 523-6391

- ii. *(A) Every city, town, or similar local political subdivision in which any part of the project is or is to be located and any Federal facility that is or is to be used by the project is located:*

Lisa Hayes
Oregon Department of Transportation
District 13 Permit Specialist
Region 5 Right of Way Agent
3014 Island Avenue

La Grande, Oregon 97850
(541) 963-8407

(B) Every city, town, or similar local political subdivision that has a population of 5,000 or more people and is located within 15 miles of the project dam:

There are no cities or towns with a population of 5,000 or more people within 15 miles of the Project.

- iii. *(A) Every irrigation district, drainage district, or similar special purpose political subdivision in which any part of the project is or is proposed to be located and any Federal facility that is or is proposed to be used by the project is located.*

Wallowa Soil and Water Conservation District
Attn: Cynthia Warnock
401 N.E. 1st Street – Suite E
Enterprise, OR 97826

Wallowa Lake Rural Fire Protection District
Chief Matt Walker
P.O. Box 922
Joseph, OR 97846

(B) Every irrigation district, drainage district, or similar special purpose political subdivision that owns, operates, maintains, or uses any project facility or any Federal facility that is or is proposed to be used by the project;

No irrigation district, drainage district, or similar special purpose political subdivision owns, operates, maintains, or uses any project facility or any Federal facility used by the Project.

- iv. *Every other political subdivision in the general area of the Project or proposed Project that there is reason to believe would be likely to be interested in, or affected by, the notification:*

U.S. Forest Service
Daniel Gonzalez
Energy Coordinator
PNW Forestry and Range Sciences Lab
1401 Gekeler Lane
La Grande, OR 97850

City of Baker City
Planning Department
P.O. Box 650
Baker City, OR 97814

City of Enterprise
City Administrator's Office
108 N.E. 1st Street
Enterprise, OR 97828

City of Haines
P.O. Box 208
Haines, OR 97833

City Of Joseph
201 N Main Street
Joseph, OR 97846

City of LaGrande
Planning Division
P.O. Box 670
La Grande, OR 97850

City of Lostine
128 Highway 82
Lostine, OR 97857

City of Wallowa
211 E 2nd Street
Wallowa, OR 97885

v. *Affected Indian Tribes:*

Bureau of Indian Affairs
Umatilla Agency
P.O. Box 520
Pendleton, OR 97801

Confederated Tribes of the Colville Reservation
Tribal Chairman
P.O. Box 150
Nespelem, WA 99155

Confederated Tribes of Umatilla Indian Reservation
Tribal Chairman
46411 Timine Way
Pendleton, OR 97801

Nez Perce Tribe
Tribal Chairman
P.O. Box 305
Lapwai, ID 83540

- h. Pursuant to 18 CFR Section 5.18(a)(3)(i), Applicant has made a good faith effort to give notification of the filing of the application for new license with the Commission by certified mail to every property owner of record of interest in the property within the Project boundary and all of the entities identified in part (g) of this Initial Statement. The notification included the name, address and telephone number of the applicant and a copy of Exhibit G.
- i. The applicant is an Oregon corporation and is not claiming preference under section 7(a) of the Federal Power Act.
- j. The statutory or regulatory requirements of the state of Oregon in which the Project is located that affect the Project as proposed with respect to bed and banks and the appropriation, diversion, and use of water for power purposes, and with respect to the right to engage in the business of developing, transmitting, and distributing power and in any other business necessary to accomplish the purposes of the license under the Federal Power Act, are:

Chapter 757 *et. seq.*, Oregon Revised Statutes, defines public utilities and regulates the business of retail distribution of electricity by the Public Utility Commission of Oregon.

Chapter 543 *et. seq.*, Oregon Revised Statutes, governs appropriation, diversion and use of water for hydropower generation and provides for the licensing of hydropower projects as amended by House Bill 2119 (1997 Oregon Legislative Assembly).

The steps which PacifiCorp Energy has taken or plans to take to comply with each of the laws cited above are:

PacifiCorp holds two water right certificates from the State of Oregon for the purposes of power generation at the Project. Up to 15 cfs may be diverted from the East Fork Wallowa River (under OR state permit no. 4595-5401) and up to one cfs may be diverted from Royal Purple Creek (under OR state permit no. 8365) for a total water right of 16 cfs. "Project waters" consists of waters within the Project area that have been diverted pursuant to this right.

PacifiCorp is not aware of any existing or proposed uses of Project waters for irrigation, domestic water supply, industrial or other purposes that would impose upstream or downstream constraints to Project operations. The small community of Wallowa Lake did withdraw water for domestic purposes from the bypass reach at one time. However, this diversion was replaced by a ground water source circa 1988 and has since been abandoned (Pers. Comm. Mike Hayward, Wallowa Co. Commissioner, September 2010).

Other than the Project itself, there are no known in-stream flow uses, existing water rights or pending water rights in the Project vicinity upstream of Wallowa Lake that would be affected by continued operation of the Project.

k. Project Description:

- The Project was initially constructed in 1921 by the Enterprise Electric Company. The existing facilities include; a diversion dam on Royal Purple Creek, a rock-filled timber crib dam on the East Fork Wallowa River, a 0.2-surface-acre (0.08 ha) forebay, a 5,688-foot-long (1,734 m) steel penstock, a powerhouse containing a 1,500 hp impulse turbine and single generating unit operating under a head of 1,168 feet (356 m) producing an average annual energy output of 7.0 GWh, and a 40 foot-long concrete lined tailrace flume connected to a 2,305 foot-long (702 m), unlined tailrace channel discharging into the West Fork Wallowa River. A detailed Project description is provided in Exhibit A.
- Existing and proposed installed generating capacity is 1,375 kVA.
- Existing dam was rebuilt in 1994.

Surveyed lands of the United States affected (shown on Exhibit G):

	Name	Acres
National Forest	Wallowa-Whitman	12.68
Indian Reservation	NA	0
Public Lands Under Jurisdiction of	NA	0
Other	NA	0
Total U.S. lands		12.68

1. The Project is fully operational in its current configuration under the existing license. Construction of the proposed Project facilities as described in Exhibits A and E, is planned to start within 36 months, and is planned to be completed within 48 months, from the date of issuance of the license.

SUBSCRIPTION

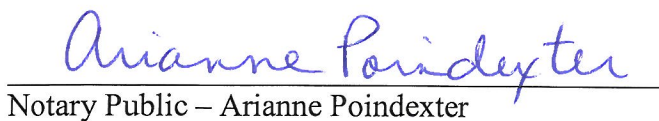
This Final License Application for the Wallowa Falls Project, FERC No. P-308 is executed in the State of Oregon, County of Multnomah, by Todd Olson, Director, Compliance Hydro Resources, PacifiCorp Energy, 825 NE Multnomah St., Suite 1500, Portland, Oregon, 97232, who, being duly sworn, deposes and says that the contents of this application are true to the best of his/her knowledge or belief and that he/she is authorized to execute this application on behalf of PacifiCorp Energy. The undersigned has signed his application this 26 day of February, 2014.



Todd Olson - Director, Compliance Hydro Resources

VERIFICATION

Subscribed and sworn to before me, a Notary Public of the State of Oregon this 26 day of February, 2014.


Notary Public – Arianne Poindexter

My Commission Expires April 18, 2014

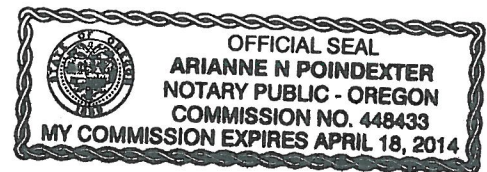


EXHIBIT A – PROJECT DESCRIPTION

Wallowa Falls Hydroelectric Project (FERC No. P-308)

Introduction

The Project was initially constructed in 1921 by the Enterprise Electric Company with a generating capacity of 800 kilovolts (kVA). The original license was issued on June 27, 1924 and expired on March 31, 1974. On October 19, 1928 the Commission approved the transfer of the license to the Inland Power and Light Company. By order dated November 23, 1942, the Commission approved the transfer of the license from Inland Power and Light Company to Pacific Power and Light Company¹. At the time of completion, the Project replaced several small generation sources in the Wallowa Valley and was connected to an existing transmission line servicing the communities of Joseph, Enterprise, Lostine and Wallowa. By order issued April 8, 1929 the Commission amended the license to include the construction of minor Project works for the diversion of water from Royal Purple Creek. In 1967 the original generator was replaced with a new 1,375 kVA (1,100 kW) unit which is still in service. By order dated March 29, 1976 the Commission issued a new license for the Project for a period of ten years. The current license was issued on August 28, 1986 for a period of thirty years. Detailed maps showing lands and waters within the existing and proposed Project boundary, land ownership and Project facilities are provided in Volume I, Exhibit G and Volume III, Appendix A.

Purpose of Project

Continued operation of the Project as proposed under a new license would provide renewable hydroelectric generation to meet a portion of local power requirements, resource diversity, and capacity needs in a remote rural area (Wallowa County, Oregon) of PacifiCorp's service territory. The Project would have an installed capacity of 1,375 kVA and generate approximately 5,500,000 kWh per year assuming a minimum in-stream flow release of 4 cubic feet per second (cfs) into the East Fork Wallowa River at the dam.

Existing Project Facilities

The existing Project consists of:

- (1) a 2-foot-high (0.6 m), 9-foot-long (2.7 m) concrete diversion dam, having a 1-foot-wide (0.3 m) spillway, at elevation 5,838 feet (1,780 m) on Royal Purple Creek which is a tributary to the East Fork Wallowa River;
- (2) a 240-foot-long (73.1 m), 8-inch (20.3 cm) diameter pipeline (120 feet of wood-stave pipe and 120 feet of PVC pipe) conveying water from the Royal Purple diversion to the Wallowa Falls forebay, 200 feet (61 m) upstream of the East Fork Wallowa River dam;

¹ Pacific Power and Light Company is a prior company name of PacifiCorp Energy.

- (3) an 18-foot-high (5.5 m), 125-foot-long (38.1 m), buttressed rock-filled timber crib dam with impervious gravel and asphalt core, having a 30-foot-wide (9.1 m) spillway, at elevation 5,795 (1,766 m) feet on the East Fork Wallowa River;
- (4) a 0.2-surface-acre (0.08 ha) forebay;
- (5) a partially enclosed power intake structure containing a 24 by 24-inch square (61 x 61 cm) sluice gate (headgate). The three-sided concrete intake enclosure prevents damage to the headgate from rocks, sediment, and other debris. Water to be used for generation flows over the top of the enclosure through an inclined steel trash rack;
- (6) a low level sluiceway consisting of a vertical steel trash rack, a 24-inch (61 cm) cast iron canal gate (sluice gate), and a 24-inch (61 cm) steel pipe that passes through the dam. The sluiceway is located adjacent to the power intake structure and continually provides 0.8 cfs of in-stream flow through a 3-inch (7.6 cm) nipple affixed into the center of the gate;
- (7) a 5,688-foot-long (1,734 m) steel penstock running from the power intake structure through the dam to the powerhouse. The penstock constricts from 24-inch (61 cm) to 18-inch (45.7 cm) in a transition section immediately below the intake head gate. The majority of the penstock is buried with two small above ground sections supported on timber crib trestles. Heading down slope from the dam the 18-inch (45.7 cm) diameter steel pipe is buried until it transitions to aboveground approximately 400 pipe feet (122 m) below the dam. The elevated section of pipe is approximately 150 feet (46 m) long and sits on a timber crib trestle structure. Continuing down slope the penstock is buried. At approximately 3,000 feet (915 m) down slope from the dam the penstock reduces to a 16-inch (40.6 cm) diameter pipe for the remainder of its length to the powerhouse. At approximately 4,500 feet (1,372 m) below the dam the penstock crosses the East Fork Wallowa River on an elevated timber crib trestle. This section of elevated pipe is approximately 90 feet (27 m) in length. The remainder of the penstock is buried to the powerhouse. The lower and upper penstock trestles were completely re-built in 1999 and 2000 respectively;
- (8) a powerhouse containing a single generating unit with a rated capacity of 1,100 kW operating under a head of 1,168 feet (356 m) currently producing an average annual energy output of 7.0 GWh under a minimum instream flow release into the East Fork Wallowa River bypassed reach of 0.5 cfs;
- (9) from the powerhouse, a 40 foot-long concrete lined tailrace flume discharges into a 2,305 foot-long (702 m), unlined tailrace channel. As shown on page 3 of Appendix A, Project flows are discharged into the West Fork Wallowa River, approximately 1,000 linear feet (305 m) from the powerhouse. However, approximately 200 feet (61 m) below the concrete lined tailrace, the unlined portion of the spillway bisects into two separate channels, a southern “main channel” and a northern “side channel”.

Additionally, the side channel is braided in several places making a total unlined spillway channel length of approximately 2,305 feet;

(10) a 20-foot-long (7 m), 7.2- kVa transmission line that connects to Wallowa Falls substation immediately adjacent to the powerhouse. The Wallowa Falls substation is connected to the local distribution grid. No other transmission lines are associated with the Project; and

(11) a 10 by 15 foot (3 by 5 m) storage shed that is situated approximately 100 ft. (30 m) southeast of dam

The normal maximum water surface area and normal maximum water surface elevation (mean sea level), and gross storage capacity of the Project impoundment (forebay) is:

- Area – 0.2 Acre Maximum
- Elevation – 5,792-ft (spillway), 5,795-ft (dam crest)
- Storage – Effectively none as the Project is operated as “run-of-the-river” with no peaking or flood control capability

The number, type, and minimum and maximum hydraulic capacity and installed (rated) capacity of the turbines or generators include:

Generator: One 1,375 kVA Allis-Chalmers Company synchronous generator rated at 80% power factor, 514 rpm, three-phase, 60 cycles, and 7200 volts.

Minimum Hydraulic Capacity: Turbine can be manually operated to 0 kW\0 cfs. During standard operation (automated mode) minimum capacity is approximately 200kW\3 cfs.

Maximum Hydraulic Capacity: 17.8-cfs

Turbine: One 48-inch (122 cm) diameter, 1,500 hp, George J. Henry Jr. impulse turbine with motorized needle valve. The turbine runner (pelton wheel) was replaced in 1996, with a unit manufactured by Canyon Industries.

Transmission: The only transmission line associate with the Project license is the 20-foot-long (6.1 m), 7.2-kVa transmission line that connects the powerhouse to the Wallowa Falls substation. The Wallowa Falls substation is then connected to a distribution line that serves residents and businesses by Wallowa Lake. This non-project distribution line is a 6.7 mile-long (10.8 kilometer (km)), 23 kV line that connects the Wallowa Falls substation with PacifiCorp’s Enterprise Substation.

The current estimated dependable capacity is 505 kW. The current average annual generation is approximately 7,000,000 kWh. The current average monthly generation is 502,000 kWh.

The State of Oregon has not made a navigability determination on the Wallowa River or its tributaries. However, the portions of the East Fork Wallowa River and Royal Purple Creek within the Project area appear too shallow or not wide enough to allow a boat to pass or to transport commercial timber. Therefore, PacifiCorp believes the East Fork Wallowa River and Royal Purple Creek are non-navigable.

During the current license term PacifiCorp made the following capital improvements to the Project dam structure and access:

In 1994 PacifiCorp completed a rebuild of the dam. The original timber crib dam was modified by the addition of a rock fill toe and embankment and the construction of an impervious gravel and asphalt core between the existing timber crib and the embankment rock fill. The spillway was widened from its original design width of 24-feet (7.3 m) to 30-feet (9.1 m) which increased its capacity by approximately 50 percent. The side walls of the spillway were constructed of rock filled gabion baskets and the full width and length of the spillway was sheathed with steel aircraft landing mats. A 3-foot (0.9 m) wide structural aluminum footbridge with railing was constructed to span to 30-foot (9.1 m) spillway.

For the dam rebuild Project PacifiCorp constructed a dirt access road to the forebay along the east side of the East Fork Wallowa River. The new access road roughly follows the alignment of the original penstock construction trail. Two pedestrian foot bridges crossing the East Fork Wallowa River between the new access road and Forest Service Trail 1804 were also constructed. By order received September 18, 1995 the Commission approved PacifiCorp's revised Exhibit F-2 and F-4 for the diversion dam and forebay access road respectively.

The Exhibit G for the Project was never revised to include the forebay access road in the Project boundary. The proposed Exhibit G for the Project is provided in Volume I. Additionally; other Project features including the forebay access road, portions of the existing tailrace and the proposed tailrace are not in the current Project boundary. It is PacifiCorp's assumption that the Project boundary under the new license will include the forebay access road and other appropriate Project features. PacifiCorp therefore treated existing features such as the forebay access road as though they are within the Project area in conducting the relicensing studies. Additional studies of resource conditions in the vicinity of the proposed tailrace were conducted.

The bypassed portion of the East Fork Wallowa River within and near the Project area is approximately 1.75 miles (2,800 m) long from the Project diversion dam to its confluence with the West Fork Wallowa River. Gradient in this reach is high, with the upper 1 mile (1,600 m) averaging 19 percent and the lower .75 mile (1,200 m) averaging 8.5 percent. Channel morphology within most of the upper reach is dominated mainly by steep bedrock, vertical waterfalls, and cascades over boulders; though the upper reaches are steep, the lower .5 mile (800 m) to the confluence with the West Fork is a shallower gradient consisting of numerous riffles and pools. Over the course of its length, the bypassed East Fork Wallowa River drops approximately 1,200 feet (365 m) from the dam to the confluence with the West Fork Wallowa River.

The East Fork Wallowa River is a snowmelt runoff stream. As such snow acts as an important flow regulator or storage mechanism, holding a significant proportion of the precipitation in the area during the winter and releasing it later in the year as it melts. Peak runoff occurs generally from May through mid-July, from melting snowpack. By late July, little snow is left in the Wallowa Mountains. Runoff recedes to low flows by August and September. Flows may increase in fall in response to autumn rains, but relatively low flows generally persist from late fall through winter due to freezing conditions in the contributing high-elevation watershed areas, which result in little or no direct runoff during this time.

As explained in the PAD (PacifiCorp 2011a), historic flow information for the Project area is largely confined to USGS stream flow data gathered at two locations in the Project vicinity over a 58-year period from October 1924 through September 1983. The two historic USGS gages were located in the Project tailrace (USGS Station 13324500) and in the East Fork one quarter mile (402 m) upstream of the confluence with the West Fork (USGS Station 13325000). The USGS also developed flow data for a third “reporting station” (USGS Station 13325001) that is a summation of data collected at the two gage sites. The data for the reporting station (USGS Station 13325001) represents the best data available for characterizing the hydrology of the East Fork in the Project vicinity.

Based on the 58-year period of record, average monthly minimum flows in the East Fork ranged from 7.7 cfs in March to 25.2 cfs in June, and average monthly maximum flows ranged from 14.6 cfs in March to 142.2 cfs in June. Average mean monthly flows in the East Fork ranged from 11 cfs in February and March to 61 cfs in June. During the period of record, monthly flows met or exceeded 10 cfs 90 percent of the time, 14 cfs 50 percent of the time, and 45 cfs 10 percent of the time.

Existing Project Operation

The Wallowa Falls Hydroelectric Project is operated as a run-of-the-river Project. The current license does not specify any daily/seasonal ramping rates, flushing flows, reservoir operations, or flood control operations. Following the installation of an automated control system in 1996 the Wallowa Falls plant is now designed for unmanned operation and is controlled by a programmable logic controller. The normal mode of operation is for the plant to be unattended. A local Project operator is located in Enterprise, Oregon and visits the Project on a monthly basis and as called out by PacifiCorp’s Hydro Control Center located in Ariel, Washington. The Hydro Control Center monitors the Project operations remotely and notifies the local operator when an issue arises. Prior to 1996 the Project was manually operated locally. In 1996, an automated control system was installed at the Project. The penstock pressure, generator load, forebay level, needle valve percent open position, generator stator temperature and front bearing temperature are all now monitored by the Supervisory Control and Data Acquisition (SCADA) system at the Wallowa Falls plant and are visible remotely to a Hydro Control Operator at the Hydro Control Center.

During most unit outage scenarios, the penstock headgate will remain open and the Project tailrace channel will remain watered up. Under all conditions of a forced unit outage (unit trip), a turbine needle valve will automatically close to a forty percent open position² and a deflector plate will engage to redirect the flow away from the turbine buckets and into the tailrace. The forty percent open position of the needle valve allows approximately 6 cfs of water to bypass the turbine and flow through the draft tube providing a continuous flow into the tailrace channel. As discussed above, an automated control system was installed at the Project in 1996 and the headgate control system was further modified in 2000. The normal mode of operation is for the plant to be unattended. The Programmable Logic Control (PLC) controls the shutdown relay on the generator unit. Fault shutdowns of the generating unit are automatic. However, there is no generator protection control or feedback control scheme on the penstock headgate in the PLC routine for the Wallowa Falls powerhouse. This means that switchyard trips or line frequency trips result in a generator unit trip but do not result in a headgate closure.

There are two conditions that will initiate a generator lockout, a headgate closure and the complete dewatering of the penstock and tailrace channel; loss of voltage to the gate control cable or a 'low penstock pressure' indication. As a result of the FERC mandated modifications, in 2000 a continuously energized solenoid valve was installed at the headgate and the powerhouse control system was modified to automatically close the headgate in the event that voltage is removed from the gate control cable. If voltage is removed from the cable due to a loss of power or damage to the wiring, the solenoid valve that operates the headgate is designed to release the oil from the cylinder whereby the weight of the headgate will cause it to drop to the closed position. The control system, as originally installed in 1996, will also automatically close the headgate in the event of a 'low penstock pressure' indication. A low penstock pressure indication would be the result of a penstock failure or a restricted inflow condition at the forebay intake caused by turbine outflow exceeding inflow. A pressure relay at the powerhouse senses any change in penstock pressure. If penstock pressure drops to approximately 430 pounds per square inch (psi), an alarm will be relayed to a Hydro Control Operator, located at the Hydro Control Center in Ariel Washington, who can make adjustments to correct a problem without a headgate closure. Any drop in penstock pressure below approximately 375 psi, such as a penstock rupture, triggers an automated signal to the headgate causing it to close and the unit to trip and lockout. In either of these scenarios, the headgate closes, the needle valve closes to a forty percent open position, the deflector plate engages, and the volume of the penstock drains through the generating unit over the course of approximately two hours, resulting in the dewatering of the Project tailrace. Additionally, debris in the needle valve, nozzle or damage to the turbine requires the headgate be closed to allow for clearing of debris or equipment repair.

The penstock pressure, generator load, forebay level, needle valve percent open position, generator stator temperature, and front bearing temperature are all monitored by the SCADA system at the powerhouse and are visible to a Hydro Control Operator at the PacifiCorp

² Based on local plant operator knowledge.

Hydro Control Center located in Ariel, Washington. Once the headgate at the forebay closes, it must be opened manually by a local operator at the forebay.

PacifiCorp has reviewed its records of forced outages for the Wallowa Falls generating unit for the period of March 1, 1986 through July 30, 2011. The results of that review were provided to the FERC in a letter dated August 8, 2011 titled Wallowa Falls Hydroelectric Project Outage Report from 3/1/1986 through 7/31/2011 (PacifiCorp, 2011b). All forced outages greater than fifteen minutes were reported. The report provides each forced outage start date and time, the cause of the outage, an explanation of what occurred, and the outage end date and time. As explained above, under all generating unit trip conditions, with the exception of a loss of voltage to the headgate control cable, ‘low penstock pressure indication’ or an unanticipated malfunction at the headgate (e.g. lightning strike), water continues to flow, at approximately 6 cfs, past the turbine into the powerhouse tailrace channel. Any forced outages, and their durations, that resulted in a headgate closure are reported. Once the headgate closes at the forebay, it takes approximately two hours for the tailrace channel to completely dewater, and it will remain dewatered until the headgate is manually opened and the unit brought back online. Since the headgate control modifications became functional in 2000, approximately 31 headgate closures have been recorded as of 7/31/2011 due to forced outages.

Annual Project maintenance is routinely conducted between June and September each year and involves vegetation management on Project lands, erosion control or road maintenance activities and as-needed maintenance on the water conveyance system and generating unit. The timing and scope of annual maintenance activities are coordinated with the Wallowa-Whitman National Forest as provided in the Special-Use Permit issued for the Project by the U.S. Department of Agriculture, Forest Service (Forest Service). Throughout the history of the hydroelectric Project native sediment has been routinely flushed past the Wallowa Falls dam during high runoff events and routine forebay flushes. Forebay flushes have historically occurred during annual maintenance, usually in the months of July or August during low flow conditions so as to allow the forebay to completely drain via the low level sluiceway pipe.

Proposed Project Facilities

Tailrace Reroute

PacifiCorp proposes to modify the Project tailrace by re-routing it from its current configuration discharging into the West Fork Wallowa River by constructing a buried 30-inch (76.2 cm) diameter, approximately 1,000-foot long (305 m), pipe discharging into the bypassed reach of the East Fork Wallowa River. Four conceptual design drawings of the tailrace reroute, including the intake and outfall structures, are provided in Volume III, Appendix C. The new tailrace pipeline will convey the full powerhouse discharge, from the existing concrete lined powerhouse tailrace to the East Fork of the Wallowa River. The conveyance pipeline will consist of a reinforced concrete intake structure, buried pipeline, and reinforced concrete outfall structure. The intake structure will include an isolation gate at the pipeline entrance and a water level indicator connected to the existing forebay headgate

control system. In the event the pipe intake becomes clogged and or begins to flood, the level indicator would send an alarm signal to the headgate control closing it and stopping flow down the penstock.

The outfall structure will include a velocity barrier which meets the requirements of Section 5.4 – Velocity Barriers in the 2011 NMFS Anadromous Salmonid Passage Facility Design (NMFS 2011) to prevent all fish species and life stages from entering the pipeline. The barrier structure will be designed to meet NMFS criteria at flows up to the ordinary high water elevation. During higher flows fish are seeking refuge and do not typically migrate. Fish exclusion specific to the species and life stages present during high flows will be evaluated during the final design. The structure will be designed for a minimum drop of 3-feet, 6-inches (1.06 meters). The outfall structure will discharge into an energy dissipation channel consisting of boulders, logs and/or woody debris to reduce erosion and scour in the East Fork Wallowa River side-channel and main channel habitats. The riprap is anticipated to have a maximum size of 12-inches, but the final size and details will be determined during final design. It is anticipated that the hydraulic energy can be dissipated in a newly constructed channel (15-25 feet long), although the improvements may extend into the lower reach of the existing side channel. No work is anticipated in the main channel.

Once the tailrace re-route pipeline is constructed and put into operation, the existing tailrace channels, which discharge to the West Fork Wallowa River, will no longer be needed for hydroelectric operations. The main tailrace channel currently located on the south side of the campground road will be retained to provide storm-water management and drainage in the area. The braided tailrace side channels on the north side of the campground road will be reclaimed and restored to match surrounding contours.

Relocate Gage for Project Flow Monitoring

PacifiCorp proposes to install a new and improved gage to monitor instream flows in the East Fork bypassed reach between the Project Diversion dam and the proposed new tailrace discharge location. The data obtained from the new gage will provide verification that proposed modified instream flow releases to the East Fork bypassed reach are being implemented as planned.

PacifiCorp currently maintains a gage just downstream from the Project Diversion dam that serves as the existing compliance point for monitoring instream flow releases to the East Fork. The new gage will be located in the East Fork bypassed reach approximately 0.7 mi downstream of the Project Diversion dam near the existing forebay access road bridge site (see Volume IV, Appendix A for a map showing the new gage location). Several attributes make this location advantageous and preferable, including that this location: (1) is above the migratory fish barrier and will not entail gage construction or operation in bull trout critical habitat; (2) avoids high-gradient turbulent channel areas where it would be difficult to construct and maintain a gage; (3) provides the most suitable channel geometry for gage installation and accuracy; (4) is easily accessible for efficient and timely maintenance of the gage and downloading of data; and (5) is adjacent to existing Project features and is within the proposed FERC Project boundary. .

The new gage will consist of a long-throated open flume installed in the channel. Long-throated open flumes have many advantages compared to other flow measuring devices, including that they are more accurate, have better technical performance, can be computer designed and calibrated to specific site conditions, and more effectively pass sediment and debris (Clemmens et al. 2001, Wahl et al. 2000). When installed, the long-throated open flume will provide a stable trapezoidal-shaped section of channel about 25-ft long and 20-ft wide. The open flume design includes a flat sill or crest that rises from the floor of the flume across the trapezoidal section. The flume's stable trapezoidal shape and crest allows flows passing through the flume to be controlled in a manner that allows flow discharge (in cfs) to be accurately quantified based on rating tables or hydraulic equations for flume structures. The ability to more effectively pass sediment and floating debris (e.g., woody debris) is a particularly important advantage of this type of flume for the East Fork bypassed reach.

Details of the design of the proposed flume are still being finalized. Conceptual design drawings of the proposed flume structure are provided in Volume III, Appendix C. The proposed flume structure will consist of dimensions that are specifically designed to site conditions and that will emphasize flow measurement accuracy. Flow measurement accuracy is particularly important at the lower end of the flow range to verify the proposed modified instream flow release to the East Fork bypassed reach of 4 cfs. The flume installation will include a stilling well fitted with a water level pressure transducer and datalogger for continuous (hourly) recording of water levels and flows.

Details of the construction and implementation of the proposed flume are still being determined. However, in general, construction and implementation activities for flume installation are expected to include (in order): equipment staging; site dewatering; excavation; construction of flume structure forms; concrete workings; backfilling of the completed flume structure; dewatering system removal; monitoring equipment installation (e.g., pressure transducer and datalogger); and post-construction site restoration. These construction and implementation activities will occur over an estimated 4 to 6-week period under low flow conditions.

The site dewatering activity will involve the temporary diversion of channel flows around the construction site. This temporary diversion will isolate the work area from flowing water, but will maintain flow to downstream portions of the stream during construction. The temporary diversion of channel flows will be accomplished by placing a temporary small cofferdam just upstream of the construction site to divert streamflow around the work area for a distance of about 150 ft or less. The cofferdam will be constructed of rock obtained from the immediate area, and the cofferdam's rock fill will be fitted with a gated pipe (of 18-in diameter or less) to capture and redirect the flows from upstream of and around the site.

The proposed flume will be composed of concrete that is cast in-place inside sealed formed structures until cured (approximately 3-5 days). The cofferdam-dewatering system will ensure that the flume site is isolated from contact with any flowing water during the construction of the forms and the process of pouring, finishing, and curing the concrete.

The extent of and amount of needed excavation is not known at this time. The flume installation will require some excavation to accommodate placement of the overall 25-ft long by 20-ft wide dimensions of the flume structure. It is expected that most excavation will involve cut-off walls surrounding the structure that will go down about 4 ft or to bedrock, whichever is first encountered. The cut-off walls are necessary to prevent erosion or undermining of the completed flume structure during high flows.

PacifiCorp or responsible contractors will obtain necessary approvals and permits for flume construction and implementation. PacifiCorp or responsible contractors will adhere to and implement the requirements of necessary approvals and permits, including (but not necessarily limited to) required or recommended measures or best management practices (BMPs) related to in-channel work, equipment use, materials handling, minimization of riparian and channel disturbance, sedimentation and erosion control, and post-construction site restoration.

Proposed Project Boundary

PacifiCorp proposes to revise the Project boundary to include the proposed tailrace alignment and other appropriate Project features that are not in the current boundary such as the Royal Purple diversion and forebay access road. The proposed Project boundary occupies 8 acres (3.2 ha) of private land owned by PacifiCorp and 12.5 acres (5 h) of federal land managed by the Wallowa-Whitman National Forest. Maps showing the current and proposed Project boundary are provided in Volume I, Exhibit G and Volume III, Appendix A.

Proposed Project Operation

The Project would continue to be operated in run-of-river mode during all times of generation. The automated control system equipment would be set to divert no more than PacifiCorp's water right of 16 cfs, from the East Fork Wallowa River.

PacifiCorp will continue to operate the Wallowa Falls Hydroelectric powerhouse with the current tailrace configuration until June following the third anniversary of FERC license issuance. During this time, PacifiCorp will design, permit and construct the proposed tailrace re-route pipeline project. Although PacifiCorp plans to construct the tailrace reroute pipeline and associated intake and outfall structures between June and September of the third year following license issuance, to minimize effects to water quality and aquatic species, the pipeline will not be put into operation until the seasonal high-flow period (June) following construction completion.

During the three-year 'interim operations' period, when the current tailrace configuration will be used, PacifiCorp will continue to conduct a fish salvage of all tailrace channels anytime there is a planned or unplanned dewatering of the tailrace. As described in Section 2.1.3 there are limited operational scenarios under which the tailrace channels become completely dewatered. To further protect bull trout and kokanee, a fish exclusion weir will be installed

annually prior to September 1, at the confluence of the tailrace with the West Fork Wallowa River to prevent fish spawning in the tailrace channels. A fish salvage of the tailrace channels will be completed prior to installation to ensure no fish are stranded in the tailrace behind the weir. The weir will be left in place through November 15, and will be monitored twice per week for the duration of installation period to assure performance. In the event that a fish exclusion weir is not installed in a given year, the tailrace channels will be dewatered and generation will cease between September 1, and November 15, to prevent fish spawning in the tailrace channels. Prior to any shutdown, a fish salvage of the tailrace channels will be conducted.

Beginning in June following the third anniversary of license issuance, the proposed tailrace reroute pipeline will be used for the discharge of all generation flows to the East Fork Wallowa River under normal operating conditions. While it is technically possible for the reroute intake structure or pipe to become clogged with ice or debris, an operational failure or emergency situation of this nature is very unlikely and is expected to occur 0-to-1 times in the new license period.

To address operational failures or emergency situations, a water level indicator will be installed in the tailrace reroute collection basin that is connected to the existing forebay headgate control system. In the event the pipe intake became clogged, the tailrace level indicator would send an alarm signal to the headgate control closing it and stopping any flooding or damage to the generation equipment, powerhouse, and its immediate environment. This system would eliminate the need for the emergency spillway channel that was described in the Preliminary Licensing Proposal.

Sediment Management Program

It is necessary to flush accumulated native sediment from the Wallowa Falls Hydroelectric Project forebay to prevent damage to the hydroelectric generating unit and continue operation of the Project. PacifiCorp proposes to modify the historic practice of flushing entrained native sediment from the forebay during the summer low-flow period to flushing sediment from the forebay during spring-runoff in the month of June. Annual forebay flushing would result in the removal of accumulated sediment from the forebay and the mobilization and transport of that sediment into the bypassed reach of the East Fork Wallowa River. Based on a volumetric survey of native sediment entrained in the forebay in August 2012, conducted by Haner, Ross and Sporseen, P.C, approximately 250 to 500 cubic yards of native material would be flushed annually.

Sediment Management Schedule and Timing

Sediment would be flushed routinely, likely annually, from the Project forebay during the month of June when seasonal high-flows would easily transport fine sediment through the bypassed reach. June is also the period identified as having the least potential impact to fish, as both kokanee and bull trout fry have emerged from the gravel and it is well before the fall spawning period for both species.

There is no real-time stream gaging or communications capabilities at the Project, and given the remoteness of the Project, PacifiCorp does not have the ability to schedule forebay flushing in response to real time flows. However, it is PacifiCorp's intent to flush prior to or during the annual high flow period in the East Fork, which historically occurs in June. To reduce uncertainty around the adequacy of June flows, we propose a threshold flow, above which mobilization of small (<2 mm) particles would be expected to occur within the East Fork Wallowa River bypassed reach. Based on the analysis provided in Section 3.3.1 of Exhibit E, PacifiCorp proposes to conduct flushing during June, as early in the high flow season (to allow subsequent peak flows to transport sediment) as possible and not at flows less than 15 cfs, and to the extent possible at flows above 20 cfs³.

If the forebay is not flushed during a given year due to low flows, site access issues or operational or maintenance issues it would not be flushed until June of the following year.

Sediment Management Flushing Method

Sediment retained in the Project forebay would be flushed through or over the dam, via the low-level outlet pipe or the dam spillway respectively, into the bypassed reach of the East Fork Wallowa River. To facilitate flushing, the penstock intake gate would be closed and the slide gate on the low-level pipe at the base of the diversion dam would be fully opened. Project inflow, up to the hydraulic capacity of the pipe, would pass through the low-level outlet pipe. Project inflows in excess of the hydraulic capacity of the low-level outlet pipe would spill over the dam. Several people operating hydraulic pumps (fire pumps) with hoses affixed to rigid poles would be stationed around the perimeter of the forebay. The pump hoses would be used to hydraulically mobilize and suspend forebay sediments in the water column to facilitate sediment transport through the low-level outlet pipe or over the dam into the bypassed reach. Flushing would not exceed 72 hours. At the end of the flushing period, the low-level outlet pipe slide gate would be closed and the penstock gate re-opened to resume generation and normal Project operation.

Sediment Management Monitoring

It is expected that there will be short-term increases in turbidity during forebay flushing; PacifiCorp would monitor turbidity as described in the Turbidity Monitoring Plan for Forebay Maintenance Flushing included in Volume III, Appendix D.

Project Costs, Benefits, and Power Values

The information below includes the following: (1) an estimate of the net power benefit of the Project for two licensing alternatives, no-action (existing Project) and PacifiCorp's proposed Project; and (2) an estimate of the cost of individual measures proposed for the protection, mitigation and enhancement of environmental resources affected by the Project.

To determine the net power benefit for the proposed Project, we compare Project costs to the value of the power output as represented by the cost of a likely alternative source of power in the region. A positive net annual power benefit indicates that the Project power

³ Average flows in the East Fork in June are approximately 60 cfs.

costs less than the current cost of alternative generation resources and a negative net annual benefit indicates that Project power costs more than the current cost of alternative generation resources. This estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

Power and Economic Benefits of the Project

Table 1 summarizes the assumptions and economic information used in the analysis. This information was derived from PacifiCorp internal records. Cost items common to both alternatives include: taxes and insurance costs; net investment (the total investment in power plant facilities remaining to be depreciated); estimated future capital investment required to maintain and extend the life of plant equipment and facilities; relicensing costs; normal operation and maintenance costs, and Commission fees.

Table 1. Parameters for economic analysis of the Wallowa Falls Project (Source: PacifiCorp).

Parameter	Value	
Period of analysis (years)	42	
Taxes and insurance (%) (a)	NA	
Federal income tax rate	37.951%	
Levy rate	1.06%	
Assessment rate	100%	
Insurance	NA	
Net investment, \$ (b)	\$532,000	
Future major capital cost, \$ (c)	\$3,296,000	
Relicensing cost, \$ (d)	\$2,373,000	
Operation and maintenance, \$/year (e)	\$94,000	
Commission fees, \$/year (f)	\$199	
Energy value current Project (MWh)	Peak - 0.5 cfs Minimum Instream Release	Off-Peak - 0.5 cfs Minimum Instream Release
January	435	242
February	429	239
March	441	246
April	496	276
May	609	339
June	780	434
July	630	351
August	613	341
September	657	366
October	604	336
November	541	301
December	583	325
Capacity value (\$/MW-year)	NA	
Interest rate (g)	7.57%	
Discount rate	6.61%	
a PacifiCorp is self-insured.		

- b Net investment is the depreciated project investment allocated to power purposes.
- c Future major capital costs include major plant rehabilitation to maintain present-day capability scheduled between 2016 and 2046 and are expressed as a present value.
- d Relicensing costs include the administrative, legal/study, and other expenses to date.
- e Existing plant operation and maintenance includes operation and maintenance related to environmental measures associated with the current license.
- f Commission fees are based on statements of annual charges received from the Commission for federal lands and administrative charges based on authorized capacity.
- g Based on PacifiCorp's weighted average cost of capital.

As currently operated, the 1,100 kW Wallowa Falls Project generates an average of 6,817,000 kWh annually and has an estimated dependable capacity of 505 kW. Table 4-1 includes monthly values for generation under high-load period (peak) and low-load period (off-peak) conditions. These values represent PacifiCorp's marginal cost of generation as determined by system load and generation resource simulation. They reflect the cost of a mixture of generation resources available to PacifiCorp. We use monthly variable peak and off-peak energy values for our analysis in order to estimate the cost (in lost energy value) of minimum in-stream flow measures.

Comparison of Alternatives

Table 2 summarizes the annual cost, power benefits, and annual net benefits for the two alternatives considered in this Exhibit E: no-action, and PacifiCorp's proposal.

Table 2. Summary of the annual cost, power benefits and annual net benefits for the no-action alternative and proposed Wallowa Falls Project.

	No Action	Proposed Project
Installed Capacity (kW)	1,100	1,100
Annual Generation (kWh)	6,817,000	5,317,000 (assumes a minimum in-stream release of 4 cfs)
Annual Power Value (\$/MWh and mills/kWh)	\$58.49	\$58.49
Annual cost (\$/MWh and mills/kWh)	\$67.71	\$123.46
Annual net benefit/(Cost) (\$/MWh and mills/kWh)	\$(9.22)	\$(64.97)

No-action Alternative

Under the no-action alternative, the project would continue to operate as it does now. The project generates an average of 6,817 MWh of electricity annually. The levelized annual power value of the project under the no-action alternative would be \$399,000 (about \$58.49

per MWh). The levelized annual cost of producing this power would be \$466,000 (about \$68.41 per MWh), resulting in a levelized annual net cost of \$67,000 (about \$9.92 per MWh). In other words, the project produces energy at a cost that is slightly more than that of currently available alternative generation by \$9.92 MWh.

PacifiCorp's Proposed Project

PacifiCorp proposes to continue operating the existing equipment in a run-of river mode. The year-round minimum in-stream flow as measured at the compliance gage will be increased from 0.5 cfs to 4 cfs. Under the proposed minimum in-stream flow of 4 cfs, the Project's installed capacity would decrease to 255 kW, a decrease of nearly 50 percent (250 kW) from the current installed capacity of 505 kW. In addition, PacifiCorp proposes to reroute the Project tailrace from its current location discharging into the West Fork Wallowa River to the East Fork Wallowa River. The total cost of the tailrace reroute is estimated at \$1,500,000. The total cost of implementing all of the measures proposed under a new license is \$9,112,000 including capital, O&M and lost generation. The total relicensing process cost is \$2,373,000. The proposed project would have an average annual generation of 5,325,000 kWh. As proposed by PacifiCorp, the Wallowa Falls Project would have an average annual power value of \$58.49 per MWh, an annual production cost (levelized over the 42-year period of analysis) of \$123.46 per MWh, and an annual net cost of \$64.97 per MWh. In other words, the project would produce energy at a cost that is \$64.97 per MWh more than that of currently available alternative generation. PacifiCorp is requesting a license term of 50 years to allow maximum cost recovery and provide favorable customer benefits over Project decommissioning.

Cost of Environmental Measures

Table 3 gives the cost of each of the environmental enhancement measures proposed. We convert all costs to equal annual (levelized) values over a 40-year license period to give a uniform basis for comparing the benefits of a particular measure to its cost. All costs have been rounded to the nearest \$1,000 with the exception of levelized annual costs.

Table 3. Cost of environmental mitigation and enhancement measures considered in assessing the environmental effects of continuing to operate the Wallowa Falls Hydroelectric Project.

Enhancement/Mitigation Measure	Entities	Capital Costs	Operation and Maintenance, or annual cost item	Levelized annual cost of item
Proposed project facilities				
Tailrace Reroute to East Fork Wallowa River	PacifiCorp	\$1,723,000	\$1,000 annually, included in \$94,000 annual O&M costs	\$157,407
New in-stream flow compliance gage located on bypassed reach at forebay access road bridge	PacifiCorp	\$230,000	\$1,000 annually, Included in \$94,000 annual O&M costs	\$22,975
Replace flow monitoring equipment every 10 years	PacifiCorp	\$120,000	\$0	\$3,530

(4x) at \$30,000 per occurrence				
Proposed environmental measures				
Construction of proposed facilities				
All proposed environmental measures described in Exhibit E Section 2.2.3.1 are included in the total capital costs of \$1,723,000 identified above for the tailrace reroute and the \$230,000 identified for the in-stream flow compliance gage.				
Operation				
Provide a year-round minimum in-stream flow of 4 cfs in the East Fork Wallowa River bypassed reach	PacifiCorp	\$260,000 Modify existing low level outlet to provide MIF	\$87,287 Annual lost generation value	\$111,778
Implement a sediment management program for forebay flushing of approx. 250 to 500 cubic yards of native sediment	PacifiCorp	\$257,000 Modify existing low level outlet to operate under hydraulic head	\$5,000 annually	\$31,228
Conduct Geologic Hazard Assessment every 5 years (9x) at \$25,000 per occurrence	PacifiCorp	\$0	\$225,000 total	\$7,922
Geology, sediment and substrate				
BMPs for sediment and erosion control during tailrace reroute construction	PacifiCorp	\$100,000 Included in the total capital costs identified above for the tailrace reroute	NA	\$10,441
Implement a sediment management program for forebay flushing of approx. 250 to 500 cubic yards of native sediment	PacifiCorp	Provided in operation above	Provided in operation above	Provided in operation above
Conduct Geologic Hazard Assessment every 5 years (9x) at \$25,000 per occurrence	PacifiCorp	\$0	Provided in operation above	Provided in operation above
Road Management Plan	PacifiCorp	\$8,000 Included in total relicensing process costs	\$1,000 annually, Included in \$94,000 annual O&M costs	\$2,243
Water resources				
BMPs for sediment and erosion control during tailrace reroute construction	PacifiCorp	Provided in geology, sediment and substrate above	Provided in geology, sediment and substrate above	Provided in geology, sediment and substrate above
Schedule commissioning of tailrace reroute during high flows	PacifiCorp	\$0	NA	NA
Provide a year-round minimum in-stream flow of 4 cfs in the East Fork	PacifiCorp	Provided in operation above	Provided in operation above	Provided in operation above

Wallowa River bypassed reach				
Instream flow compliance monitoring for bypassed reach	PacifiCorp	\$0	\$10,000 annually	\$13,475
Implement a sediment management program for forebay flushing of approx. 250 to 500 cubic yards of native sediment	PacifiCorp	Provided in operation above	Provided in operation above	Provided in operation above
Implement a Turbidity Monitoring Plan for forebay flushing	PacifiCorp	\$8,000 Included in total relicensing process costs	\$5,000 annually	\$7,633
Fish and aquatic resources				
BMPs for sediment and erosion control during tailrace reroute construction	PacifiCorp	Provided in geology, sediment and substrate above	Provided in geology, sediment and substrate above	Provided in geology, sediment and substrate above
Tailrace Reroute to East Fork Wallowa River	PacifiCorp	provided in proposed project facilities above	provided in proposed project facilities above	provided in proposed project facilities above
Schedule commissioning of tailrace reroute during high flows	PacifiCorp	\$0	NA	NA
Conduct fish salvages as needed during 3 year interim operations period under a new license	PacifiCorp	NA	\$10,000 each year for first 3 years under a new license	\$2,041
Install fish exclusion weir in existing tailrace during bull trout spawning for 3 year interim operations period under a new license	PacifiCorp	NA	\$10,000 each year for first 3 years under a new license	\$2,041
Provide a year-round minimum in-stream flow of 4 cfs in the East Fork Wallowa River bypassed reach	PacifiCorp	provided in operation above	provided in operation above	provided in operation above
In-stream flow compliance monitoring for bypassed reach		provided in water resources above	provided in water resources above	provided in water resources above
Implement a sediment management program for forebay flushing of approx. 250 to 500 cubic yards of native sediment	PacifiCorp	provided in operation above	provided in operation above	provided in operation above
Comply with Oregon State Aquatic Invasive Species Prevention Program Requirements	PacifiCorp	NA	\$1,000 annually for all fish, invertebrate, and botanical species	\$1,347
Wildlife and terrestrial resources				
Noxious weed management plan	PacifiCorp	\$8,000 included in	\$10,000 for first two years, then \$7,000	\$10,629

		relicensing process costs	annually	
Vegetation Management plan	PacifiCorp	\$5,000 included in relicensing process costs	\$15,000 for first two years, then \$10,000 annually	\$14,657
BMPs for sediment and erosion control during tailrace reroute construction	PacifiCorp	Provided in geology, sediment and substrate above	Provided in geology, sediment and substrate above	Provided in geology, sediment and substrate above
Permit & mitigate wetland loss at tailrace reroute	PacifiCorp	\$100,000 included in the total capital costs identified above for the tailrace reroute	\$0	\$9,523
Implement a sediment management program for forebay flushing of approx. 250 to 500 cubic yards of native sediment	PacifiCorp	Provided in operation above	Provided in operation above	Provided in operation above
Comply with Oregon State Aquatic Invasive Species Prevention Program Requirements	PacifiCorp	NA	Provided in fish and aquatic resources above	Provided in fish and aquatic resources above
Recreation resources				
Annual Coordination with Forest Service and OPRD	PacifiCorp	\$0	\$1,000 annually	\$1,347
Campground Entry Sign	PacifiCorp	\$3,000	\$1,000 annually	\$1,347
Install new campground host pad (300 sf), with full hook-up	PacifiCorp	\$23,000	\$1,000 annually	\$3,122
Install new 2 room ADA accessible flush toilet unit, sewage pump facilities, site preparation, electricity, water	PacifiCorp	\$140,000	\$3,000 annually	\$16,316
Install campsite identification signs	PacifiCorp	\$2,000	\$0	\$195
Upgrade and restore campsite pads (one site will be ADA accessible)	PacifiCorp	\$12,000	\$1,000 annually	\$2,172
Remove logs and stumps in campground	PacifiCorp	\$4,000	\$0	\$372
Interpretive 3-panel sign near powerhouse	PacifiCorp	\$22,000	\$0	\$1,952
Single panel trailhead sign with wilderness registration station: relocated away from powerhouse	PacifiCorp	\$14,000	\$0	\$1,242
New trail from relocated trailhead to existing Forest Service trail system	PacifiCorp	\$6,000	\$1,000 annually	\$1,614
Replace cable gate near powerhouse with a metal	PacifiCorp	\$6,000	\$0s	\$532

pipe-gate.				
New access trail from campground west to overlook ridge and reclaim user created trails in area	PacifiCorp	\$6,000	\$1,000 annually	\$1,614
New single panel trailhead sign at campground with wilderness registration station	PacifiCorp	\$14,000	\$1,000 annually	\$2,324
Install six metal directional signs along forebay access road	PacifiCorp	\$15,000	\$0	\$1,331
Improve drainage at access road-East Fork connector trail by installing a turnpike drainage structure per WWNF standards	PacifiCorp	\$3,000	\$0	\$266
West side of forebay – single panel informational sign at East Fork Trail	PacifiCorp	\$14,000	\$0	\$1,302
Aesthetic Resources				
Intake structure – wood shakes attached to the exterior and roof		\$0	\$2,000 in first license year only	\$142
East Side of forebay – remove and reorganize existing PacifiCorp material storage area near storage shed	PacifiCorp	\$0	\$2,000 in first license year only	\$142
Powerhouse – replace all fencing with black vinyl chain-link fencing. Linear footage will be reduced due to tailrace reroute	PacifiCorp	\$23,000	\$1,000 annually, included in \$94,000 annual O&M costs	\$3,184
Powerhouse – landscape approximately 2,500 sq. ft. between powerhouse and highway terminus.	PacifiCorp	\$20,000	\$2,000 each year for the first two years to get plants established	\$2,018
Powerhouse – recoat or replace roof with dark, non-reflective color (at time of maintenance need)	PacifiCorp	\$0	\$18,000 one-time maintenance action in license-year 5	\$1,069
Powerhouse – recoat or replace siding with dark or neutral color (at time of maintenance need)	PacifiCorp	\$0	\$40,000 one-time maintenance action in license-year 10	\$1,896
Upper penstock trestle – paint penstock and stain trestle consistent neutral color	PacifiCorp	\$0	\$30,000 one-time maintenance action in license-year 2	\$2,040
Cultural Resources				
Implement an unanticipated discovery plan for cultural	PacifiCorp	\$0 included in all	\$1,000 annually, Included in \$94,000	\$1,347

resources and human remains		capital project construction protocols	annual O&M costs	
Monitoring of tailrace reroute and major recreation facility construction	PacifiCorp	\$57,000	NA	\$5,180

Measures to Ensure Safe Management, Operation, and Maintenance of the Project

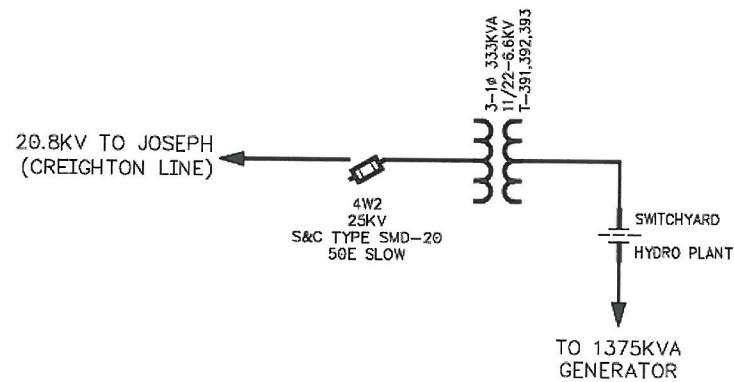
The Project has been operating for more than 27 years under the existing license. During this time, Commission staff has conducted periodic environmental compliance and operational safety inspections focused on ensuring that Project operations are within the terms of the license, and that the condition of the Project structures and routine maintenance conducted continue to ensure the safety of the public. As part of the relicensing process, Commission staff will continue to evaluate the adequacy of proposed Project facility changes under a new license. Special articles may be included in a new license issued, as appropriate. Commission staff would continue to inspect the Project during the new license term to assure continued adherence to Commission-approved plans and specifications, special license articles relating to construction, operation and maintenance, and accepted engineering practices and procedures. The following proposed measures will ensure the safe management, operation and maintenance of the Project.

- Incorporate a routine (5 year interval) geologic hazard assessment into the Dam Safety Surveillance and Monitoring Plan (DSSMP) for the Wallowa Falls Project. The assessment will be performed by a qualified geotechnical engineer and/or engineering geologist and will evaluate the condition of known hazards and identify any new hazards that may have developed. The assessment will be submitted to the Division of Dam Safety and Inspections and will be accompanied by a plan and schedule to address any hazards that represent a tangible threat to Project features and/or public safety.
- Implement a sediment management program for forebay maintenance flushing.
- Incorporate a routine access road inspection and maintenance plan for PacifiCorp maintained road features within the Project Boundary.
- Implement a Vegetation Management Plan to minimize the potential risk that hazard trees and other vegetation that may pose to facilities, operations, public safety, or personnel.

Detailed Single-Line Electrical Diagram

A detailed single-line electrical diagram is provided in Figure 1 below.

Figure 1. Wallowa Falls Hydro Plant Schematic One Line Drawing.



PROJ#	326878		
ER#			
DATE	2/10/11		
ENG	DES		
DR D. WOLFF	CH	BIW	

APPROVAL

CHRIS A. HALLER

WALLOWA FALLS
SCHEMATIC
ONE LINE DIAGRAM
(PARTIAL)



PACIFICORP ENERGY
A POWER COMPANY

HYDRO

SCALE: NONE

SHEET

PB-15246

REV.	0
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[illegible]

References

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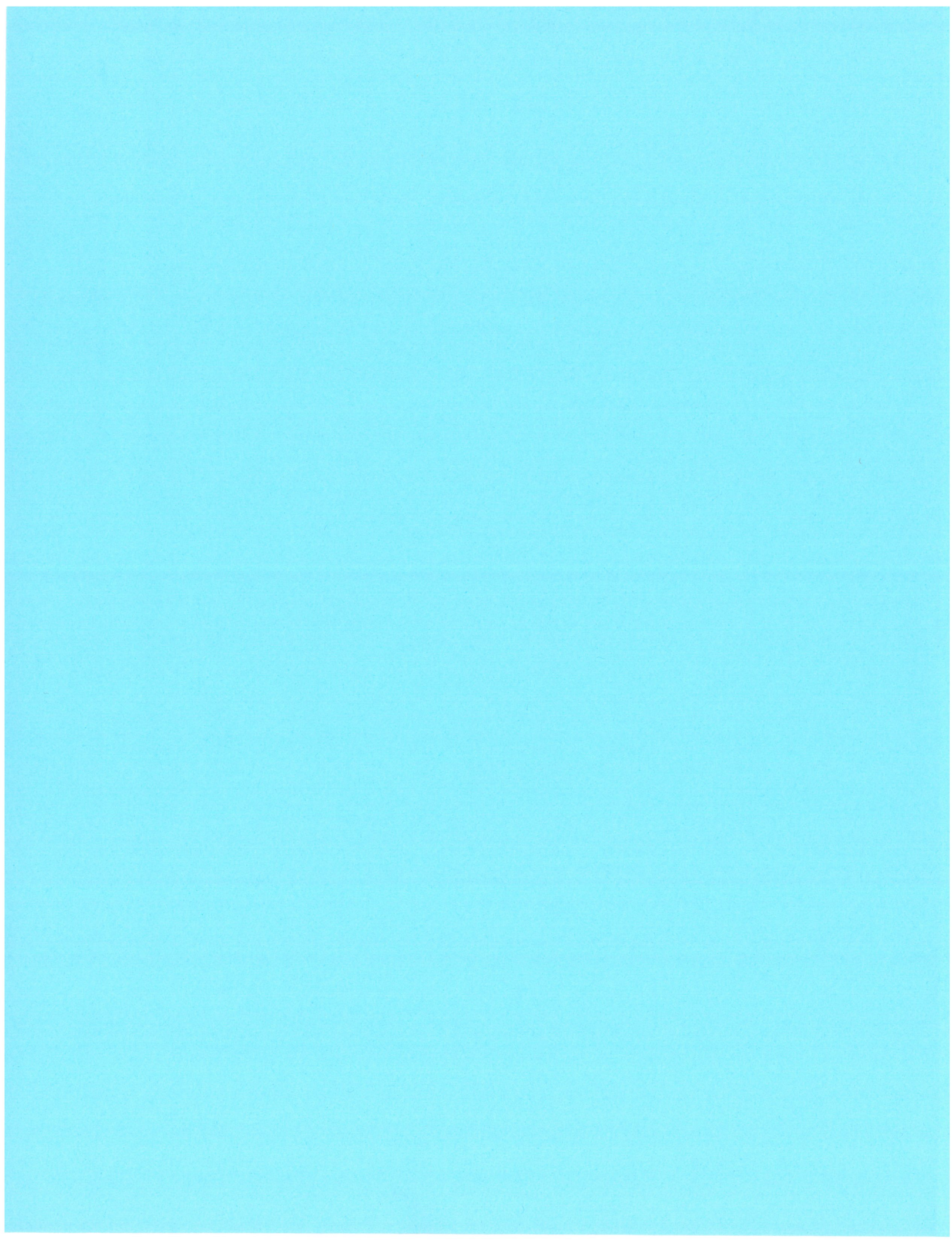


EXHIBIT G – PROJECT MAPS

(see link below)

[http://www.pacificorp.com/content/dam/pacificorp/doc/
Energy_Sources/Hydro/Hydro_Licensing/Wallowa%20
Falls/WF_ExhG_newProjectBoundary.pdf](http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Hydro/Hydro_Licensing/Wallowa%20Falls/WF_ExhG_newProjectBoundary.pdf)

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

PacifiCorp Energy

Project No. 308

DESCRIPTION OF PROPOSED EXHIBIT G REVISIONS
WALLOWA FALLS HYDROELECTRIC PROJECT (FERC NO. 308)
FINAL LICENSE APPLICATION

(February 28, 2014)

As part of the application for new license for the Wallow Falls Project (FERC No. 308), PacifiCorp is proposing to revise the current Exhibit G (Exhibit G-1, Project Area and Boundary, FERC drawing no. P-308-14) and modify the Project boundary to include proposed facilities and to more closely enclose only those lands necessary for the operation of the Project. Proposed substantive changes are discussed below.

Both the current and revised Exhibit G drawings are on a single sheet but the revised Exhibit G displays the Project boundary contiguously rather than in two parts used in the current Exhibit G.

The revised Project boundary includes all principal Project works necessary for operation and maintenance of the Project. It also incorporates the alignment of the proposed tailrace pipeline that discharges Project flows into the East Fork Wallowa River.

Compared to the current boundary, the revised Project boundary is narrower near the Project dam and around the powerhouse but widens to include the Pacific Park Campground. Along the penstock, the boundary was slightly widened to incorporate the Project forebay access road.

The revised Project boundary is generally described by a series of 50-ft wide offsets from the centerline of continuous linear Project features (e.g., penstock, tailrace pipeline), 50-ft offsets from non-continuous Project features (e.g., dam, powerhouse, substation), and 15-ft wide offsets from the centerline of Project access roads. North of the powerhouse, the boundary encloses the Pacific Park Campground which is bounded by the southeast channel of the West Fork Wallowa River, the PacifiCorp property line, and the boundary of a lease to Oregon Parks and Recreation Department. At the south end of the Project, the boundary

includes a 50-ft buffer area around the Project facilities including the Royal Purple diversion dam, Wallowa Falls dam, forebay, laydown/storage area, and penstock. The revised boundary along the penstock includes a 50-ft wide corridor on each side of the penstock but occasionally follows the outer edge of the access road in locations where the access road diverges from the penstock. The access road generally remains close to the penstock alignment except at the diversion dam and also at the north end of the Project where it is located on PacifiCorp property.

The revised Project boundary includes approximately 28.3 acres of land. Approximately 12.7 acres (rounded from 12.68) of federal land is within the revised boundary. This represents a 0.6-acre increase of federal lands within the proposed boundary compared to the 12.1 acres of federal lands in the current boundary. None of the federal land within the revised Project boundary is occupied by Project transmission lines.

Federal Lands in the Project Boundary				
PLSS Township and Range, W.M.	PLSS Section	Quarter-Quarter Section	Acres	Agency Jurisdiction
T3S, R45E	32	NE,NE	1.39	USDA-FS
T3S, R45E	33	NW,NW	2.63	USDA-FS
T3S, R45E	33	SW,NW	3.52	USDA-FS
T3S, R45E	33	NW,SW	4.56	USDA-FS
T3S, R45E	33	NE,SW	0.55	USDA-FS
T3S, R45E	33	SE,SW	0.04	USDA-FS
		Total Acres	12.68	