

**Review of Low Impact Hydropower Institute Application
for
Low Impact Hydropower Re-Certification
Falls Creek Hydroelectric Project FERC #6661
Prepared by Fred Ayer
Executive Director, LIHI**

Introduction

This report reviews the application submitted by Frontier Technology, Inc. for Low Impact Hydropower Re-Certification for the Falls Creek Hydroelectric Project (FERC Exemption No. 6661). The Project is located on Falls Creek, a tributary to the South Santiam River, in the Willamette National Forest, Oregon.

Because the project is located on Forest Service lands, it also has a USDA Forest Service Special Use Permit (Permit # FSM 2714). In accordance with this Permit, the area occupied and permitted to occupy is 6.5 acres. The permit is issued for the purpose of operation and maintenance of the project's roads, diversion dam, penstock, powerhouse, self-contained toilet, antenna, and solar cells at the diversion.

The Project was originally certified as Low Impact on June 3, 2002. The current certification expires on June 3, 2007.

The Falls Creek Hydroelectric Project continues to meet all of the criteria to continue to be certified and therefore, I recommend recertification.

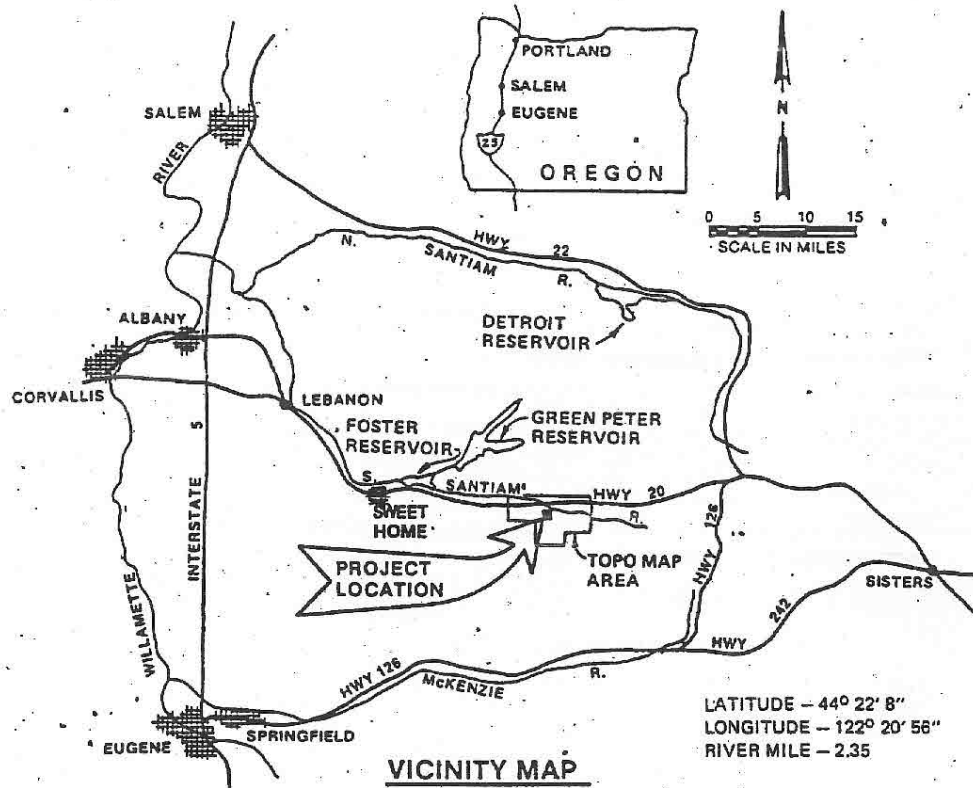
Facility Description

The Falls Creek Project is located 25 miles east of Sweet Home, Oregon (see maps on page 2-3) on lands owned by the U.S. Forest Service. The project is run-of-the-river, and uses only natural flows within Falls Creek for power generation. Power is delivered to PacifiCorp for distribution.

The Falls Creek project is a “run of river” facility, which means it uses whatever water is flowing in Falls Creek and does not hold or store it for later use. The project is sited to take advantage of the mountainous terrain—water is diverted from Falls Creek and funneled through a buried penstock that drops nearly one half a mile to the powerhouse below. Because of the natural steep drop in the Creek, salmon have never migrated up it, although trout are located in some of the pools, and a minimum instream flow is provided to protect that habitat. This “high head” facility has a capacity of 4.3 megawatts, and produces nearly 15 million kilowatt hours of electricity a year.

A 5-foot high diversion dam on Falls Creek located 2.3 miles upstream from the confluence with the South Santiam River creates a small pool (0.07 acres) from which the Facility diverts water

06974 (Falls Creek - Dam)

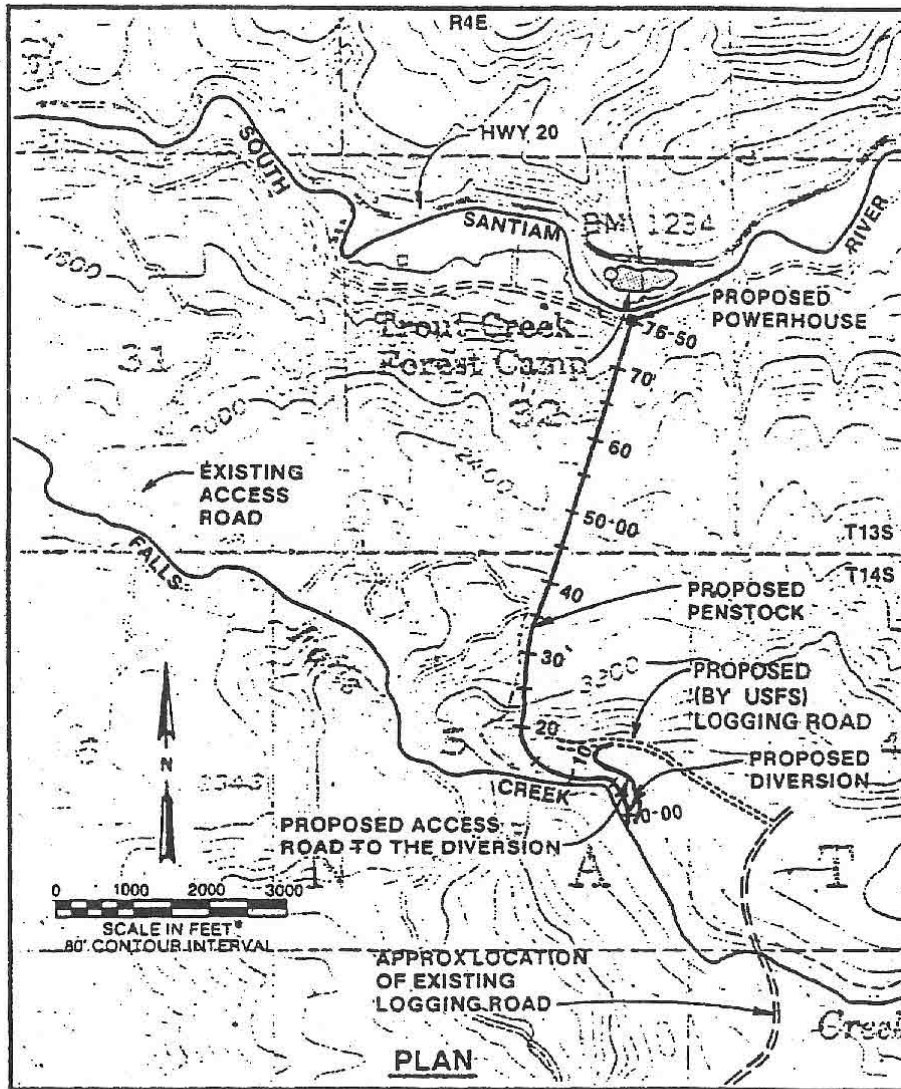


LOCATION POINT OF DIVERSION
N 2,200 feet, W 1,200 feet of SE corner of
Section 5 being within the NE 1/4 of the SE 1/4 of
Section 5, Township 14S, Range 4E, WM, in Linn County

Falls Creek Hydroelectric Project

IN: FALLS CREEK RIVER MILE: 2.35
NEAR: SWEET HOME
COUNTY: LINN
APPLICANT: GARY P. MARCUS
DATE: APRIL 11, 1983

004874 (Falls Creek - Dam)



Falls Creek Hydroelectric Project

IN: FALLS CREEK RIVER MILE: 2.35
NEAR: SWEET HOME
COUNTY: LINN
APPLICANT: GARY P. MARCUS
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into a penstock. Water is delivered to the powerhouse on the south bank of the South Santiam River through 7,380 feet of buried 30-, 24-, and 20-inch welded steel penstock. The water diverted through the powerhouse is discharged into the South Santiam River approximately 2 miles upstream of the confluence with Falls Creek where it naturally would have entered the river.

The Project draws approximately 26 cfs flow when flows are available (generally during winter rains and spring snowmelt). Natural flows during this time are typically 50 cfs, and can reach 200 cfs. The Project maintains 3 cfs in the channel at all times, and uses the summer months for routine and preventative maintenance.

The Falls Creek Hydroelectric Project has a head of 2,381 ft, and has one of the highest “Head-Pressures” in the Northwest. When the water reaches the powerhouse, a pressure of approximately 1,030 psi is created. The turbine generates 4.9 MW at full load. The actual plant output depends on the streamflow available for diversion. The turbine spear valves are opened or closed to regulate flows to the turbine based on signals from the point of diversion that indicate the amount of water availability.

The power plant operates using a GE Fanuc 90-30 PLC control system. Power is generated at 4,160 V, and then transformed to 20,800 V for transmission via PacifiCorp’s local distribution power lines. Power is sold to PacifiCorp under a 35-year operating agreement.

Resource agencies, both during the time of licensing and more recently, have commended the Falls Creek project for its compliance with agency recommendations. The FERC exemption incorporates all of the agencies’ most stringent recommendations and the facility makes a good faith effort to comply. FERC exemption status was granted to the Falls Creek Hydroelectric Project in 1983, and construction was completed in 1985.

Low Impact Certification Criteria

A. Flows:

Criteria

- 1) Is the facility in Compliance with Resource Agency Recommendations issued after December 31, 1986 regarding flow conditions for fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking conditions, and seasonal and episodic instream flow variations) for both the reach below the tailrace and all bypassed reaches?**

N/A

The Falls Creek Hydroelectric Project received its exemption prior to 12/31/86.

If N/A, go to A2.

- 2) **If there is no flow condition recommended by any Resource Agency for the Facility, or if the recommendation was issued prior to January 1, 1987, is the Facility in Compliance with a flow release schedule, both below the tailrace and in all bypassed reaches, that at a minimum meets Aquatic Base Flow standards or “good” habitat flow standards calculated using the Montana-Tennant method?**

NO.

If no, go to A3.

- 3) **If the Facility is unable to meet the flow standards in A.2., has the Applicant demonstrated, and obtained a letter from the relevant Resource Agency confirming that demonstration, that the flow conditions at the Facility are appropriately protective of fish, wildlife, and water quality?**

YES.

Letters attached to the original LIHI application and conversations with the resource agencies confirm the applicant has demonstrated that flow conditions at the Facility are protective of fish, wildlife, and water quality.

Falls Creek remains sensitive to the environmental effects of its activities. The facility continues to maintain a streamflow of at least one cubic foot per second continuously, as required by the Oregon Department of Fish and Wildlife (ODFW). Moreover, structural constraints of the project prevent it from operating at streamflows less than 3 cfs, thereby guaranteeing that at least this amount (if it is naturally flowing) will flow in the channel.

PASS.

B. Water Quality:

Criteria

1) **Is the Facility either:**

- a) **In compliance with all conditions issued pursuant to a Clean Water Act Section 401 water quality certification issued for the facility after December 31, 1986? Or**
- b) **In Compliance with the quantitative water quality standards established by the state that support designated uses pursuant to the federal Clean Water Act in the Facility area and in the downstream reach?**

YES.

The determination was made as part of the FERC application and approved as part of the exemption that the Facility would have no impact on water quality above or below the diversion.

The letter of support from Oregon Department of Environmental Quality (ODEQ) and conversations with resource agencies corroborates the compliance by the applicant with quantitative water quality standards.

If yes, go to B2.

- 2) Is the Facility area or the downstream reach currently identified by the state as not meeting water quality standards (including narrative and numeric criteria and designated uses) pursuant to Section 303(d) of the Clean Water Act?**

YES.

Although Falls Creek is not on the Clean Water Act 303(d) list, the South Santiam River (of which Falls Creek is a tributary) is listed for exceeding temperature criteria.

If yes, go to B3.

- 3) If the answer to question B.2. is yes, has there been a determination that the Facility is not a cause of that violation?**

YES.

The letter the applicant enclosed does not explicitly state that the Facility is not the cause of the violation. However, conversations with the ODEQ determined that current records indicate the Facility is not the cause of the violation.

PASS.

C. Fish Passage and Protection:

Criteria

- 1) Is the facility in compliance with Mandatory Fish Passage Prescriptions for upstream and downstream passage of anadromous and catadromous fish issued by Resource Agencies after December 31, 1986?**

N/A.

The Facility's exemption was granted prior to 1986 and therefore this criterion is not applicable. Furthermore, no mandatory fish passage prescriptions have been issued by resource agencies.

If N/A, go to C2.

- 2) Are there historic records of anadromous and/or catadromous fish movement through the facility area, but anadromous and/or catadromous fish do not presently move through the Facility area (e.g., because passage is blocked at a downstream dam or the fish run is extinct)?**
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NO.

If no, go to C3.

3) If, since December 31, 1986:

- a) **Resource Agencies have had the opportunity to issue, and considered issuing, a Mandatory Fish Passage Prescription for upstream and/or downstream passage of anadromous or catadromous fish (including delayed installation as described in C2a above), and**
- b) **The Resource Agencies declined to issue a Mandatory Fish Passage Prescription,**
- c) **Was a reason for the Resource Agencies' declining to issue a Mandatory Fish Passage Prescription one of the following: (1) the technological infeasibility of passage, (2) the absence of habitat upstream of the Facility due at least in part to inundation by the Facility impoundment, or (3) the anadromous or catadromous fish are no longer present in the Facility area and/or downstream reach due in whole or part to the presence of the Facility?**

NO

If no, go to C5.

5) Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream or downstream passage of riverine fish?

N/A.

No fish passage prescriptions for riverine fish have been issued.

If N/A, go to C6.

6) Is the facility in Compliance with Resource Agency Recommendations for Riverine, anadromous and catadromous fish entrainment protection, such as tailrace barriers?

YES.

At the time of construction, resource agencies recommended that a screen be installed in the tailrace to prevent fish from trying to swim into the tailrace pipe when the Facility was being constructed. A screen was installed and continues to be in use. No other recommendations have been issued.

PASS.

D. Watershed Protection:

Criteria:

- 1) Is the Facility in Compliance with Resource Agency Recommendations, or, if none, with license conditions, regarding protection, mitigation or enhancement of lands inundated**
-

by the Facility or otherwise occupied by the Facility, or regarding other watershed protection, mitigation and enhancement activities?

N/A.

No agency recommendations or FERC license conditions were issued regarding watershed protection.

PASS.

E. Threatened and Endangered Species Protection:

Criteria:

1) Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream reach?

YES.

The ODFW identified three state or federal endangered or threatened species present within the Facility area or downstream reach. Winter steelhead and spring-run chinook salmon both occur in the South Santiam River and the lower 0.1 miles of Falls Creek at the confluence of the South Santiam River. Northern spotted owl is also present in the project area.

If yes, go to E2.

2) If a recovery plan has been adopted for the threatened or endangered species pursuant to Section 4(f) of the Endangered Species Act or similar state provision, is the Facility in Compliance with all recommendations in the plan relevant to the Facility?

N/A.

Per conversations with the ODFW, no recovery plans have been issued for the listed species found within the Project area or potentially affected by the Project.

If N/A, go to E3.

3) If the Facility has received authority to Incidentally Take a listed species through: (i) Having a relevant agency complete consultation pursuant to ESA Section 7 resulting in a biological opinion, a habitat recovery plan, and/or (if needed) an incidental take statement; (ii) Obtaining an incidental take permit pursuant to ESA Section 10; or (iii) For species listed by a state and not by the federal government, obtaining authority pursuant to similar state procedures; is the Facility in Compliance with conditions pursuant to that authority?

N/A.

The Facility has not received authority to incidentally take a species.

If N/A, go to E5.

5) If E2 and E3 are not applicable, has the Applicant demonstrated that the Facility and Facility operations do not negatively affect listed species?

YES.

Fish screens in the tailrace channel prevent upstream movement of fish through the tailrace. A 20-ft corridor of trees was removed for the construction of the penstock. Potential impacts to northern spotted owl were not assessed during construction because the species was not listed at the time. Both USFWS and ODFW concur that the project has no adverse impacts on listed species or their habitats. Nothing has changed with the Facility's methods of operation or maintenance since 2002 that would impact or harm any threatened or endangered species.

PASS.

F. Cultural Resource Protection:

Criteria:

1) If FERC-regulated, is the Facility in compliance with all requirements regarding Cultural Resource protection, mitigation or enhancement included in the FERC license or exemption?

YES.

There are no specific requirements regarding cultural resource protection within the exemption. Appropriate surveys and research by qualified anthropologists were conducted prior to construction as part of the exemption application. No archaeological sites were found as part of these surveys at that time.

In 1983 the Oregon State Historic Preservation Office determined that the Santiam Wagon Road (SWR) retained enough historic integrity to warrant eligibility to the National Register of Historic Places. Further, in 1995, House Bill 2966, the Oregon Historic Trails Bill, recognized 16 historic trails in Oregon, the Santiam Wagon Road (SWR) being one of them. The Facility's penstock crosses under the Santiam Wagon Road, and the powerhouse, switchyard, and the self-contained toilet sit beside this roadway.

An Implementation Guide, in concert with the Historic Properties Management Plan, provides guidance for (1) preservation of the SWR historic integrity, (2) public education and interpretation of, (3) appropriate enhancement of, and (4) appropriate uses and activities within the Santiam Wagon Road Special Interest Area. The SWR Implementation Guide provides a schedule of attainment for desired future conditions for the SWR following a proposed time table of five years.

The USFS has oversight of compliance for the SWR Implementation Guide criteria. When the Facility's USFS Special Use Permit (SUP) was renewed in June 2006, negotiations between Falls Creek, the Historic Preservation Council, and the USFS regarding the goals of the SWR Implementation Plan were concluded and added as Exhibit A of the USFS SUP. Copies of the Falls Creek SUP, dated October 7, 2006 with expiration on December 31, 2025, and the Santiam Wagon Road Special Interest Area Implementation Guide, are included with this recertification application.

PASS.

G. Recreation:

Criteria:

- 1) If FERC-regulated, is the Facility in Compliance with the recreational access, accommodation (including recreational flow releases) and facilities conditions in its FERC license or exemption?**

YES.

No specific recommendations were issued as part of the FERC exemption. However, the Facility is located on Forest Service lands and a campground is located across the river from the powerhouse.

The Facility has a Special Use Permit with the Forest Service (renewed on October 7, 2006 through December 31, 2025), which provides conditions guiding the use of Forest Service Lands. Recreational access and use is not impacted by the Project. Falls Creek offers annual tours providing presentations of its Facility to the public, along with a presentation on the historic significance of the area. Although some noise can be heard from the powerhouse during high flow periods, the campground's peak season (July-August) generally coincides with when the Facility is off-line, resulting in minimal impacts to recreational resources.

Falls Creek is working on a 5-year landscape improvement plan per conditions negotiated in the recently renewed USFS SUP, to maintain the historic preservation of the Santiam Wagon Road. (See F.1 above.) Exhibit A of the SUP (included with this recertification application) outlines criteria that will further mitigate any visual impacts the Facility has on the campground across the river or from the roadway in front of the powerhouse.

If yes go to G3.

- 3) Does the Facility allow access to the reservoir and downstream reaches without fees or charges?**

YES.

Because the project is located on Forest Service lands, access to the project reach is available without fee.

PASS.

H. Facilities Recommended for Removal:

Criteria:

- 1) Is there a Resource Agency recommendation for removal of the dam associated with the Facility?**

NO.

There have been no recommendations for removal of the diversion.

PASS.

FACILITY IS LOW IMPACT

RECORD OF CONTACTS

Date of Conversation: July 18, 2007
Application Reviewer: Fred Ayer, Executive Director

Person Contacted: Sweet Home Ranger District
Willamette National Forest
Brian McGinley, Recreation Supervisor
3225 Hwy 20
Sweet Home, OR 97386
541-367-9234
bmcginley@fs.fed.us

Brian was very positive about the Falls Creek Project and the applicant. He said it was a terrific project that was “light on the land” and working with the applicant was easy, a pleasure and that they were extremely receptive to the Forest Service’s resource needs. He was supportive of Falls Creek being certified as low impact. He confirmed that the Special Use Permit had been renewed in June of 2006 and had even more stringent requirements than the original. The applicant and the Forest Service have reached new agreements on vegetation, specifically around the structures. The applicant recently built a small storage shed (11’x 11’) after working with the Forest Service staff to design the shed for minimal visual impact. He said that the USFS and the applicant were both very conscience of the Santiam Wagon Road (SWR) and its historical significance. The SWR is the access road for the project and the USFS manages all activities that might affect the SWR consistent with the Historic Properties Management Plan.

Date of Conversation: July 18, 2007
Application Reviewer: Fred Ayer, Executive Director

Person Contacted: Oregon Water Resources Department
Mary S. Graineey, Hydroelectric Program Coordinator
North Mall Office Building
725 Summer Street NE, Suite A
Salem, OR 97301-1271
503-986-0900
503-986-0904 FAX
Mary.S.Graineey@state.or.us

Mary said as far as she knew there were no substantive changes to the project and that the original filing would still be accurate. She said the Applicant was good to work with. The applicant pays the state an annual fee and they are up to date with payments.

Date of Conversation: July 18, 2007
Application Reviewer: Fred Ayer, Executive Director

Person Contacted: Oregon Water Resources Department
R. Craig Kohanek, Hydroelectric Project Analyst
North Mall Office Building
725 Summer Street NE, Suite A
Salem, OR 97301-1271
503-986-0823
503-986-0904 FAX
R.Craig.Kohanek@state.or.us

Craig deferred to Mary Grainey, and said that she was more knowledgeable about the Falls Creek Project. He confirmed that because of the steepness of the stream, migrating fish at the Falls Creek Project were not an issue. He also confirmed that the applicant was cooperative and good to work with.

Date of Conversation: July 18, 2007
Application Reviewer: Fred Ayer, Executive Director

Person Contacted: Oregon Department of Fish and Wildlife
Ken Homolka, Hydropower Program Leader
Water Quality/Quantity
3406 Cherry Avenue N.E.
Salem, OR 97303
503-947-6090
503-947-6000
Ken.Homolka@state.or.us

I spoke with Ken and he said he wanted to check their files, because this wasn't a project he'd looked at for some time. He said he would go through files and try to send me his thoughts by Friday July, 20th. He didn't think there was necessarily wrong with the project, he just hadn't looked at it in awhile. I asked him if my understanding of the project was correct that the steep stream conditions meant there were no anadromous fish concerns. He said yes.

Date of Conversation: July 18, 2007
Application Reviewer: Fred Ayer, Executive Director

Person Contacted: Oregon State Historic Preservation Office
Parks and Recreation Department
Roger Roper, Deputy State Historic Preservation Officer
1115 Commercial Street NE, Suite 2
Salem, OR 97301
503-986-0677
Roger.Roper@state.or.us

Roger was not real familiar with the project but based on the applicant's description of the project penstock crossing the Santiam Wagon Road which is eligible for the National Register of Historic Places, he recommended that the applicant be in contact with the Oregon Historic Trails Advisory Council should they plan to make changes. He also suggested I call Keith May (541-276-8206) a member of the Advisory Council. After a brief discussion, Keith thought that unless the Applicant was planning on making changes or adding to the project, there was no need for them to be in contact with the Advisory Council.
