2018 Annual Operational Compliance Report

Wallowa Falls Hydroelectric Project

(FERC No. P-308)

Grande Ronde River Basin

Wallowa County, Oregon

December 2018

Prepared by:
PacifiCorp
825 NE Multnomah Street
Portland, OR 97232

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1.0 Introduction

The Federal Energy Regulatory Commission (Commission) issued a new operating license for the Wallowa Falls Hydroelectric Project (Project) January 5, 2017. The Operation Compliance Monitoring Plan (OCMP) was developed to satisfy Article 408 and Condition 1e) of Appendix A: Oregon Department of Environmental Quality (ODEQ) Water Quality Certification, of the license. The OCMP was approved by the October 11, 2017 Commission Order Modifying and Approving Operational Compliance Monitoring Plan Pursuant to License Article 408. This Annual Report satisfies the reporting requirements of Section 3.1.2 of the OCMP (PacifiCorp 2017a) and license Article 408.

In addition to the report elements provided in Section 3.1.2 of the OCMP, PacifiCorp has elected to include the 2018 Wallowa Falls Bull Trout Redd Monitoring Report required by Article 412 of the license and the 2018 Noxious Weed Control Plan Annual Report required by Section 3.5 of the Noxious Weed Control Plan (PacifiCorp 2017c) in this Report, as Appendices C and D, respectively.

2.0 Project Operations – Water Management

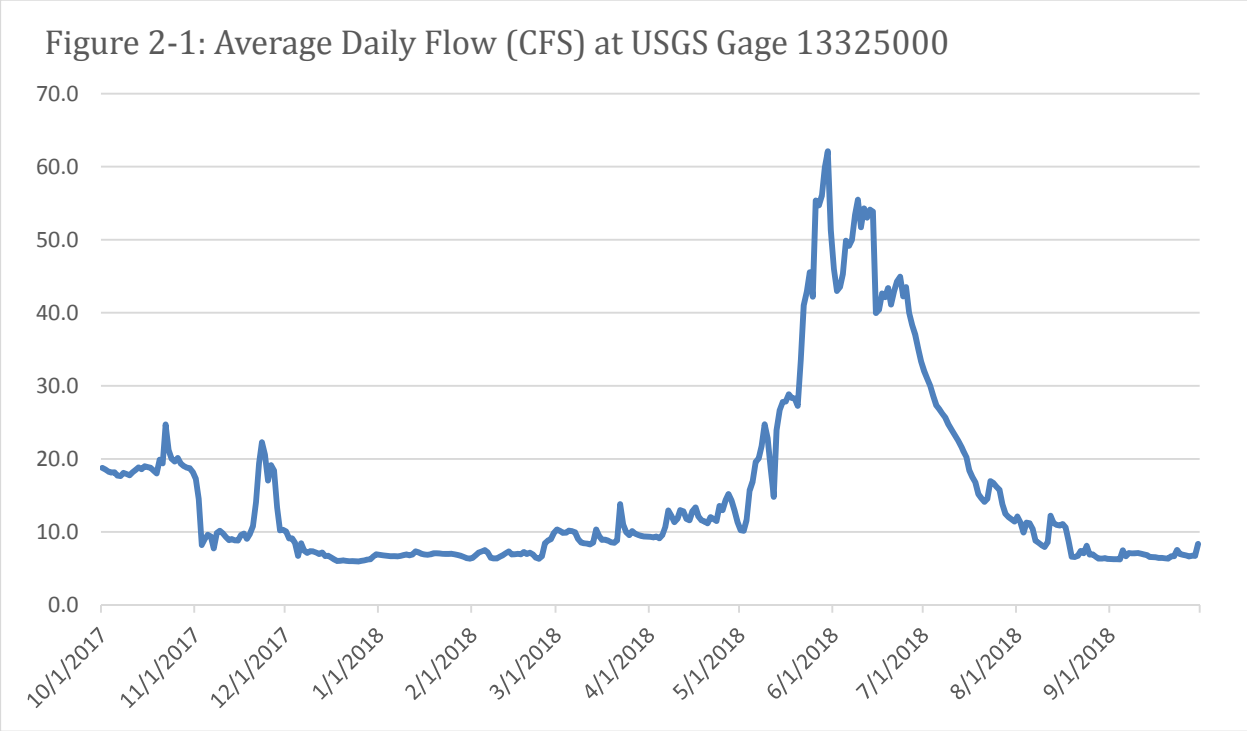
2.1.1 Minimum Flows

Minimum instream flows, as required by license Appendix A, Condition 1(a) and Appendix B, Condition 9(2) will be implemented by PacifiCorp beginning on or before July 5, 2018. As reported, in the 2017 Annual Operational Compliance Report, PacifiCorp contracted the United States Department of the Interior, U.S. Geological Survey (USGS) to install the required stream gage and conduct the required hydrologic surveillance program (USGS Gage 13325000, East Fork Wallowa River) for the Project. The gage was installed in the summer of 2017[1]. As required by license Appendix A, Condition 1(b), the East Fork Wallowa River gage reports a real-time recording of river stage and corresponding flow in cfs measured in 15 minute intervals. Compliance with the license required minimum flow is determined based on a top of the hour average of the previous four 15 minute readings.

From October 1, 2017 through June 14 2018, the Project operated under the previous year-round minimum flow requirement of 0.5 cubic feet per second (cfs). On June 14, 2018, following the annual forebay flushing event, PacifiCorp set the slide gate on lower level outlet drain valve at the dam to provide a continuous flow release of greater than or equal to 5 cfs, as measured at the compliance gage in the bypassed reach of the East Fork Wallowa River. There was greater than 5

[1] The Gage and associated communications system are located on the East Fork of the Wallowa River on a parcel of property owned by PacifiCorp and designated by Wallowa County, Oregon, as tax lot number 03S4500009900.

cfs in the bypassed reach, as measured on all days between June 15, 2018 and September 30, 2018. Figure 2-1 shows the average daily flow during the 2018 water year.



2.1.2 Ramping

In accordance with Article 406 *Ramping Rates* and Condition 1(c) of Appendix A of the Wallowa Falls License PacifiCorp filed the *Wallowa Falls Ramping Study Report and Down-Ramping Plan* with the Commission on April 3, 2018. As discussed in the Study Report, as well as the OCMP, due to the lack of storage capacity, the Project is operated in run-of river mode and generation is subject to seasonal river flows.[2] All increases in generation, will comply with the Standard Operating Procedure (Down-Ramping Plan) for ramping.

[2] Run of river mode of operation refers to a hydroelectric project that has little or no water (energy) storage, is subject to seasonal river flows for generation and is therefore an intermittent energy source. This is in contrast to conventional hydropower which uses reservoirs to regulate water for flood control and dispatchable electrical power.

At a run of river project there is little or no storage, therefore when generation is held at a steady state, changes to river stage in the bypassed reach are entirely the result of natural increases or decreases in inflow to the project. In contrast, at a conventional hydropower project, when generation is held at a steady state, natural increases in inflow can be absorbed (stored) in the project reservoir or natural decreases in inflow can be withdrawn from the project reservoir, allowing the downstream river stage to be maintained in steady state.

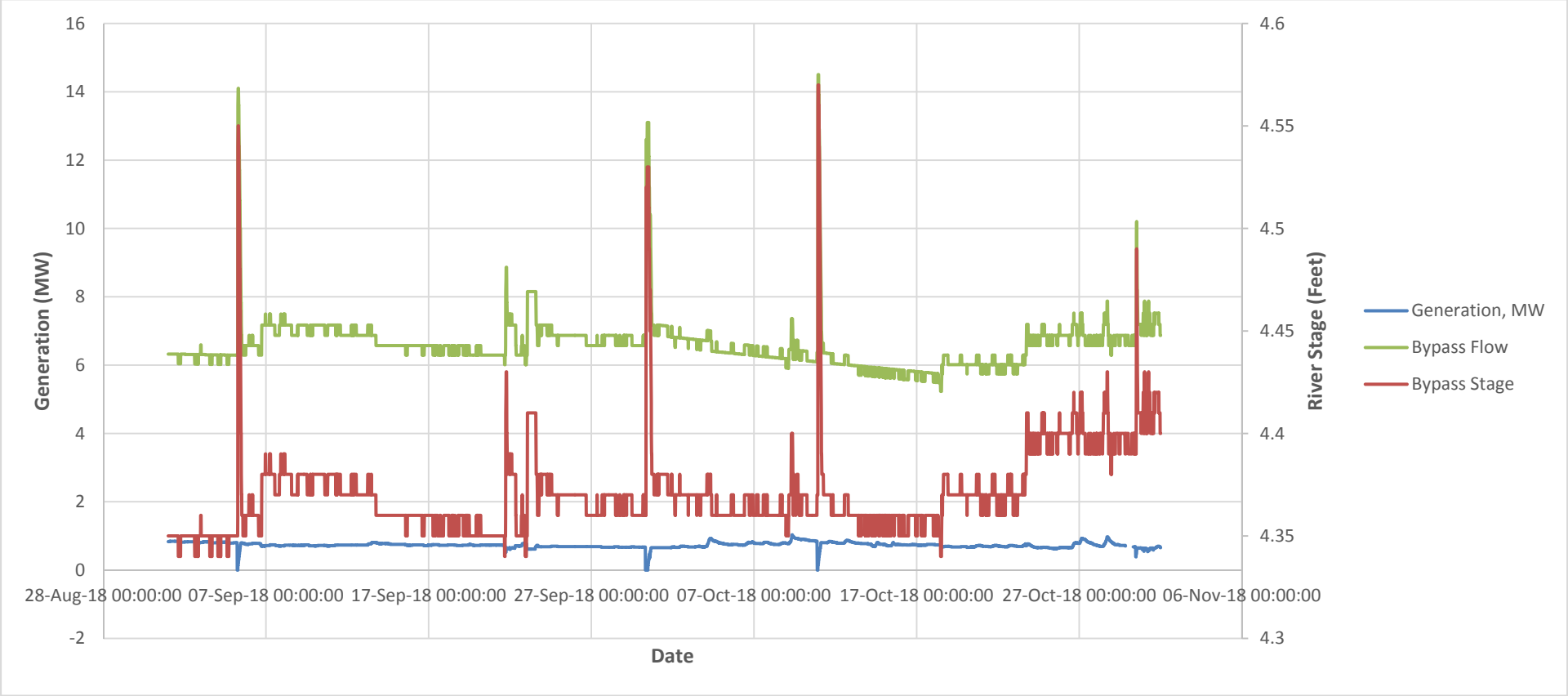
On July 17, 2018, the Programmed Logic Control (PLC) was re-programmed to make all generation increases in steps of 300 kW/h/. The forebay level indication and communications feed from the dam to the powerhouse and the Hydro Control Center, in Ariel, Washington, was also improved in 2018. The PLC receives real-time data from the USGS compliance gage and is programmed to alarm if there is a drop in minimum flows. These improvements in automation and communication have allowed the PLC to control unit generation based on real-time forebay level indication and streamflow in the bypassed reach. This is a much more efficient way to run the generating unit than was historically possible and also has the added benefit of holding a steadier river stage in the bypassed reach of the East Fork Wallowa River. For example, when a rainstorm occurs and forebay indication shows a rise in inflows the PLC can ramp the unit up at 300 kW/hr. to utilize the increased inflows for generation while holding the bypassed reach at a more steady stage. PacifiCorp's water right of 16 cfs is the maximum used for generation. Therefore, any inflow in excess of 16 cfs will always spill over the dam. In 2018, because the unit was operated based on forebay indication, there were some small generation changes during the September 1 through October 31, bull trout spawning period. However, these generation changes actually provided for less stage change in the bypassed reach than if generation had been held completely steady. Generation, river stage and flow data for the period of September 1 through October 31 is shown in Figure 2-2.

In 2018, all generation changes were made in compliance with Standard Operating Procedure (Down-Ramping Plan), that is to say the automated Programmed Logic Control (PLC) of the unit made all generation increases in steps of 300 kW/h or smaller. There was no facility maintenance during this period of September 1 through October 31. However, there were three unplanned unit trips during this period. On September 5 the generating unit tripped offline at 0545 hours Pacific Standard Time (PST) and was brought back online at 0645 hours PST. The prescribed ramp rate of 0.1 ft./hr. (300 kW/hour) was followed as generation was brought back up to approximately 770 kilowatts. Unfortunately this outage was not reported to the Agencies at the time. A second unplanned outage occurred when the generating unit tripped offline on September 30, 2018. The unit was offline for approximately 3.5 hours and generation resumed at 1132 hours PST. The prescribed ramp rate of 0.1 ft./hr. was followed as generation was brought back up to approximately 660 kilowatts. This outage was reported to the Agencies via e-mail on October 1, 2018. The third unplanned outage occurred on Wednesday, October 10, at 2125 hours PST. The project generator was offline for approximately 1 hour and generation resumed at 2221 hours PST. The prescribed ramp rate of 0.1 ft./hr. was followed as generation was brought back up to approximately 800 kilowatts. This outage was reported to the Agencies via e-mail on October 10, 2018.Table 2.0 shows generation increases and corresponding hourly stage change for each of the outage events discussed above.

Table 2.0 Generation versus East Fork Wallowa River Stage at USGS Gage 13325000

Date/Time	Generation (kW)	Hourly Average Stage (Feet)	Hourly Average Ramp (Feet)
September 5, 2018 Unplanned Outage			
09-05-18/0545	-0.0043	4.35	0
09-05-18/0645	0.1473	4.4	0.05
09-05-18/0745	0.3187	4.55	0.147
09-05-18/0845	0.4799	4.53	-0.02
09-05-18/0945	0.6532	4.49	-0.035
09-05-18/1045	0.7645	4.45	-0.043
09-05-18/1145	0.7939	4.40	-0.048
09-05-18/1245	0.7938	4.37	-0.035
09-05-18/1345	0.7910	4.36	-0.005
September 30, 2018 Unplanned Outage			
09-30-18/1100	-0.0039	4.53	0.005
09-30-18/1200	0.1475	4.53	0.005
09-30-18/1300	0.3075	4.53	-0.005
09-30-18/1400	0.4759	4.49	-0.033
09-30-18/1500	0.4561	4.46	-0.033
09-30-18/1600	0.6355	4.45	-0.005
09-30-18/1700	0.6540	4.41	-0.045
09-30-18/1800	0.6551	4.38	-0.028
09-30-18/1900	0.6551	4.38	-0.003
October 10, 2018 Unplanned Outage			
10-10-18/2145	-0.0041	4.37	0.001
10-10-18/2245	0.1456	4.46	0.1
10-10-18/2345	0.3046	4.57	0.1
10-10-18/0045	0.4685	4.54	-0.025
10-10-18/0145	0.6517	4.51	-0.038
10-10-18/0245	0.8006	4.46	-0.045
10-10-18/0345	0.8002	4.41	-0.048
10-10-18/0445	0.7997	4.38	-0.03
10-10-18/0545	0.7996	4.38	-0.003

Figure 2-2 Generation versus East Fork Wallowa River Stage/Flow at USGS Gage 13325000



3.0 Forebay Flushing

PacifiCorp flushed the Project forebay for 72 hours from June 11 through June 14, 2018. Prior to the flush PacifiCorp notified agency stakeholders, via e-mail May 17, 2018, of the planned flushing event. Agency stakeholders were comfortable with the flushing plan and schedule and declined the offer of a pre-flush coordination conference call.

A Forebay Flushing Report was filed with the Commission and the Oregon Department of Environmental Quality August 7, 2018 and is included as Appendix A to this report.

Figure 3.0. Location of Wallowa Falls forebay flush monitoring datasondes in 2018.

4.0 Fish Salvage Events

Article 411 of the license calls for a Fish Salvage Plan to be developed within six months of license issuance, PacifiCorp developed the Fish Salvage Plan (PacifiCorp 2017b) in consultation with the

agencies and filed it with the Commission April 14, 2017. The plan is implemented during all tailrace dewatering events, as well as immediately after installation of the temporary tailrace barrier, until the permanent tailrace barrier, required by license Article 409 and Appendix A, Condition 2(a), is installed and operational. The 2018 Fish Salvage and Temporary Tailrace Barrier Report is included as Appendix B to this report.

5.0 Bull Trout Monitoring and Protection Measures

Article 412 of the license mandates that annually, by March 31, PacifiCorp file a report with the Commission that documents the prior year's bull trout redd monitoring results as required by Appendix C, condition 4(a), of the license, as well as, any bull trout monitoring and protection measures completed during the previous year. At a minimum, the report must include:

1) The results of the fish handling and injury monitoring from removal for in-water construction required by Appendix C, condition 2(g) and (h);
2) The results of the bull trout construction monitoring required by Appendix C, condition 3(a)xi); and
3) The results of the bull trout redd monitoring required by Appendix C, condition 4(a).

In 2018 there were no fish handled for work-site isolation nor was there any upland or in-water construction on the Wallowa Falls Hydroelectric Project, therefore there is nothing to report for topics (1) and (2) above. Per license Article 412 and Appendix C, condition 4(a), the results of bull trout redd monitoring for calendar year 2018 are included as Appendix C to this report.

6.0 Noxious Weed Control

Article 415 and Appendix B, condition 6 of the Commission license requires that PacifiCorp file a noxious weed control plan with the Commission within six (6) months of license issuance, PacifiCorp developed the Noxious Weed Control Plan (NWCP [PacifiCorp 2017c]) in consultation with the agencies and filed it with the Commission June 5, 2017. As provided for in Section 3.5 of the NWCP, the 2018 Noxious Weed Control Plan Annual Report is included as Appendix D to this report.

5.0 References

Federal Energy Regulatory Commission (FERC). 2017. PacifiCorp Wallowa Falls Hydroelectric License (FERC) Project No. 308. Issued January 5, 2017.

PacifiCorp. 2017a. Operational Compliance Monitoring Plan. Wallowa Falls Hydroelectric Project FERC Project No. P-308. Portland, Oregon.

PacifiCorp. 2017b. Noxious Weed Control Plan. Wallowa Falls Hydroelectric Project FERC Project No. P-308. Portland, Oregon.

PacifiCorp. 2017c. Fish Salvage Plan. Wallowa Falls Hydroelectric Project FERC Project No. P-308. Portland, Oregon.

PacifiCorp. 2018. Wallowa Falls Ramping Study Report and Down-Ramping Plan. Wallowa Falls Hydroelectric Project FERC Project No. P-308. Portland, Oregon.

Appendix A

Wallowa Falls Forebay Flushing Report

PACIFICORP

Pacific Power |
Rocky Mountain Power
825 NE Multnomah, Suite 1800
Portland, Oregon 97232

Electronically filed August 7, 2018

Ms. Kimberly D. Bose, Secretary Federal Energy Regulatory Commission 888 First Street, NE Washington, DC 20426	Mr. John Dadoly Oregon Department of Environmental Quality 700 SE Emigrant Ave – Suite 330 Pendleton, OR 97801

Subject: Wallowa Falls Hydroelectric Project (FERC No. P-308)
Forebay Flushing Report, August 2018

Dear Addressee:

The Federal Energy Regulatory Commission (Commission) issued a new operating license for the Wallowa Falls Hydroelectric Project (Project) January 5, 2017. Annual flushing of the Project forebay is permitted under Appendix A, Condition 5 of the license. On August 2, 2017 the Commission issued an Order Modifying and Approving the Turbidity Monitoring Plan for Forebay Flushing under Appendix B, Condition 10 of the Project license. This letter report satisfies the annual reporting requirement for forebay flushing.

PacifiCorp flushed the forebay for 72 hours from June 1~~0~~ through June 1~~2~~, 2018. Prior to the flush, PacifiCorp notified agency stakeholders[1] via e-mail May 17, 2018 of the planned flushing event. Agency stakeholders declined the offer of a pre-flush coordination conference call.

The final Turbidity Monitoring Plan for Forebay Flushing, dated June 2, 2017, requires that natural inflow to the Project be greater than or equal to 15 cubic feet per second (cfs) for flushing to occur. The flow in the lower bypassed reach of East Fork Wallowa River, as measured at the U.S. Geological Survey (USGS) #13325000, at midnight June 10, 2018, was 57.6 cfs. Bypassed reach flows remained greater than 49 cfs for the duration of the 72 hour flushing event.

For forebay flushing the following general sequence of events occurred:

June 10, 2018: Mobilized to site and deployed Hydrolab MS5 mini datasondes in the East Fork Wallowa River upstream of the inlet to the Project forebay and downstream of the Project dam at the USGS gage site. Sondes were in place through June 16, 2018 and recorded top of the hour nephelometric turbidity units (NTU)[2]. Turbidity data is provided at Attachment 1 to the letter report.

June 11, 2018: PacifiCorp's contracted biologist conducted a fish salvage of the Project tailrace per the final Fish Salvage plan date May 2, 2017.

[1] Oregon Department of Environmental Quality, Oregon Department of Fish and Wildlife, U.S. Fish and Wildlife Service and U.S. Forest Service.

[2] For unknown reasons the sonde deployed above the Project forebay to record background turbidity malfunctioned and did not record anything for the duration of the deployment.

June 11, 2018: PacifiCorp personnel mobilized to the Project forebay and closed the penstock intake gate and opened the low level outlet gate to 100 percent to allow all inflow, within pipe capacity, to flow through the dam via the pipe.

June 12, 2018: PacifiCorp personnel inspected the forebay level and found a water surface elevation decrease of approximately three feet with no water spilling over the dam spillway.

June 13, 2018: PacifiCorp personnel inspected the forebay level and found that the water surface elevation had decreased an additional 1.5 feet from the previous day for a total drawdown of approximately 4.5 feet. Inflows were too high to completely drain the forebay using the lower level outlet pipe.

June 14, 2018: PacifiCorp personnel along with contracted biologist closed the lower level outlet drain valve and then adjusted the gate to provide a minimum flow release of 5 cfs.

June 14, 2018: PacifiCorp's contracted biologist walked the entire bypassed reach of the East Fork Wallowa River and visually monitored for stranded, distressed or dead fish. None were observed. The biologist also noted that there were no signs of excessive sediment deposition anywhere in the reach.

June 16, 2018: Hydrolab datasondes were removed from the East Fork Wallowa River upstream and downstream locations.

Due to the inability to completely drawdown the forebay, PacifiCorp operations personnel reported that limited quantities of sediment were moved out of the forebay. However, visual inspection did verify that the area immediately surrounding the intake structure was free of sediment following the flush. Unfortunately, due to an unknown equipment malfunction, there is no recorded background turbidity for the flushing event, but turbidity data from the lower datasonde appears to indicate some high sediment pulses of water did move down the channel from the forebay. Although it is worth noting, with flows in excess of 49 cfs there is also likely natural sediment transport occurring in the East Fork Wallowa River.

This letter report and its attachments are being filed electronically. If you have any questions please contact Briana Weatherly at 503-813-7039 or Briana.weatherly@pacificorp.com.

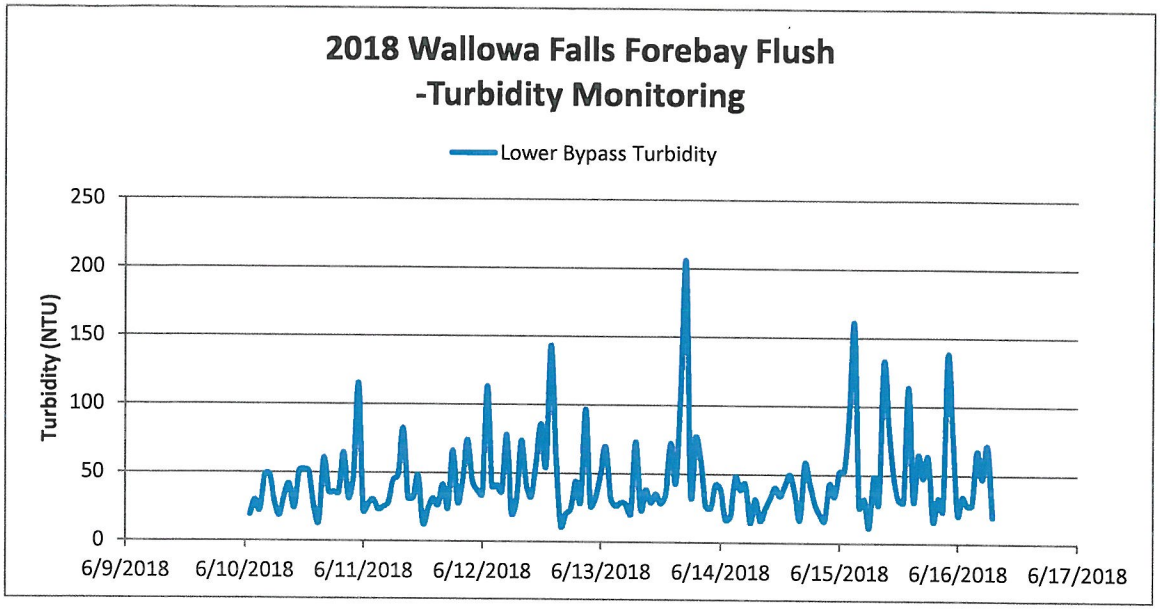
Sincerely,

Mark A. Sturtevant
Managing Director, Renewable Resources

MAS: BW: km

Encl:	Letter – Public
	Attachment 1 – Wallowa Falls 2018 Forebay Flushing Turbidity Data - Public

eFile:	Kimberly D. Bose, Secretary Via eLibrary at www.ferc.gov	**eMail:** John Dadoly, ODEQ DADOLY.John@deq.state.or.us
Cc:	Gretchen Sausen, USFWS	Cc: Adrian Cuzick, USDA- FS
Cc:	Elizabeth A. O. Moats, ODFW	



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Setup Time (HH:MM:SS) : 16:08:50
Starting Date (M/D/YYYY) : 6/10/2018
Starting Time (HH:MM:SS) : 01:00:00
Stopping Date (M/D/YYYY) : 6/24/2018
Stopping Time (HH:MM:SS) : 23:00:00
Interval (HH:MM:SS) : 01:00:00
Sensor warmup (HH:MM:SS) : 00:02:00
Circltr warmup (HH:MM:SS) : 00:02:00

Date M/D/YYYY	TurbSC NTU	Time HH:MM:SS	Temp °C
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6/10/18 4:00 AM	47.9	4:00:00	4.24
6/10/18 5:00 AM	48.5	5:00:00	3.89
6/10/18 6:00 AM	28.6	6:00:00	4.01
6/10/18 7:00 AM	18.5	7:00:00	4.18
6/10/18 8:00 AM	33.1	8:00:00	4.31
6/10/18 9:00 AM	41.5	9:00:00	4.35
6/10/18 10:00 AM	24.1	10:00:00	4.6
6/10/18 11:00 AM	50.9	11:00:00	4.89
6/10/18 12:00 PM	52.2	12:00:00	5.42
6/10/18 1:00 PM	50.5	13:00:00	5.98
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6/10/18 11:00 PM	115.2	23:00:00	4.88
6/11/18 12:00 AM	21.7	0:00:00	4.88
6/11/18 1:00 AM	27.2	1:00:00	4.74
6/11/18 2:00 AM	30.2	2:00:00	4.59
6/11/18 3:00 AM	23.1	3:00:00	4.37
6/11/18 4:00 AM	25	4:00:00	4.26
6/11/18 5:00 AM	28	5:00:00	4.33
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6/11/18 11:00 AM	47.8	11:00:00	5.53
6/11/18 12:00 PM	12.8	12:00:00	6.38
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6/12/18 5:00 AM	78.1	5:00:00	3.63
6/12/18 6:00 AM	20.6	6:00:00	3.73
6/12/18 7:00 AM	29.6	7:00:00	3.62
6/12/18 8:00 AM	73.9	8:00:00	3.95
6/12/18 9:00 AM	41.7	9:00:00	4.49
6/12/18 10:00 AM	32.6	10:00:00	5.43
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6/12/18 4:00 PM	11.4	16:00:00	9.87
6/12/18 5:00 PM	20.3	17:00:00	9.96
6/12/18 6:00 PM	24	18:00:00	9.77
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6/13/18 10:00 AM	28.8	10:00:00	7.33
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6/13/18 10:00 PM	24.9	22:00:00	8.69
6/13/18 11:00 PM	42.2	23:00:00	8.23
6/14/18 12:00 AM	39	0:00:00	7.7
6/14/18 1:00 AM	16.8	1:00:00	7.42
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6/14/18 5:00 AM	43.1	5:00:00	6.14
6/14/18 6:00 AM	14.5	6:00:00	5.89
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6/14/18 9:00 AM	24.7	9:00:00	6.09
6/14/18 10:00 AM	32.6	10:00:00	6.28
6/14/18 11:00 AM	40.4	11:00:00	6.67
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6/14/18 10:00 PM	43.2	22:00:00	7.87
6/14/18 11:00 PM	33.9	23:00:00	7.16
6/15/18 12:00 AM	52.3	0:00:00	6.67
6/15/18 1:00 AM	53	1:00:00	6.22
6/15/18 2:00 AM	94.7	2:00:00	5.85
6/15/18 3:00 AM	159.9	3:00:00	5.6
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Date M/D/YYYY	TurbSC NTU	Time HH:MM:SS	Temp −C
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6/15/18 7:00 AM	48.9	7:00:00	5.26
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6/15/18 9:00 AM	132	9:00:00	6.77
6/15/18 10:00 AM	85.9	10:00:00	6.95
6/15/18 11:00 AM	48	11:00:00	7.69
6/15/18 12:00 PM	31.4	12:00:00	8.92
6/15/18 1:00 PM	30.3	13:00:00	9.52
6/15/18 2:00 PM	114.1	14:00:00	9.55
6/15/18 3:00 PM	31.1	15:00:00	9.68
6/15/18 4:00 PM	64.6	16:00:00	9.66
6/15/18 5:00 PM	47.6	17:00:00	9.74
6/15/18 6:00 PM	63	18:00:00	9.57
6/15/18 7:00 PM	16.4	19:00:00	9.01
6/15/18 8:00 PM	33	20:00:00	8.89
6/15/18 9:00 PM	24.2	21:00:00	8.18
6/15/18 10:00 PM	137.6	22:00:00	7.64
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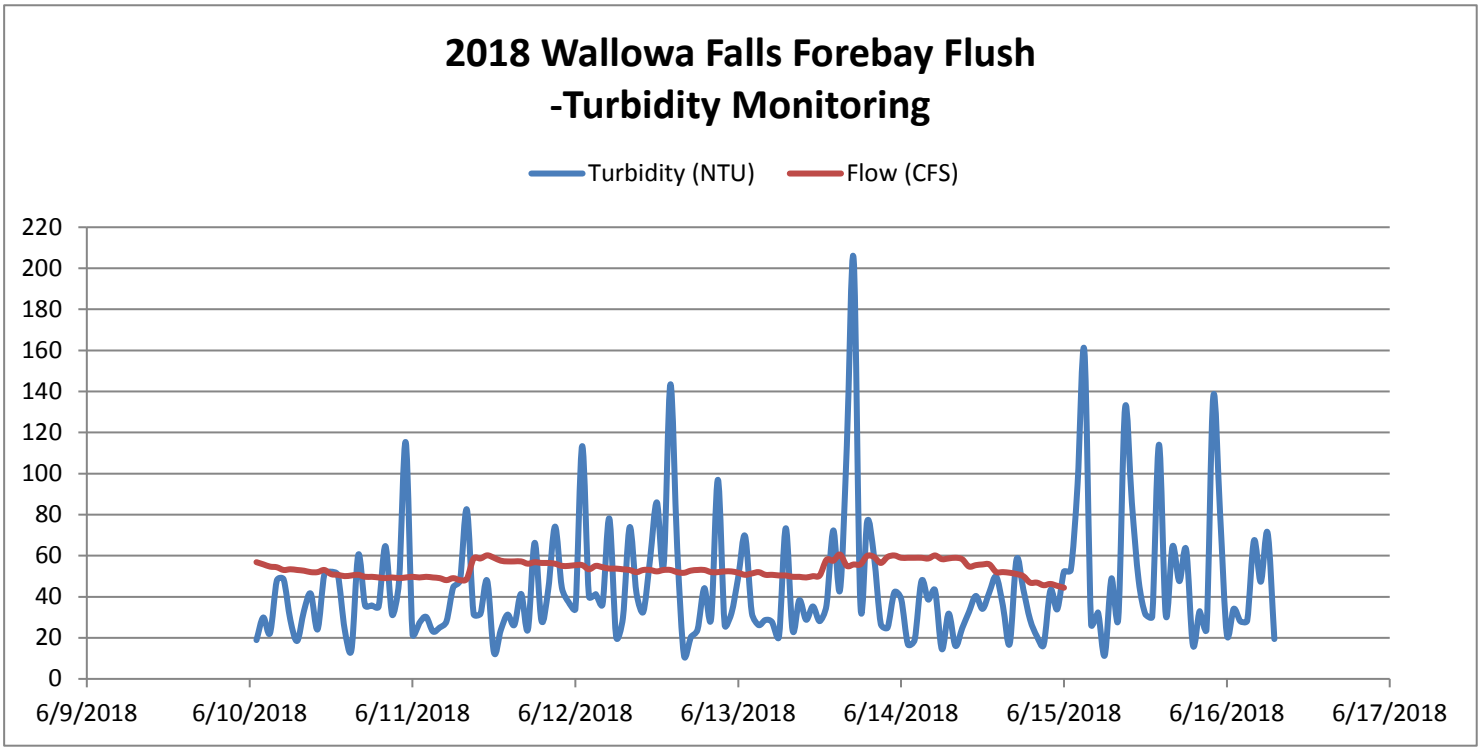
6/16/18 3:00 AM	28.4	3:00:00	6.41
6/16/18 4:00 AM	67.4	4:00:00	6.18
6/16/18 5:00 AM	47.3	5:00:00	6.14
6/16/18 6:00 AM	71.2	6:00:00	6
6/16/18 7:00 AM	19.4	7:00:00	6.65



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Starting Time (HH:MM:SS) : 01:00:00
Stopping Date (M/D/YYYY) : 6/24/2018
Stopping Time (HH:MM:SS) : 23:00:00
Interval (HH:MM:SS) : 01:00:00
Sensor warmup (HH:MM:SS) : 00:02:00
Circltr warmup (HH:MM:SS) : 00:02:00

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6/10/18 5:00 AM	48.5	53.05	5:00:00	3.89
6/10/18 6:00 AM	28.6	53.4	6:00:00	4.01
6/10/18 7:00 AM	18.5	53.05	7:00:00	4.18
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6/10/18 2:00 PM	24.1	50.05	14:00:00	6.24
6/10/18 3:00 PM	14.1	50.375	15:00:00	6.53
6/10/18 4:00 PM	60.4	50.7	16:00:00	6.5
6/10/18 5:00 PM	35.8	49.725	17:00:00	6.25
6/10/18 6:00 PM	35.8	49.725	18:00:00	6.21
6/10/18 7:00 PM	35.2	49.4	19:00:00	6.08
6/10/18 8:00 PM	64.7	49.075	20:00:00	5.77
6/10/18 9:00 PM	31.2	49.4	21:00:00	5.46
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6/11/18 8:00 AM	82.5	48.75	8:00:00	4.5
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6/11/18 1:00 PM	23.7	57.575	13:00:00	7.01
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6/12/18 4:00 AM	36.3	54.4	4:00:00	3.78
6/12/18 5:00 AM	78.1	53.725	5:00:00	3.63
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Date M/D/YYYY	TurbSC NTU	Flow CFS	Time HH:MM:SS	Temp −C
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6/12/18 11:00 AM	58.2	53.05	11:00:00	6.3
6/12/18 12:00 PM	86	52.35	12:00:00	7.36
6/12/18 1:00 PM	55.3	53.05	13:00:00	8.26
6/12/18 2:00 PM	143.5	53.05	14:00:00	9.04
6/12/18 3:00 PM	63.8	52	15:00:00	9.56
6/12/18 4:00 PM	11.4	51.675	16:00:00	9.87
6/12/18 5:00 PM	20.3	52.725	17:00:00	9.96
6/12/18 6:00 PM	24	53.05	18:00:00	9.77
6/12/18 7:00 PM	44.2	53.05	19:00:00	9.56
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6/12/18 9:00 PM	97	52	21:00:00	8.63
6/12/18 10:00 PM	26.2	52.35	22:00:00	8
6/12/18 11:00 PM	32	52.35	23:00:00	7.54
6/13/18 12:00 AM	49.7	51.675	0:00:00	7.33
6/13/18 1:00 AM	69.6	50.7	1:00:00	7.03
6/13/18 2:00 AM	32.1	51.35	2:00:00	6.74
6/13/18 3:00 AM	26.2	52	3:00:00	6.53
6/13/18 4:00 AM	28.7	50.7	4:00:00	6.32
6/13/18 5:00 AM	27.6	50.7	5:00:00	6.18
6/13/18 6:00 AM	20.6	50.375	6:00:00	6.07
6/13/18 7:00 AM	73.4	50.375	7:00:00	6.01
6/13/18 8:00 AM	23.8	49.725	8:00:00	6.44
6/13/18 9:00 AM	38.4	49.725	9:00:00	6.87
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6/13/18 11:00 AM	35.3	50.05	11:00:00	8.09
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6/14/18 1:00 AM	16.8	59	1:00:00	7.42
6/14/18 2:00 AM	19.1	59	2:00:00	6.93
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Date M/D/YYYY	TurbSC NTU	Flow CFS	Time HH:MM:SS	Temp −C
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6/14/18 8:00 AM	16.1	59	8:00:00	6.04
6/14/18 9:00 AM	24.7	58.275	9:00:00	6.09
6/14/18 10:00 AM	32.6	54.73	10:00:00	6.28
6/14/18 11:00 AM	40.4	55.4	11:00:00	6.67
6/14/18 12:00 PM	34.1	55.75	12:00:00	7.54
6/14/18 1:00 PM	42.2	55.775	13:00:00	8.3
6/14/18 2:00 PM	49.8	52.075	14:00:00	9
6/14/18 3:00 PM	35.6	52.025	15:00:00	9.39
6/14/18 4:00 PM	17.1	51.7	16:00:00	9.5
6/14/18 5:00 PM	58.1	51.075	17:00:00	9.57
6/14/18 6:00 PM	43.7	50.05	18:00:00	9.5
6/14/18 7:00 PM	28.9	46.9	19:00:00	9.28
6/14/18 8:00 PM	20.8	46.9	20:00:00	8.88
6/14/18 9:00 PM	16.5	45.625	21:00:00	8.59
6/14/18 10:00 PM	43.2	46.25	22:00:00	7.87
6/14/18 11:00 PM	33.9	45.325	23:00:00	7.16
6/15/18 12:00 AM	52.3	44.4	0:00:00	6.67
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6/15/18 2:00 AM	94.7		2:00:00	5.85
6/15/18 3:00 AM	159.9		3:00:00	5.6
6/15/18 4:00 AM	26.5	43.5	4:00:00	5.36
6/15/18 5:00 AM	32.4		5:00:00	5.27
6/15/18 6:00 AM	11.4		6:00:00	5.21
6/15/18 7:00 AM	48.9		7:00:00	5.26
6/15/18 8:00 AM	29.4	41.3	8:00:00	5.85
6/15/18 9:00 AM	132		9:00:00	6.77
6/15/18 10:00 AM	85.9		10:00:00	6.95
6/15/18 11:00 AM	48		11:00:00	7.69
6/15/18 12:00 PM	31.4	39.4	12:00:00	8.92
6/15/18 1:00 PM	30.3		13:00:00	9.52
6/15/18 2:00 PM	114.1		14:00:00	9.55
6/15/18 3:00 PM	31.1		15:00:00	9.68
6/15/18 4:00 PM	64.6	38.8	16:00:00	9.66
6/15/18 5:00 PM	47.6		17:00:00	9.74
6/15/18 6:00 PM	63		18:00:00	9.57
6/15/18 7:00 PM	16.4		19:00:00	9.01
6/15/18 8:00 PM	33	38.5	20:00:00	8.89
6/15/18 9:00 PM	24.2		21:00:00	8.18
6/15/18 10:00 PM	137.6		22:00:00	7.64
6/15/18 11:00 PM	80.7		23:00:00	7.4
6/16/18 12:00 AM	21.5	38.3	0:00:00	7.23

Date M/D/YYYY	TurbSC NTU	Flow CFS	Time HH:MM:SS	Temp −C
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6/16/18 2:00 AM	28		2:00:00	6.56
6/16/18 3:00 AM	28.4		3:00:00	6.41
6/16/18 4:00 AM	67.4	38.1	4:00:00	6.18
6/16/18 5:00 AM	47.3		5:00:00	6.14
6/16/18 6:00 AM	71.2		6:00:00	6
6/16/18 7:00 AM	19.4	38.2	7:00:00	6.65

Appendix B

Fish Salvage & Temporary Tailrace Barrier Report

Final

Fish Salvage & Temporary Tailrace Barrier Report for the Wallowa Falls Hydroelectric Project Tailrace

(FERC No. P-308)

December 20, 2018

Prepared by:
Jeremiah Doyle
PacifiCorp
825 NE Multnomah Street
Portland, OR 97232

Table of Contents

1.0 INTRODUCTION

The Federal Energy Regulatory Commission (FERC) issued a new operating license for the Wallowa Falls Hydroelectric Project (Project) on January 5, 2017. Elements of the new license address fishery resources within the Project area, specifically as they pertain to the Project tailrace. **Article 411** of the license calls for a *Fish Salvage Plan* to be developed within six months of license issuance, "*the licensee must file for Commission approval a fish salvage plan that describes its proposed procedures for capturing, handling, and relocating any fish trapped in the tailrace channel during planned or unplanned unit outage events that dewater the tailrace channel. The fish salvage plan must be implemented each year following license issuance until the permanent tailrace barrier required by Appendix A condition 2(a) and Article 409 is installed and operating. In addition to the handling procedures specified by Appendix C, condition 2, the plan must include the following provisions: (1) Salvaging of fish from the tailrace channel within two hours of the installation of any temporary fish passage barrier required by Appendix A, condition 2(b); and (2) Salvaging of fish from the tailrace channel prior to complete dewatering of the tailrace channel due to a planned or unplanned outage event*."

Resident and migratory fish species currently inhabit the tailrace channel at varying densities, depending on time of year. Fish species encountered to date consist of rainbow trout (*Oncorhynchus mykiss*), bull trout (*Salvelinus confluentus*), brook trout (*Salvelinus fontinalis*), mountain whitefish (*Prosopium williamsoni*), kokanee (*Oncorhynchus nerka*), and *cottid ssp*. Infrequent unplanned unit trips with subsequent headgate closures, as well as an annually occurring planned plant outage for maintenance and annual installation of a temporary tailrace fish barrier, all cause the Project tailrace to be dewatered for a length of time great enough to drain the entire reach. During plant outages lasting longer than one hour in duration it is necessary to physically remove, or salvage, fish currently residing therein.

This Report and the information contained within fulfill Plan implementation reporting requirements of Article 411 of the FERC license as well as actions necessary to protect and preserve fishery resources within the Project area.

2.0 STUDY AREA

The Project is located on the East Fork Wallowa River approximately 11 miles (17 kilometers) outside of the City of Joseph in Northeastern Oregon. The Project (Figure 1) reservoir/forebay lies over 5,200 feet (1,600 meters) above mean sea level (msl) and is approximately 0.2 surface acres (0.08 ha) in size and averages 5 feet (1.5 m) deep. Because the Project operates as run of river, there is no measurable storage. Though no measurable storage is present in the forebay, habitat in this area is lacustrine, and given the shallow water depth no thermal stratification is present. Substrate in the forebay consists of deposited silt, sand, and other glacial fines.

Water diverted at the forebay travels through the flow line and penstock to the generating turbine in the Project powerhouse. Water exits the turbine and is discharged into an approximately 985-foot (300 m) long tailrace discharge channel that empties into the West Fork Wallowa River. This channel has an average wetted-width of 10 feet (3.1 m) and an average depth of one foot (0.3 m). The habitat type within the tailrace channel is dominated by high gradient riffle with very few pools.

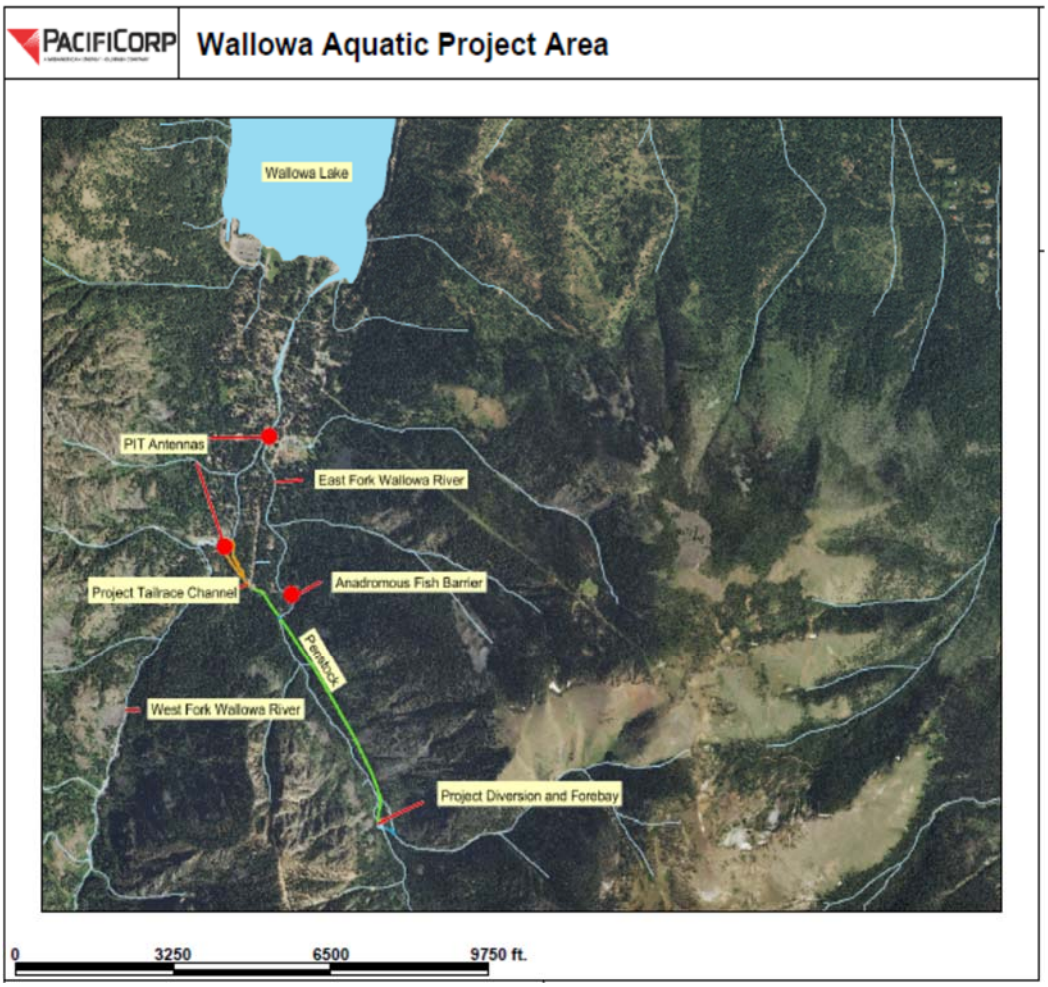

Figure 1 Wallowa Falls Hydroelectric Project.

3.0 METHODS

Onsite observations indicate when the unit trips and the headgate closes it takes approximately 90 minutes for the entire tailrace channel to drain completely of water. Conversely, if the unit trips and the headgate does not close a constant flow of approximately 3 cubic feet per second (cfs) is supplied to the tailrace channel. Thus a fish salvage event is only triggered if the unit trips along with a subsequent headgate closure. Unit trips that do not cause the headgate to close shall trigger no salvage response as the amount of water available within the tailrace channel during this scenario is sufficient for fish survival until the unit is brought back online and full flow once again commences.

Upon notification of a unit trip with corresponding headgate closure, regardless of time of day, a local on-call qualified biologist was immediately notified by an operator at Merwin Hydro Control and commenced with physically rescuing stranded fish from the tailrace channel. The local qualified biologist lives in close proximity to the Project so as to be on-site and walking the tailrace channel within 60 minutes of the unplanned unit trip. A Smith-Root LR-24 (or similar model) backpack electrofisher or long-handled dip net was utilized to capture stranded fish. If a backpack electrofisher was utilized, it was set to Direct Current (DC) and applied at the lowest voltage setting possible to still allow capture of stranded fish species. All electrofishing activities followed protocols as set forth in the National Marine Fisheries Service Backpack Electrofishing Guidelines (NMFS 2000). To remain compliant with stipulations contained within the USFWS issued Biological Opinion (BiOp) for the Wallowa Falls Hydroelectric Facility, PacifiCorp ensured that fish capture and removal operations were conducted by a qualified biologist, and that all staff participating in the operation had the necessary knowledge, skills, and abilities to ensure safe handling of fish. All planned unit outages with headgate closure occured early in the morning to ensure the lowest possible water temperatures for safe fish handling.

In 2018, any and all salvage activities began in the fenced area immediately downstream of the turbine discharge and proceeded in a downstream manner until all areas of the tailrace were thoroughly fished. All captured fish were held in five gallon buckets or small coolers with aerators until liberation into the West Fork Wallowa River downstream of the Project tailrace confluence. Fish capture and removal operations took all appropriate steps to minimize the amount and duration of handling. The operations maintained captured fish in water to the maximum extent possible during seining/netting, handling, and transfer for release, to prevent and minimize stress.

Prior to liberation, all captured fish were quantified and measured to their caudal fork. Due to the presence and possible capture of Endangered Species Act listed bull trout in the Project area, recording of information following contact with said species complied with stipulations contained within the USFWS issued BiOp for this Project which states, “PacifiCorp shall document all bull trout encountered during work site isolation by submitting a fish handling and injury-occurrence report to the Service. The report shall include: 1) the name and address of the supervisory fish biologist; 2) methods used to isolate the work area and minimize disturbances to bull trout; 3) stream conditions before and following placement and removal of temporary barriers; 4) the means of fish removal; 5) approximate the number of fish removed by species and age class, the number of bull trout removed; 6) condition of all bull trout released; and 7) any incidence of observed injury or mortality to bull trout. Specifically, for all bull trout

captured, we ask that the fisheries biologist in charge of handling record the date and time, capture location, capture method used, length and weight of the specimen, condition (if abnormal), search for and record identification numbers from any tags that may be present, and provide the collector's name." This Report and information contained therein shall qualify also as the "fish handling and injury-occurrence report" as stipulated within the USFWS issued BiOp for the Project.

Also in 2018, a resistance type weir was constructed to serve as a temporary fish exclusionary device at the outlet of the tailrace channel and it's confluence with the West Fork Wallowa River. The resistance weir utilized 25.4 millimeter (mm) diameter polyvinyl chloride (PVC) set to a length of 2.4 meters (m) and spaced apart 6.35 mm by mechanically constructed stringers, the weir was stream-spanning (Figure 2). As extra precaution, a barrier net was also laid across the entire bottom of the upstream side of the weir. The openings of this barrier net were also 6.35 mm and the net was held in place by large sandbags placed end to end along the stream bottom and spanning the entire stream-width.

Figure 2. Photo of Wallowa Falls tailrace barrier in operation. Photo taken on August 2, 2018.

4.0 RESULTS

Fish Salvage

The Wallowa Falls Tailrace Channel was salvaged for aquatic species on four separate occasions in 2018. The first salvage occurred on May 25 and was due to a unit trip and subsequent headgate drop. No fish were initially observed or captured during salvage activities, but a visual inspection of the dried tailrace channel the next day encountered one dessicated rainbow trout mortality. The second salvage activity occurred on June 11 from planned dewatering due to maintenance of the generating unit. Two rainbow trout were captured and liberated downstream to the West Fork Wallowa River. The third salvage occurred on July 16 after the temporary tailrace barrier was installed per Article 411 (1) of the operating license which stipulates that a fish salvage will be performed within two hours of a fish exclusionary device being installed within the channel. During this salvage four rainbow trout, two bull trout, and one *Salvelinus* hybrid were captured and liberated downstream to the West Fork Wallowa River. All *Salvelinus* captures were additionally sampled for genetic material to be analyzed at a later date.

In all, seven rainbow trout, two bull trout, and one *S.* hybrid ranging in fork lengths from 124 mm to 200 mm were captured within the tailrace channel. Of these ten captures, all live fish were liberated to the West Fork Wallowa River (Table 1). All fish were captured by a Smith-Root model LR-24 backpack electrofisher set to straight direct current in order to minimize stress from initial capture and all protocols as set forth in the NOAA Electrofishing Guidelines Manual were followed.

Table 1

Date	Species	Fork Length (mm)	Location	Comments
5/25/18	RB	124	Tailrace	Salvage due to unplanned unit trip. MORT.
6/11/18	RB	125	Tailrace	Salvage due to unit maintenance
6/11/18	RB	150	Tailrace	Salvage due to unit maintenance
7/16/18	Bull	119	Tailrace	Salvage after temp tailrace barrier construction
7/16/18	Bull	132	Tailrace	Salvage after temp tailrace barrier construction
7/16/18	hybrid	134	Tailrace	Salvage after temp tailrace barrier construction
7/16/18	RB	200	Tailrace	Salvage after temp tailrace barrier construction
7/16/18	RB	170	Tailrace	Salvage after temp tailrace barrier construction
7/16/18	RB	192	Tailrace	Salvage after temp tailrace barrier construction
7/16/18	RB	168	Tailrace	Salvage after temp tailrace barrier construction
11/1/18	n/a	n/a	Tailrace	Salvage due to unit maintenance. No fish captured or observed.

Temporary Fish Barrier

Per Article 410 of the operating license, a temporary fish barrier was installed at the outlet of the Wallowa Falls Tailrace Channel on July 16, 2018. This tailrace fish barrier was visually inspected twice per week until taken out on November 15, 2018. At no time during weekly inspections was the barrier visually assessed to be ineffective in precluding fish from entering the tailrace (Appendix A). Maintenance on the generating unit on November 1 granted the

opportunity to test the effectiveness of the tailrace barrier as the tailrace channel was drained dry prior to maintenance activities. No fish were captured or observed during fish salvage activities as the tailrace was dewatering and no fish mortalities were observed after the channel was completely dewatered.

5.0 CITATIONS

National Marine Fisheries Service. 2000. National Marine Fisheries Service Backpack Electrofishing Guidelines.

United States Fish and Wildlife Service. 2016. Biological Opinion for the Wallowa Falls Hydroelectric Project.

APPENDIX A

TAILRACE BARRIER WEEKLY INSPECTION NOTES

Date	Observer	Comments
7/16/2018	J. Doyle	Weir completed and installed
7/20/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
7/23/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
7/26/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
7/30/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
8/2/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well. .
8/6/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
8/9/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
8/13/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
8/17/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
8/20/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
8/23/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
8/27/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
8/30/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
9/2/2018	J. Doyle	Weir in place, mechanically cleaned with push broom and working well.
9/6/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
9/10/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well. .
9/13/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
9/17/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
9/20/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.

Date	Observer	Comments
9/23/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
9/28/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
10/2/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
10/6/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
10/10/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
10/12/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
10/15/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
10/18/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
10/23/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
10/28/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
10/30/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
11/2/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
11/6/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
11/10/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
11/12/2018	Bioresources staff	Weir in place, mechanically cleaned with push broom and working well.
11/15/2018	Bioresources staff	Weir disassembled and taken out of tailrace channel.

Appendix C

Bull Trout Redd Monitoring Report

Final

Bull Trout Redd Monitoring Report for the Wallowa Falls Hydroelectric Project

East Fork Wallowa River barrier to upstream fish migration, photo courtesy of Kendrick Moholt

(FERC No. P-308)

December 20, 2018

Prepared by:

Jeremiah Doyle

PacifiCorp

825 NE Multnomah Street

Portland, OR 97232

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1.0 INTRODUCTION

The United States Fish and Wildlife Service (USFWS) issued a new Biological Opinion (BiOp) for the Wallowa Falls Hydroelectric Project (Project) on October 14, 2016. Monitoring elements within the new BiOp specifically pertaining to Endangered Species Act (ESA) listed bull trout (*Salvelinus confluentus)* were triggered when the Federal Energy Regulatory Commission (FERC) issued a new operating license for the Project on January 7, 2017.

The USFWS listed five reasonable and prudent measures (RPM) to be undertaken in order to minimize incidental take of bull trout by Project operations. Elements within this Plan pertain specifically to RPM 4 which seeks to "*minimize the risk of adverse effects to bull trout from emergency shut-down and ramping"*. Section 8.4 4(a) of the BiOp adds specific language and actions to be taken in order to achieve RPM 4.

Bull trout currently inhabit the East Fork Wallowa River (Study Area) at varying densities, depending on time of year. Past redd surveys of the Study Area have revealed bull trout actively constructing redds, while no bull trout redds have ever been observed within the neighboring West Fork.

This Report and the information contained therein fulfills reporting requirements per Section 8.4 4(a) of the USFWS issued BiOp as well as results pertinent to implementation of actions necessary to assess abundance and spatial distribution of bull trout redds within the East Fork Wallowa River.

2.0 STUDY AREA

The bypassed portion of the East Fork Wallowa River within and near the Project area is approximately 2,800 meters (m) long from the Project diversion dam to its confluence with the Wallowa River (Figure 1). Gradient in this reach is high, with the upper 1,600 m averaging 19 percent and the lower 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 800 m to the confluence with the Wallowa River has a shallower gradient, consisting of numerous riffles and pools. Over the course of its length, the bypassed East Fork Wallowa River drops approximately 365 m from the dam to the confluence with the Wallowa River. The upper and lower portions are divided by a 3.7 m vertical falls (Report cover photo), an impassible upstream migration fish barrier.

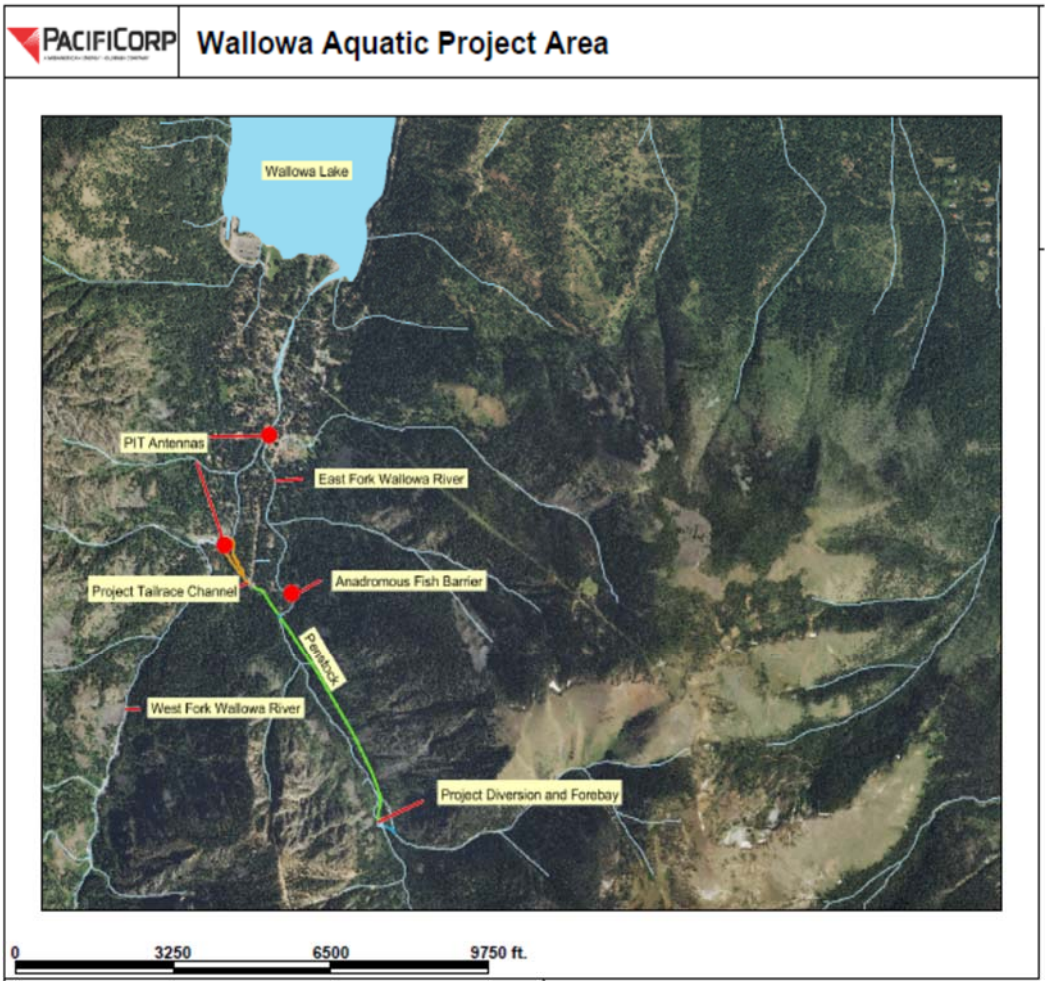


Figure 1. Wallowa Falls Hydroelectric Project.

3.0 METHODS

Section 8.4 4(a) of the BiOp states the following terms and conditions are necessary for the implementation of RPM 4, "*Conduct bull trout redd monitoring in the East Fork Wallowa River (from the upstream falls to the confluence with the Wallowa River) on an annual basis for 10 years to monitor take. FERC/PacifiCorp shall meet with the Service at the end of the 10 year period to determine whether additional years of redd monitoring are necessary GPS and map redds and photo document redds during survey. Measure the size of a redd and its location. Document bull trout observed (<6 inches in length, < 12 inches in length, <14 inches in length, and > 14 inches in length, while conducting redd count and document if bull trout occupy the redd). Note if brook trout are spawning with bull trout. Document flows during annual redd counts and during a shutdown and ramping. Conduct this redd monitoring in mid-September and October. If an emergency shutdown and ramping occurs during the spawning season, the East Fork Wallowa River spawning area will be field visited for any new redds built near the water's edge that could be dewatered due to shut down and ramping. Notify the Service of both positive and negative findings".*

Bull trout redd surveys of the lower portion of the East Fork Wallowa River began September 1, 2018 and continued weekly through October 30, 2018 for a total of nine redd surveys. During each survey the entire lower portion of the East Fork Wallowa River was walked by an experienced qualified biologist, from the confluence with the West Fork Wallowa River upstream 800 m to the migratory fish barrier. In order to standardize inherent observer error, the same experienced surveyor was utilized for all nine surveys in 2018. All encountered bull trout redds were demarcated by handheld GPS, flagged for visual reference within the stream, and photographs were taken of each redd. During subsequent surveys, previously identified redds were revisited and assessed for visibility. Flagging was either marked Still Visible along with the survey date if redd could still be visually identified, or the flagging taken down if the redd was no longer visible. Time taken for redd to no longer remain visible within the stream was recorded in order to assess redd life. Though the Planning document called for only four redd surveys during the spawning period, this being the second year of study and redd life still being characterized, nine surveys were performed in order to gain an accurate understanding of visual redd persistence within this watershed. Observed redd life will be utilized to adjust frequency of surveys moving forward.

All fish observed in the vicinity of identified redds were recorded to species if possible, as well as estimated for fork length.

4.0 RESULTS

Four bull trout redds were identified and marked by GPS during the nine redd surveys performed of the East Fork Wallowa River in 2018 (Figure 2). All four bull trout redds were large and indicative of being constructed by large migratory-sized fish (Table 1). One new bull trout redd was observed during each of the first four surveys (Sept. 1 – Sept. 24), no new redds were observed during the final five surveys (Oct. 2 – Oct. 30). All four observed redds had bull trout either on and actively constructing or in very close proximity to. Three of the four redds had a

pair (Figure 3), one male/one female, associated with the redd; while the fourth identified redd only had a single fish in close proximity (Table 1).

Table 1. East Fork Wallowa River bull trout redd data.

Date	Survey Location	Redd	Redd Dimension	Live bull trout				Survey Conditions
				<6 in.	<12 in.	<14 in.	>14 in.	
9/1/2018	EF Wallowa mouth to barrier	1	50 in. long 27 in. wide	0	0	0	3	Clear sky, Good H2O vis
9/8/2018	EF Wallowa mouth to barrier	2	72 in. long 39 in. wide	0	0	0	3	Clear sky Good H2O vis
9/16/2018	EF Wallowa mouth to barrier	3	42 in. long 20 in. wide	0	1	0	1	Clear sky Good H2O vis
9/24/2018	EF Wallowa mouth to barrier	4	79 in. long 37 in. wide	0	0	0	1	Clear sky Good H2O vis
10/2/2018	EF Wallowa mouth to barrier	0	n/a	0	0	0	0	Clear sky Good H2O vis
10/9/2018	EF Wallowa mouth to barrier	0	n/a	0	0	0	0	Light rain Good H2O vis
10/16/2018	EF Wallowa mouth to barrier	0	n/a	0	0	0	0	Clear sky Good H2O vis
10/25/2018	EF Wallowa mouth to barrier	0	n/a	0	0	0	0	Clear sky Good H2O vis
10/30/2018	EF Wallowa mouth to barrier	0	n/a	0	0	0	0	Overcast Good H2O vis

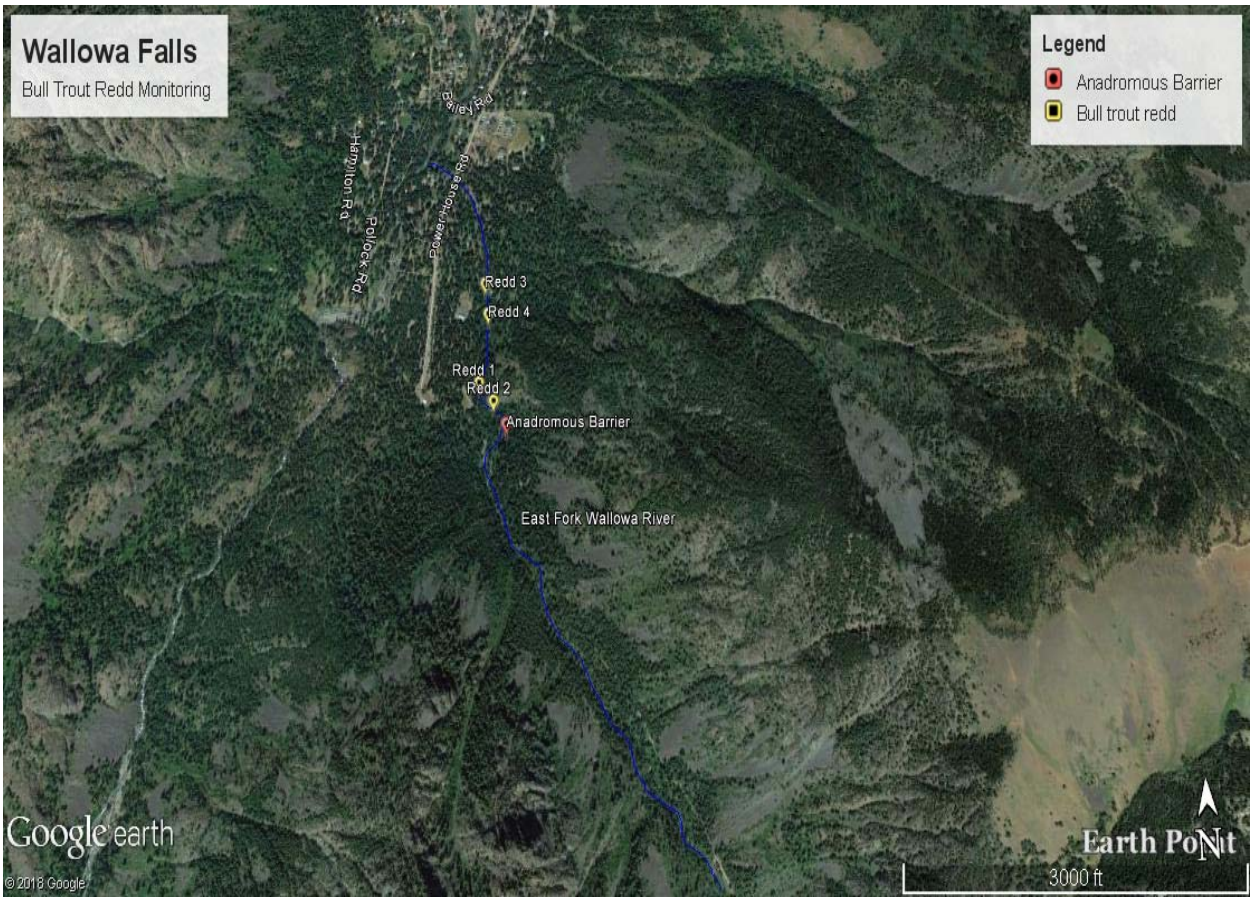


Figure 2. GPS marked locations (yellow dots, n=4) of bull trout redds within the East Fork Wallowa River

All four bull trout redds were in the upper portion of available habitat below the barrier, with the uppermost redd ~ 40 meters below the impassible falls. Redd 1 visually persisted for 45 days, redd 2 for 47 days, redd 3 for 39 days, and redd 4 for 22 days. No observed fish during any survey was identified as a brook trout (*Salvelinus fontinalis*). Flows during the survey period remained stable as measured at the United States Geological Service gage station, and never deviated below prescribed minimum flows for this portion of the year.

Three unit trips occurred during the bull trout spawning period in 2018. All three unit trips were less than four hours in duration before the unit was brought back on-line and ramped back up following prescribed ramping protocols. PacifiCorp made the real-time decision, based on professional judgment, that no emergency redd survey need be performed prior to the unit being brought back on-line when any outage is less than 24 hours in duration. PacifiCorp believes that 24 hours or less is not enough time for bull trout to pair up, stage on an area within the stream, construct a redd, and spawn successfully. Therefore, no emergency redd surveys of the bypassed portion of the East Fork Wallowa River due to a Wallowa Falls generator unit trip was observed during the August 1 – October 31 bull trout spawn timeframe.

In 2019 it is anticipated bull trout redd surveys will occur at the same rate, timeframe and duration as that observed in 2018.

Figure 3. Bull trout paired over the top of redd #3.

5.0 CITATIONS

Oregon Department of Environmental Quality. 2016. 401 Water Quality Certification for the Wallowa Falls Hydroelectric Project.

United States Fish and Wildlife Service. 2016. Biological Opinion for the Wallowa Falls Hydroelectric Project.

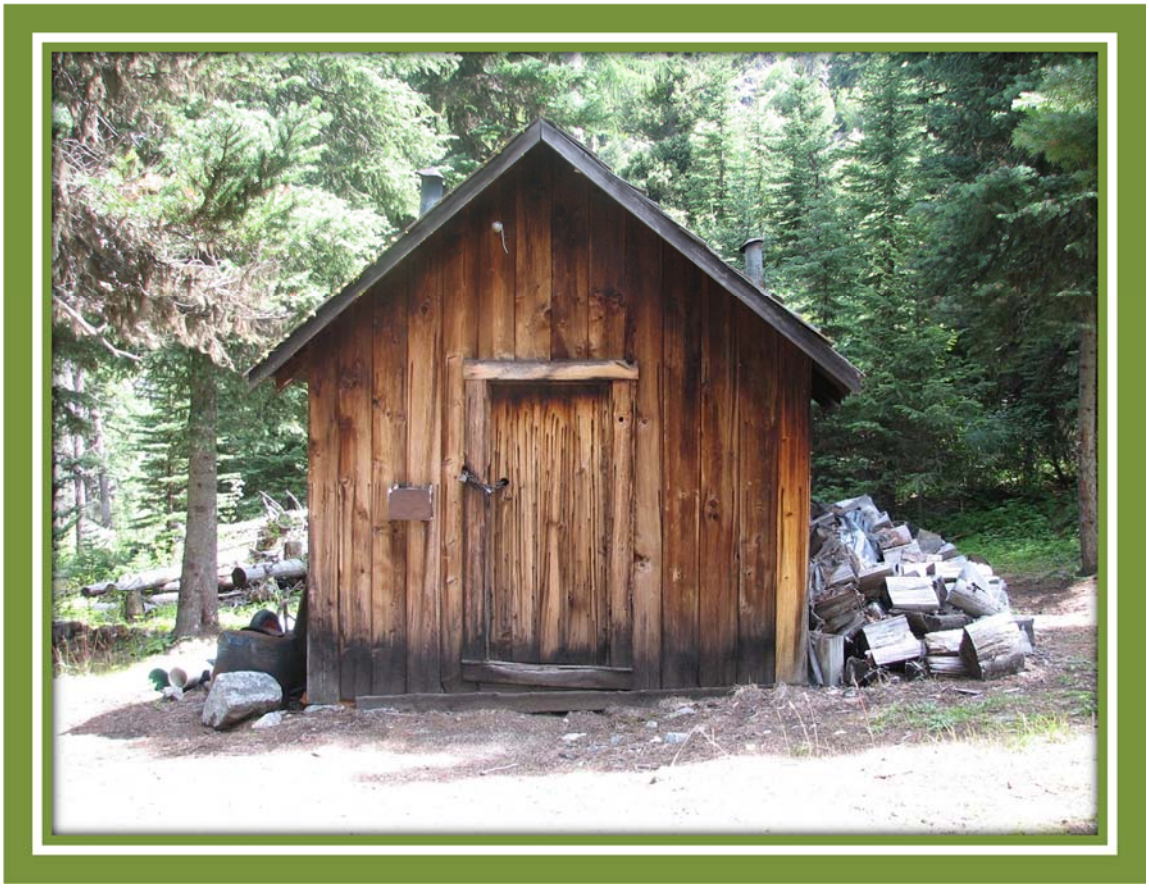
Appendix D

Noxious Weed Control Plan Annual Report

2018 Noxious Weed Control Plan Annual Report

Wallowa Falls Hydroelectric Project

FERC Project No. 308



Prepared by:

PACIFICORP

December 2018

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APPENDICES

1.0 Introduction

The Wallowa Falls Hydroelectric Project (FERC Project No. 308) received a new operating license from the Federal Energy Regulatory Commission (Commission) on January 5, 2017 (FERC 2017). Article 415 of the FERC license required PacifiCorp to file a noxious weed control plan (NWCP) with FERC within 6 month from the date of the license issuance (July 5, 2017):

> Article 415. *Noxious Weed Control Plan*. The revised Noxious Weed Control Plan required by Appendix B, condition 6, must be developed after consultation with the Oregon Department of Fish and Wildlife and U.S. Fish and Wildlife Service. The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.
>
> The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee must implement the plan, including any changes required by the Commission.

The United States Department of Agriculture (USDA), Forest Service Final Section 4(e) Conditions were filed on February 16, 2016 and included as Appendix B in FERC license (FERC 2017). The following conditions apply to the NWCP (PacifiCorp 2017):

> Condition No. 6 – *Noxious Weed Management Plan* The Licensee shall, within six months following License issuance, revise the Noxious Weed Management Plan (NWMP), Appendix K, Volume III of the FLA [Final License Application] (February 2015), in consultation with the USDA Forest Service. The NWMP shall include measures A through D below and must meet USDA Forest Service standards, guidelines, methods, and monitoring protocols for actions undertaken on National Forest Service (NFS) lands. The NWMP shall be filed with the Commission for approval. After Commission approval, the Licensee shall immediately implement the NWMP.

A. The Licensee shall implement applicable noxious weed control measures found in invasive plant management direction for the Pacific Northwest Region and/or the Wallowa-Whitman National Forest Land and Resource Management Plan, as amended for the period of the License. Future changes or modifications to the management direction will require the Licensee to coordinate with the USDA Forest Service at the Annual Resource Coordination Meeting required in Condition 5 to ensure the Licensee's implementation activities comply with those changes or modifications.

B. The Licensee shall survey and treat noxious weeds on NFS lands within the FERC Project Boundary for three (3) consecutive years between June 1 and July 31 following construction or maintenance activities described in the FLA. If for three consecutive years, no noxious weeds are detected during the annual surveys, then survey intervals shall shift to a biennial schedule until a noxious weed infestation is detected. Control methods that will effectively control all Class A and other target weeds shall be implemented the same year as detection as allowed by U.S. Forest Service Pacific Northwest Region Invasive Plant Program, Preventing and Managing Invasive Plants (April 2005) and Record of Decision (ROD) (October 2005).

C. The exact timing between June 1 and July 31 are recommended to implement control methods for optimal effectiveness in association with the guidelines provided by U.S. Forest Service Pacific Northwest Region Invasive Plant Program, Preventing and Managing Invasive Plants (April 2005) and Record of Decision (ROD) (October 2005). Manual control methods shall include measures including but not limited to reseeding, mulching and supplemental irrigation to ensure establishment of non-noxious vegetation in treated areas.

D. The Licensee shall ensure that: a) ground cover in treated areas equals or exceeds 80 percent of that in an undisturbed control area with similar vegetation and is adjacent to the Project area and b) species composition in disturbed areas equals or exceeds 75 percent non-weedy species. If the standards above are not feasible or achievable, the Licensee shall consult and coordinate with the USDA Forest Service to develop suitable alternatives.

E. The Licensee shall include a status report in its Annual Report, required by Condition No. 5 – Resource Coordination, describing activities related to weed control, assessment of weed areas, and identification of future efforts to control noxious weed spread and colonization within the Project boundary.

PacifiCorp submitted the Noxious Weed Control Plan (NWCP) to the Commission on June 1, 2017 pursuant to Article 415 and the Forest Service Final Section 4E Conditions included as Appendix B of the FERC license. A FERC order approving NWCP was issued by the Commission on July 25, 2017. PacifiCorp implement the NWCP in 2017 prior to receiving the Commission approval to insure that noxious weed monitoring and control methods were completed during the growing season and would optimize effectiveness.

This report complies with the FERC License Appendix B USDA, Forest Service Final Section 4(e) Condition No. 5- Resource Coordination requiring PacifiCorp to provide an Annual Report to Wallowa Whitman National Forest (WWNF) on the status of the NWCP activities for that year (FERC 2017). The status report should be completed by December 1 each year to allow for at least a 30-day review prior to the Annual Resource Coordination meeting. The status report will only apply to the Project Boundary as described in Section 2.0 and shown in Appendix A:

- The current year Invasive Plant Inventory Forms
- A description of the control methods, operation and maintenance, and success of the control methods conducted that year and the accompanying treatment forms [Herbicide Application (2510), Insect Release (2550), and/or Mechanical/Physical Treatment (2530)
- Future anticipated soil disturbing activities, noxious weed prevention methods to be conducted, and identification of future efforts to control noxious weed spread and colonization for the following year within the Project Boundary
- Future expected efforts and a schedule for monitoring
- Compliance with the current Wallowa Whitman National Forest, State and Local regulations for weed management activities
- Results of revegetation success for all ground disturbance activities

2.0 Project location

The Wallowa Falls Hydroelectric Project is located on the east fork of the Wallowa River near the town of Joseph, Oregon in Wallowa County. The project powerhouse discharges into the West Fork of the Wallowa River upstream of Wallowa Lake (Figure 1).

The Project Boundary is an estimated 26 acres and encloses project operations, such as Royal Purple Creek Diversion Dam, the pipeline and open channel conveying water from the Royal Purple Creek Diversion Dam to the East Fork Dam and impoundment, penstock, powerhouse, transmission line, and non-project substation (FERC 2017). Portions of the access road, tailrace, and Pacific Park Campground are also included within the Project Boundary (FERC 2017). Approximately half lands within the Project Boundary are owned by PacifiCorp and the other half are on WWNF lands. Appendix A shows the Project Boundary and the associated features.

Areas within the Project Boundary may be more susceptible to noxious weeds due to exposed soils and/or are adjacent to frequent human activity. Therefore the Project Boundary is differentiated into three noxious weed priority areas to prioritize monitoring, prevention, and control methods accordingly. Noxious weed priority areas are defined as follows and are shown on Appendix A.

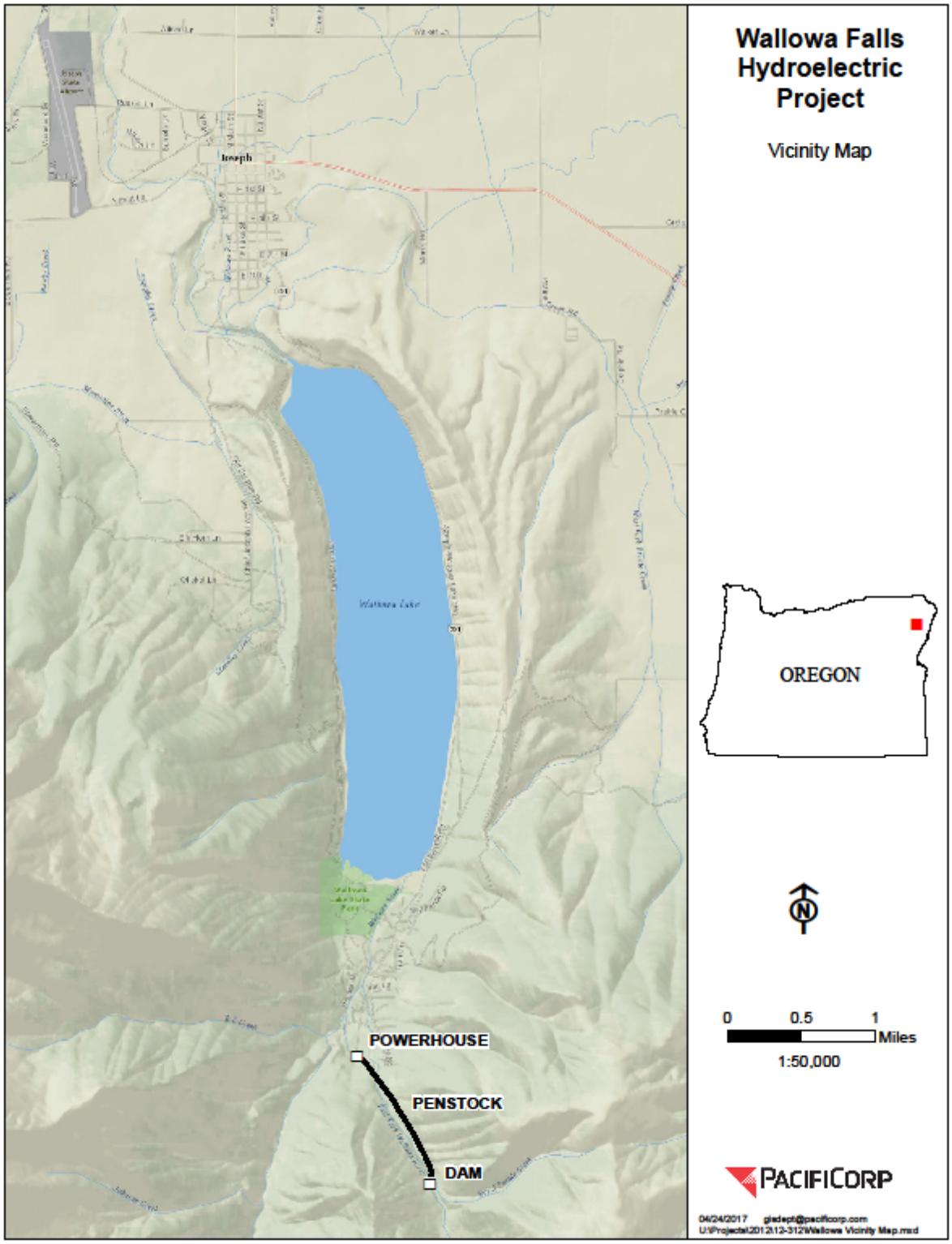
High Priority: areas with frequent or continued soil disturbance, frequent or constant exposure to weed seed vectors, or is known to have existing noxious weeds. These areas include the campground, forebay area, and portions of the WWNF trail within the Project Boundary.

Medium Priority: areas with prior or frequent soil disturbance, but has low exposure to weed seed vectors. Examples of this would include the access road and penstock.

Low Priority: areas that have intact soils and a low exposure to weed seed vectors. Examples of this would include talus slopes and forested areas away from high use areas.

These areas may be modified as needed to adjust for changes in the Project Boundary or in public use of an area (e.g. new trails etc.). No changes were required to the Project Boundary or the noxious weed priority areas in 2018.

Figure 1: Wallowa Falls Hydroelectric Project Vicinity Map



3.0 Regulation and Compliance

A comprehensive review of current and applicable WWNF, State and local regulations was completed in June 2018. The laws are as follows and PacifiCorp complied with these regulations and guidelines for all noxious weed monitoring and management in 2018:

3.1 USFS and WWNF regulations guidelines

The following USFS documents were used as guidelines and reference for all noxious weed monitoring and control methods implemented in 2018:

- Land and Resource Management Plan Wallowa-Whitman National Forest, as amended (USFS 1990).
- Pacific Northwest Region Invasive Plant Program Preventing and Managing Invasive Plants Final Environmental Impact Statement (USFS 2005a).
- Pacific Northwest Region Invasive Plant Program Preventing and Managing Invasive Plants Record of Decision. (USFS 2005b).
- Wallowa-Whitman National Forest Invasive Plants Treatment Project Final Environmental Impact Statement. (USFS 2010a).
- Wallowa-Whitman National Forest Invasive Plant Treatment Project Record of Decision. (USFS March 2010b).

3.2 Oregon Revised Statues

The following Oregon Revised Statues (ORS) are chapter 569 Weed Control that provide state and county authority to manage noxious weeds and are applicable to NWCP:

2015 ORS 569.175 applicable definitions:

(1) "Noxious weed" means a terrestrial, aquatic or marine plant designated by the State Weed Board under ORS 569.615 as among those representing the greatest public menace and as a top priority for action by weed control programs.

(2) "Person" means a person as defined in ORS 174.100 (Definitions), the federal government or any of its agencies, the State of Oregon or any of its agencies, or any city, county, district or municipal corporation of this state

2015 ORS 569.185 State Department of Agriculture authority:

(13) Request any person owning or controlling land within this state to control, prevent the spread of or, when feasible, eradicate noxious weeds, and to supervise such activities.

2015 ORS 569.350 Necessity of eradication of weeds:

Noxious weeds have become so thoroughly established and are spreading so rapidly on state, county and federally owned lands, as well as on property in individual ownership and in transition to county ownership through tax delinquency, that they hereby are declared a

menace to the public welfare. While it is recognized that complete eradication may not be practicable, it hereby is established that steps leading to eradication and control are necessary and that responsibility rests not only on the individual landowner and operator but also on the county, state and federal government, and that the county, state and federal government should cooperate with individual owners in the control and eradication of noxious weed pests.

3.3 Noxious Weed Monitoring List

State of Oregon and Wallowa County maintain a list of target Noxious Weeds that are separated into the following three categories for prioritizing management (Oregon Department of Agriculture 2018):

A listed Weed: A weed of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent.

Recommended action: Infestations are subject to eradication or intensive control when and where found. A weed of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent.

B listed Weed: A weed of economic importance which is regionally abundant, but which may have limited distribution in some counties.

Recommended action: Limited to intensive control at the state, county or regional level as determined on a site specific, case-by-case basis. Where implementation of a fully integrated statewide management plan is not feasible, biological control (when available) shall be the primary control method.

T Designated Weed: A designated group of weed species that are selected and will be the focus for prevention and control by the Noxious Weed Control Program. Action against these weeds will receive priority. T designated noxious weeds are determined by the Oregon State Weed Board and directs Oregon Department of Agriculture to develop and implement a statewide management plan. T designated noxious weeds are species selected from either the A or B list.

The following table is a list of species included in the 2018 NWCP monitoring:

Table 1: 2018 Oregon State and Wallowa County Listed Noxious Weeds

Common Name [2,3]	Scientific Name[1,2]	Oregon State Category[2]	Wallowa County Category[3]
Absinthe Wormwood*	*Artemisia absinthium*		B
African Rue	*Peganum harmala*	A (T)	
Annual Bugloss*	*Anchusa officialis*		B
Armenian blackberry (Himalayan blackberry) *	*Rubus armeniacus*	B	B
Atlantic Ivy	*Hedera hibernica*	B	
Bachelor Button*	*Centaurea cyanus*		B
Barbed goatgrass	*Aegilops triuncialis*	A (T)	
Biddy-biddy	*Acaena novae-zelandiae*	B	
Bohemian Knotweed	*Polygonum behemicum*		A
Buffalobur	*Solunum rostratum*	B	
Bull thistle**	*Cirsium vulgare*	B	
Bur Buttercup*	*Ceratocephala testiculata*		B
Butterfly bush	*Buddleja davidii*	B	
Camelthorn	*Alhagi pseudalhag*	A	
Canada thistle**	*Cirsium arvense*	B	B
Cape Ivy	*Delairea odorata*	A (T)	
Chicory*	*Cichorium intybus*		B
Coltsfoot	*Tussilago farfara*	A	
Common Burdock**	*Arctium minus*		B
Common Bugloss*	*Anchusa officinalis*	B(T)	A (T)
Common cordgrass	*Spartina anglica*	A(T)	
Common crupina*	*Crupina vulgaris*	B	B
Common frogbit	*Hydrocharis morsus-range*	A	
Common reed	*Phragmites australis*	B	
Common Tansy	*Tanacetum vulgare*		A
Common Teasel	*Dipsacus fullonum*		B
Creeping yellowcress	*Rorippa sylvestris*	B	
Cut-leaved Teasel	*Dipsacus laciniatus*	B	
Dalmatian Toadflax*	*Linaria dalmatica*	B(T)	B
Delta arrowhead	*Sagittaria platyphyla*	A	
Dense flowered cord grass	*Spartina densilfora*	A (T)	
Diffuse Knapweed*	*Centaurea diffusa*	B	B
Dodder*	*Cuscuta spp.*	B	
Dyer's Woad*	*Isatis tinctoria*	B	T
English Ivy	*Hedera helix*	B	
Eurasian watermilfoil	*Myriophyllum spicatum*	B	

Table 1: 2018 Listed Oregon and Wallowa County Listed Noxious Weeds (continued)

Common Name [2,3]	Scientific Name[1,2]	Oregon State Category[2]	Wallowa County Category[3]
European water chestnut	*Trapa natans*	A	
False Brome	*Brachypodium sylvaticaum*	B	
Field Bindweed*	*Convolvulus arvensis*	B (T)	B
Floating Primrose Willow	*Ludwigia peploides*	B	
Flowering Rush	*Butomus umbellatus*	A (T)	
French Broom	*Genista monspessulana*	B	
Garden yellow loosestrife	*Lysimachia vulgaris*	A (T)	
Garlic Mustard	*Alliaria petiolata*	B (T)	A (T)
Giant hogweed	*Heracleum mantegazzianum*	A (T)	
Giant Knotweed	*Polygonum sachalinense*	B	A
Goatsrue	*Galega officinalis*	A (T)	
Gorse	*Ulex europaeus*	B (T)	
Hairy whitetop *	*Lepidium pubescens*	B	A
Halogeton	*Halogeton glomeratus*	B	
Herb Robert	*Geranium robertianum*	B	
Himalayan knotweed	*Polygonum polystachum*	B	
Hoary Alyssum (False Hoary Alyssum) *	*Berteroa incana*	A (T)	A (T)
Hoary cress whitetop*	*Lepidium draba*	B	A (T)
Houndstongue**	*Cynoglossum officinale*	B	B
Hydrilla	*Hydrilla verticillata*	A	
Iberian starthistle	*Centaurea iberica*	A (T)	A
Indigo bush	*Amorpha fruticosa*	B	
Italian Thistle	*Carduss pycnocephalus*	B	A (T)
Japanese dodder	*Cuscuta japonica*	A	
Japanese knotweed*	*Polygonum cuspidatum*	B	(T)
Johnsongrass	*Sorghum halepense*	B	
Jointed goatgrass*	*Aegilops cylindriva*	B	B (T)
Jubata grass	*Cortaderia jubata*	B	
King devil hawkweed	*Pilosella piloselloides*	A	
Kochia*	*Kocia scoparia*	B	B
Kudzu	*Pueraria lobata*	A(T)	
Large-flower Primrose Willow	*Ludwigia grandiflora*	B (T)	
Leafy Spurge*	*Euphorbia esula*	B(T)	A (T)
Lens podded whitetop*	*Cardaria chalapensis*	B	
Lesser celandine	*Ranunculus ficaria*	B	
Long-Spine sandbur	*Cenchrus longispinus*		B
Matgrass	*Nardus stricta*	A (T)	
Meadow Hawkweed*	*Hieracium pratense*	B (T)	B (T)

Table 1: 2018 Listed Oregon and Wallowa County Listed Noxious Weeds (continued)

Common Name [2,3]	Scientific Name[1,2]	Oregon State Category[2]	Wallowa County Category[3]
Mouse-ear hawkweed	*Pilosella pilosella*	A (T)	
Meadow Knapweed**	*Centaurea pratensis*	B	A (T)
Mediterranean Sage	*Salvia aethiopis*	B	A (T)
Medusahead Rye*	*Taeniatherum canput-medusae*	B	B (T)
Milk thistle	*Silybum marianum*	B	
Orange Hawkweed*	*Pilosella aurantiacum*	A (T)	A (T)
Oregano	*Origanum vulgare*		A (T)
Ovate goatgrass	*Aegilops ovata*	A	
Oxeye Daisy**	*Leucanthemum vulgare*		B
Parrot's feather	*Myriophyllum aquaticum*	B	
Paterson's curse	*Echium plantagineum*	A (T)	
Perennial peavine	*Lathyrus latifolius*	B	
Perennial Pepperweed*	*Lepdium latifolium*	B(T)	A(T)
Pheasanteye (Blooddrop) *	*Adonis aestivalis*	B	
Plumeless Thistle*	*Carduus acanthoides*	A (T)	A
Poison Hemlock*	*Conium maculatum*	B	B
Policeman's Helmet	*Impatiens glandulifera*	B	
Portuguese broom	*Cytisus striatus*	B(T)	
Punturevine*	*Tribulus terrestris*	B	A
Purple Loosestrife*	*Lythrum salicaria*	B	A
Purple nutsedge	*Cyperus rotundus*	A	
Purple Star Thistle	*Centaurea calcitrapa*	A (T)	T
Ragweed	*Ambrosia artemisifolia*	B	
Ravenna grass	*Saccharum ravennae*	A (T)	A
Reed Canarygrass (Ribbon grass)	*Phalaris arundinaceae*	B (T)	B
Rose campion	*Lychnis coronaria*		A
Rush Skeletonweed*	*Chondrilla juncea*	B(T)	B (T)
Russian Knapweed*	*Acroptilon repens*	B	A (T)
Saltcedar*	*Tamarix ramoissima*	B (T)	
Salt meadow cordgrass	*Spartina patens*	A (T)	
Scotch Broom*	*Cytisus scoparius*	B	A(T)
Scotch Thistle*	*Onopordium acanthium*	B	B (T)
Shiny leaf geranium	*Geranium lucidum*	B	
Silverleaf nightshade	*Solanum elaeagnifolium*	A	
Slender flowered thistle	*Carduss tenuiflorus*	B	
Small broomrape	*Orobranche minor*	B	
Smooth Cordgrass	*Spartina alterniflora*	A	
Smooth distaff thistle	*Carthamus baeticus*	A	

Table 1: 2018 Listed Oregon and Wallowa County Listed Noxious Weeds (continued)

Common Name [2,3]	Scientific Name[1,2]	Oregon State Category[2]	Wallowa County Category[3]
South American waterweed	*Egeria densa*	B	
Spanish broom	*Sparitium junceun*	B	
Spanish heath	*Erica lusitanica*	B	
Spikeweed	*Hemizonia pungens*	B	
Spiny cocklebur*	*Xanthium spinosum*	B	
Spotted Cats ear	*Hyphochaeris glabra*		T
Spotted Knapweed**	*Centaurea stoebe*	B(T)	A (T)
Spurge laurel	*Daphne Laureola*	B	
Squarrose knapweed	*Centaurea virgata*	A (T)	
St. Johnswort**	*Hypericum perforatum*	B	
Sulfur Cinquefoil*	*Potentilla recta*	B	B (T)
Swainsonpea	*Sphaerophysa salsula*	B	
Sweetbriar Rose*	*Rosa rubiginosa*		B
Syrian bean-caper	*Zygophyllum fabago*	A	
Tall Buttercup*	*Ranunculus acris*		B
Tansy Ragwort*	*Senecio jacobaea*	B (T)	A (T)
Tuarian thistle	*Onopordum tauricum*	A(T)	
Tree of Heaven*	*Ailanthus altissima*	B	
Velvetleaf	*Abultilon theophrasti*	B	
Ventenata (North Africa grass) *	*Ventenata dubia*		B
Water soldier	*Stratiotes aloides*	A	
Waterprimrose	*Ludwigia hexapetala*	B (T)	
Welted Thistle*	*Carduus crispis*	A (T)	A (T)
West Indian sponge Plant	*Limnobium laevigatum*	A	
White bryonia (white bryony)	*Byronia alba*	A	A
White Campion	*Siline latifolia*		B
Wooly distaff thistle	*Carthamus lanatus*	A (T)	
Yellow archangel	*Lamiastrum galeobdolon*	B	
Yellow flag iris*	*Iris psuedocorus*	B	A (T)
Yellow floating heart	*Nymphoides peltata*	A (T)	
Yellow hawkweed*	*Pilosella floribundum*	A (T)	
Yellow nutsedge	*Cyperus esculentus*	B	
Yellow starthistle*	*Centuarea solstialis*	B	A
Yellow toadflax*	*Linaria vulgaris*	B	B
Yellowtuft	*Alyssum coriscan*	A(T)	

***Noxious weeds are known to exist within Wallowa County [1, 2]**

**Noxious weeds are known to exist within the Project Boundary (Bio-Resources 2018)

[1] Natural Resources Conservation Service 2018

[2] Oregon Department of Agriculture 2018 [3] Wallowa County 2018

4.0 2018 Monitoring and Management

The following is description of noxious weed monitoring, control and other management strategies that occurred in 2018 within the Project Boundary.

4.1 Prevention

Activities that disturb soils through the removal of native vegetation result in exposed ground that promotes the establishment of noxious weeds. Therefore noxious weeds will be controlled prior to conducting any soil disturbing activity and the area will be revegetated to prevent noxious weed establishment. No ground disturbing activities occurred within the Project Boundary in 2018.

4.2 Noxious Weed Monitoring

PacifiCorp contracted with local contractor, Kendrick Moholt (Bio-Resources, Inc.) to implement the NWCP monitoring and oversee control methods. The noxious weed monitoring surveys were completed by Kendrick on July 8, 2018 and included all high and medium priority noxious weed areas. A record of the each noxious weed infestation has been documented on Invasive Plant Inventory Forms are provided in Appendix B. The table below provides a list of the noxious weeds location and status.

Table 2: Noxious Weeds Located in 2018 within the Project Boundary.

Common Name	Scientific Name	Oregon State Category	Wallowa County Category	Location
Canada thistle	*Cirsium arvense*	B	B	Campground/trail
Bull thistle	*Cirsium vulgare*	B	None	Campground/trail
Houndstongue	*Cynoglossum officinale*	B	B	Trail
Common Burdock	*Arctium minus*	None	B	Campground/trail
Spotted knapweed	*Centaurea maculosa*	B (T)	A (T)	Campground/road
Oxeye daisy	*Leucanthemum vulgar*, formerly *Chrysanthemum leucanthemum*		B	Campground/trail
Meadow hawkweed	*Hieracium caespitosum*	B(T)	B (T)	Trail
St. Johnswort	*Hypericum perforatum*	B		Trail

4.3 Control Methods

Kendrick Moholt supervised the spray operation to control noxious weeds within the Project Boundary on July 9. 2018. Treatment consisted of spraying with Milestone® herbicide, mixed with a surfactant and a marking dye. The Herbicide Application Form 2510 is provided in Appendix B.

The campground and surrounding areas had Canada thistle, bull thistle, houndstongue, and burdock treated with spot application using backpack sprayers to minimize the application to individual plants.

An area near the entrance to the campground and the east side of the county road (near the trail head and horse trails) was thoroughly sprayed with backpack sprayers and All-terrain vehicle mounted sprayer to control larger infestations of spotted knapweed. The spotted knapweed will likely need to be treated again in 2019 to be completely effective.

Along the access road and trail there are three locations, including the area near the dam, were sprayed to control meadow hawkweed. Due to the potential presence of rare plants, special care was taken to avoid impacting rare plants. The two hawkweed populations identified during the relicensing studies do not appear to be spreading and appears to be decreasing in size. A third population consisting of two plants was located near the trailhead in 2017 and it appears to have been controlled. Additional treatments in 2019 will be necessary to eradicate hawkweed at the other locations. Other target noxious weed treated along access road and trail include bull thistle, Canada thistle and St. Johnswort.

4.4 Revegetation Success

All areas of prior ground disturbance within Project Boundary will be evaluated during the annual noxious weed monitoring to determine if the following criteria have been met:

a) ground cover in treated areas equals or exceeds 80 percent of that in an undisturbed control area with similar vegetation and is adjacent to the area of ground disturbance and

b) species composition in disturbed areas equals or exceeds 75 percent non-weedy species.

These areas will be monitored until the above criteria is met for 3 consecutive years. If the criteria cannot be met and is not feasible or achievable, then PacifiCorp will consult and coordinate with the US Forest Service at the Annual Resource Coordination Meeting. Currently there are no areas ground disturbance areas that require revegetation and/or revegetation success monitoring.

5.0 2019 Monitoring and Management

In 2019, the construction of the tailrace reroute and royal purple pipe extension will be begin in late summer and is scheduled to be completed in 2020. The royal purple pipe extension is currently within a high priority portion of the current Noxious Weed Monitoring Area. A portion of the tailrace reroute will extend beyond the current Noxious Weed Monitoring Area, but will be included in the 2019 noxious weed survey as a high priority area. Appendix C provides map of the proposed construction limits for both projects. Any noxious weed identified within the area will be treated prior to construction. In addition to these areas, the 2019 noxious weed monitoring will include all high and medium priority areas within the Project Boundary (Appendix A) and noxious weed control will occur as needed. The hawkweed infestations and spotted knapweed infestation near the trailhead and along the trail will likely need additional herbicide treatment in 2019.

6.0 References

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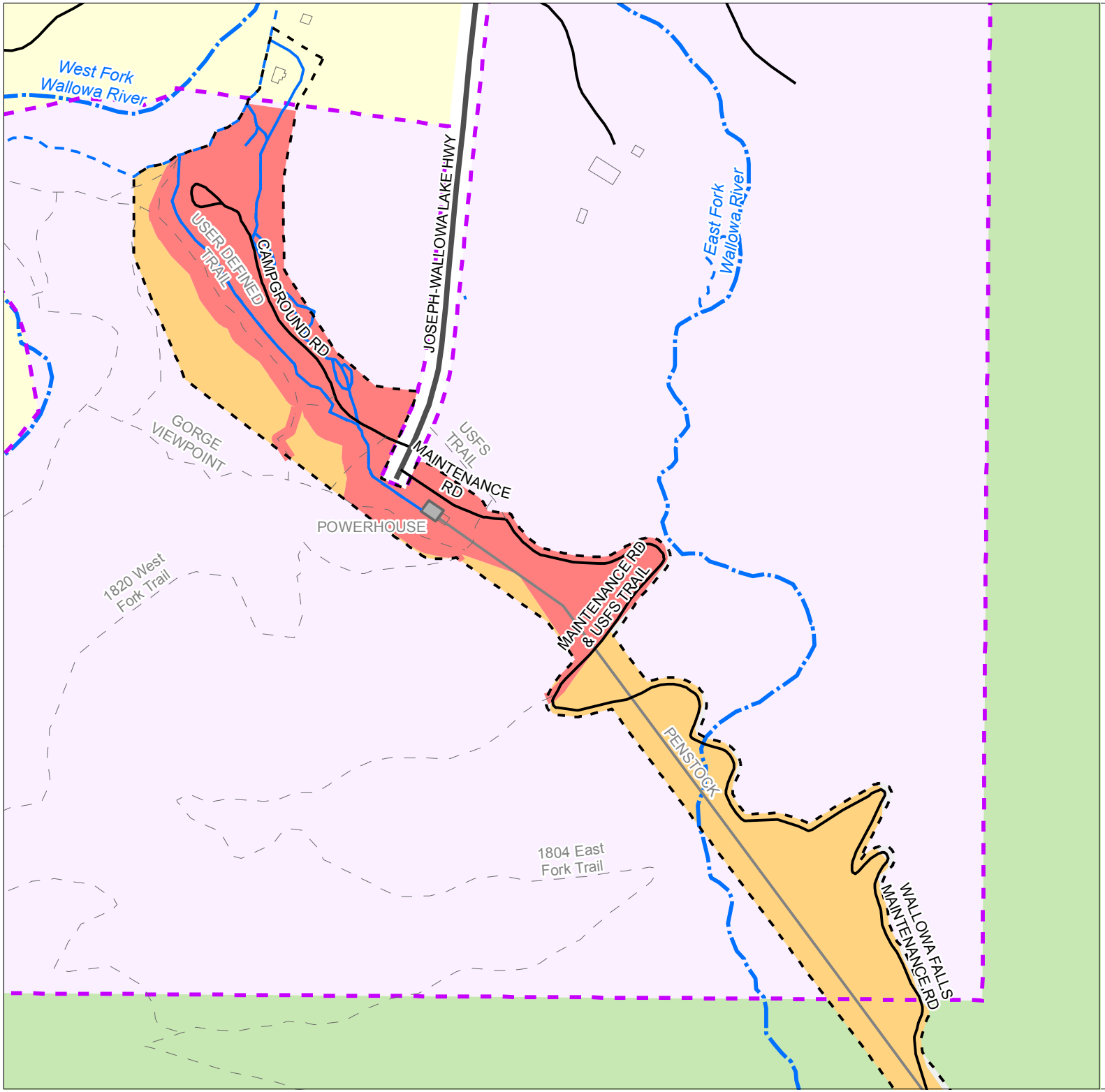
Appendix A

Noxious Weed Monitoring Area



Wallowa Falls Hydroelectric Project

Noxious Weed Monitoring Area

Legend

- Trail
- Road
- Highway
- Facility
- Penstock
- FERC Boundary

Priority Noxious Weed Areas

- High
- Medium
- Low

Land Ownership

- PacifiCorp
- USFS
- Private

1:3,600

0 250 500 Feet

PACIFICORP

04/20/2017 gisdept@pacificorp.com
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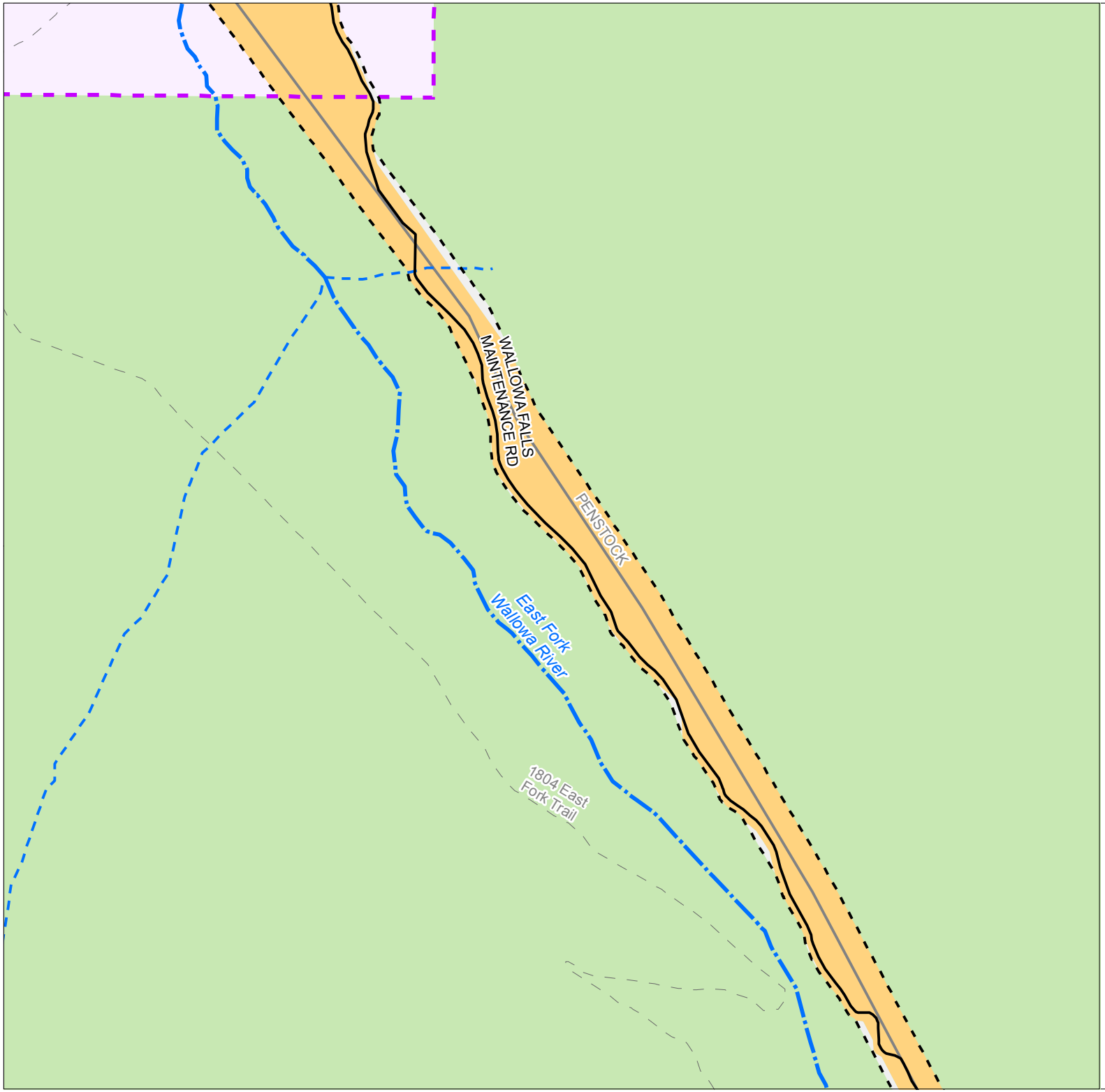

Wallowa Falls Hydroelectric Project

Noxious Weed Monitoring Area

Legend

- Trail
- Road
- Highway
- Facility
- Penstock
- FERC Boundary

Priority Noxious Weed Areas

- High
- Medium
- Low

Land Ownership

- PacifiCorp
- USFS
- Private

1:3,600

N

0 250 500 Feet

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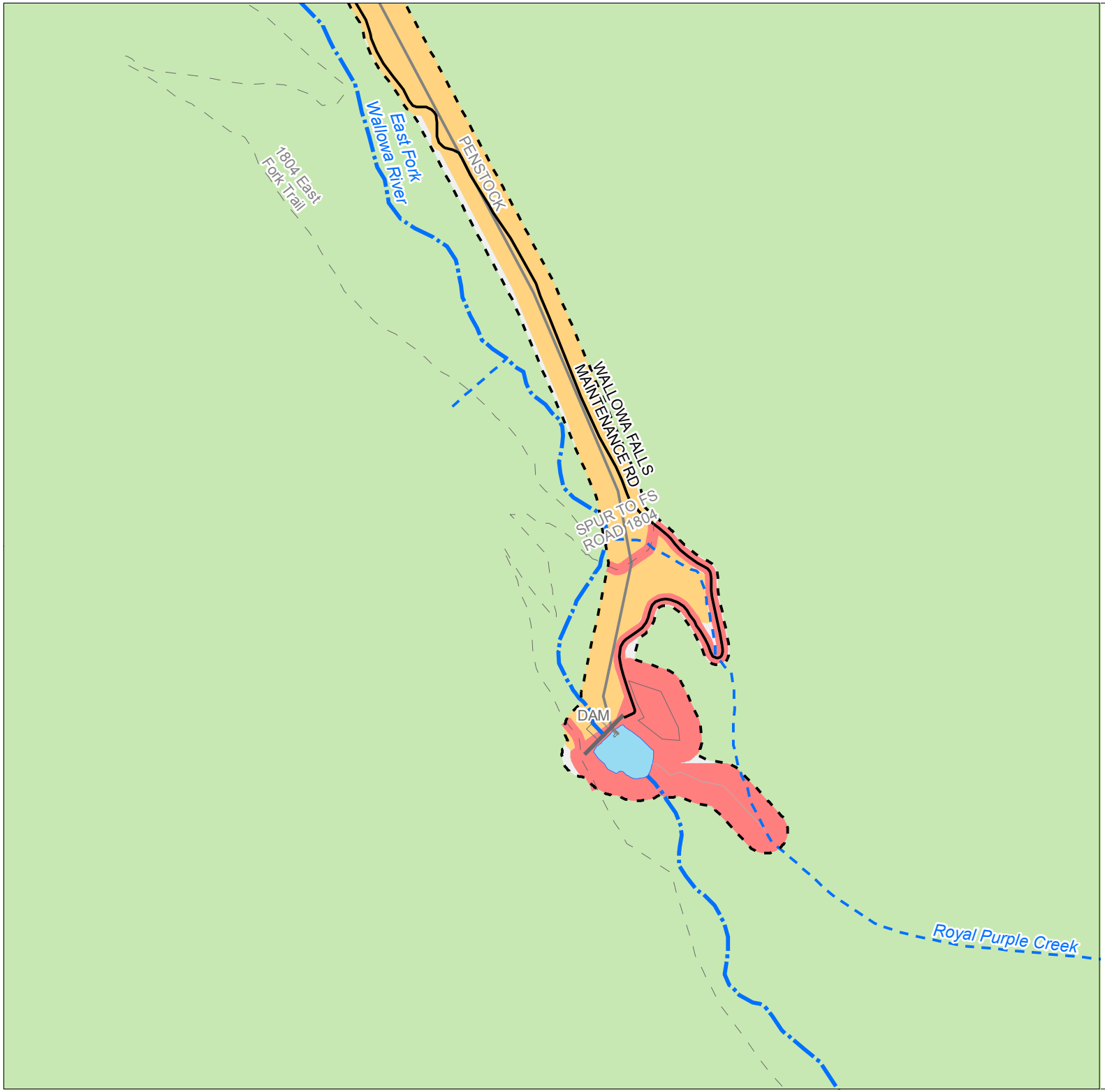

Wallowa Falls Hydroelectric Project

Noxious Weed Monitoring Area

Legend

- Trail
- Road
- Highway
- Facility
- Penstock
- FERC Boundary

Priority Noxious Weed Areas

- High
- Medium
- Low

Land Ownership

- PacifiCorp
- USFS
- Private

1:3,600

N

0 250 500 Feet

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04/20/2017 gisdept@pacificorp.com
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Appendix B
Invasive Plant Inventory Form and Herbicide Application (2510) Forms

Invasive Plant Inventory Form

General Site Information

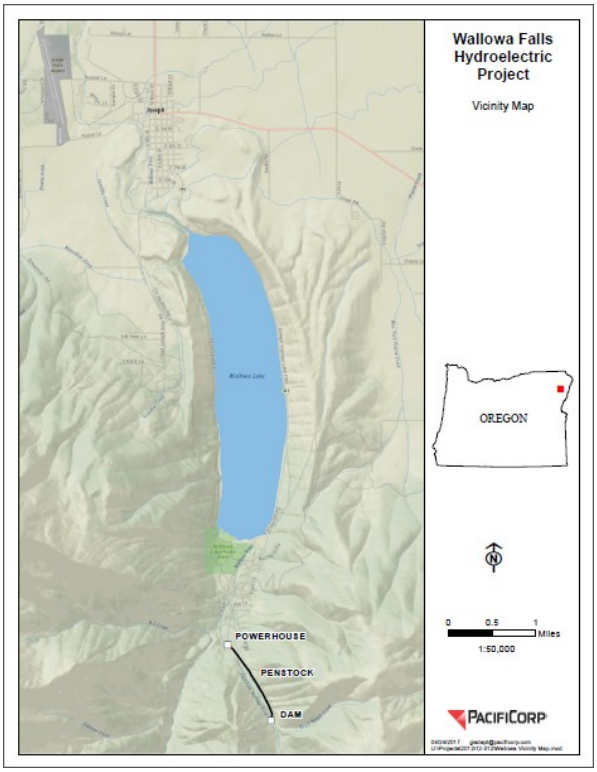
Site Name: Wallowa Falls Hydroelectric Project			**Date:** 8 July 2018
Photo Point (GPS):			Ownership/District:USFS, WWNF, Eagle Cap and PacifiCorp
Photo Name:			**Examiner:** Kendrick Moholt, Bio-Resources, Inc.
Botanist Initial: Wildlife Biologist:	**Elevation:** 4700'-5800'	**GPS Coordinates:** 0483259 E 5012652N to 0484159E 5011062N	**Datum:** UTM (NAD 27) Zone 11
EDRR: Y N	**GPS File Name:**	Other Observations:	
Access: Road **Trail** X **River** **Other** campground			
Township: 3S **Range:** 45E **Section:** 33 NW¼ of NW¼, SW¼ of NW¼, NW¼ of SW¼, SE¼ of SW¼			
Township: 3S **Range:** 45E **Section:** 29 SW ¼			
Township: 3S **Range:** 45E **Section:** 32 NE¼ of NE¼			

Site Data Information

Target Species Code: CIVU	**Common Name:** Bull Thistle	
Scientific Name: *Cirsium vulgare*		**Phenology: R** **B** **FL** X **S**
Distribution: CLumped **L**inear **SE** Scattered even **SP** Scattered Patchy X **C**ontinuous		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.15
% Cover or Count (weeds): ~50		Understory Cover % (all):40-90%
Potential to Spread: High Med x Low		**Distance to Water:** >30m
Water Type: Perennial **Ephemeral**		**System: Lake** **River** **Spring** **Stream**
Soil Types: sandy loam		Slope % aspect: 2-20%, Aspect variable
Other Species on Site:		

Comments

Map of Site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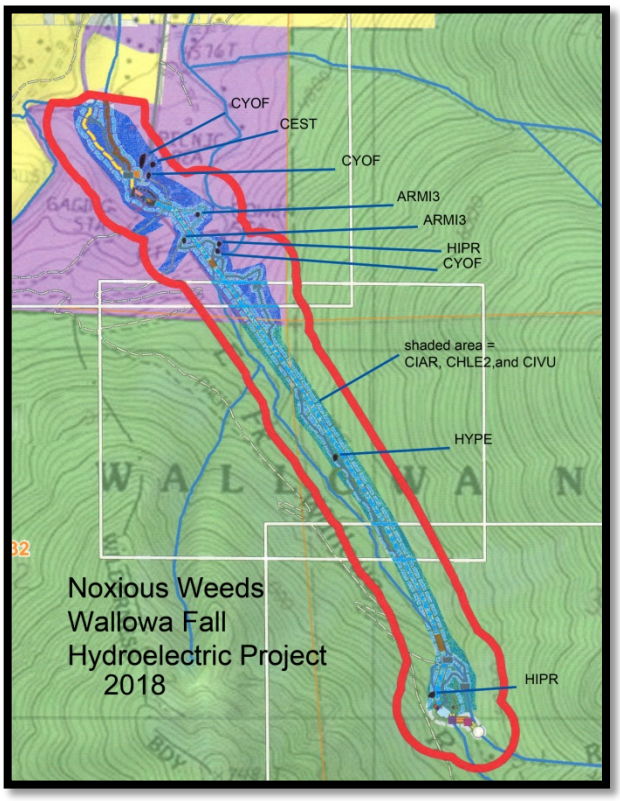
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CIAR, CHLE2,and CIVU
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Noxious Weeds
Wallowa Fall
Hydroelectric Project
2018

Invasive Plant Inventory Form

General Site Information

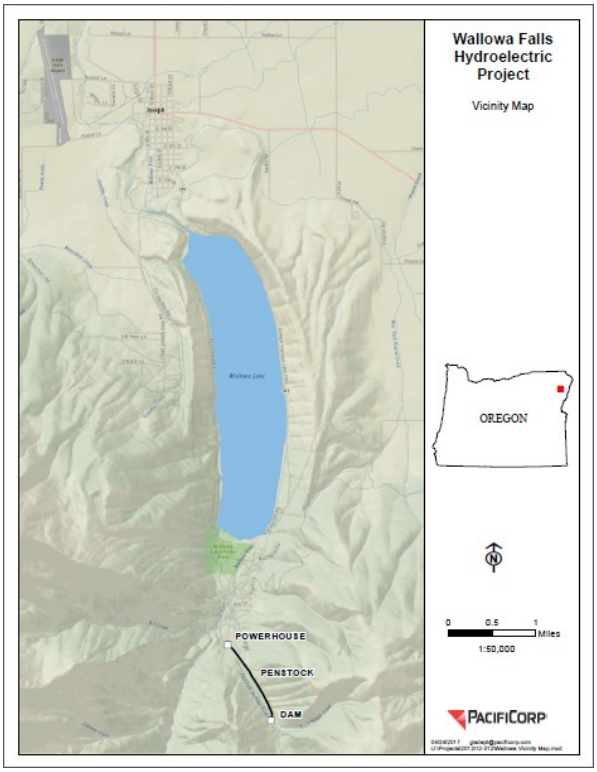
Site Name: Wallowa Falls Hydroelectric Project			**Date:** 8 July 2018
Photo Point (GPS):			Ownership/District:USFS, WWNF, Eagle Cap and PacifiCorp
Photo Name:			**Examiner:** Kendrick Moholt, Bio-Resources, Inc.
Botanist Initial: Wildlife Biologist:	**Elevation:** 4700'-5800'	**GPS Coordinates:** 0483259 E 5012652N to 0484159E 5011062N	**Datum:** UTM (NAD 27) Zone 11
EDRR: __Y__N	**GPS File Name:**	Other Observations:	
Access: Road__ Trail X **River_ Other** campground			
Township: 3S**Range:** 45E **Section:** 33 NW¼ of NW¼, SW¼ of NW¼, NW¼ of SW¼, SE¼ of SW¼			
Township: 3S**Range:** 45E **Section:** 29 SW ¼			
Township: 3S**Range:** 45E **Section:** 32 NE¼ of NE¼			

Site Data Information

Target Species Code: CIAV	**Common Name:** Canada Thistle	
Scientific Name: *Cirsium arvense*		**Phenology: R__ B__ FL** X **S**
Distribution: CLumped____**L**inear_____**SE** Scattered even_____ **SP** Scattered Patchy X_ **C**ontinuous_____		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.3
% Cover or Count (weeds): ~1000		Understory Cover % (all):40-90%
Potential to Spread: High__ Med x_Low____		**Distance to Water:** >30m
Water Type: Perennial_ Ephemeral____		**System: Lake__ River__ Spring_ Stream**
Soil Types: sandy loam		Slope % aspect: 2-20%, Aspect variable
Other Species on Site:		

Comments

Map of Site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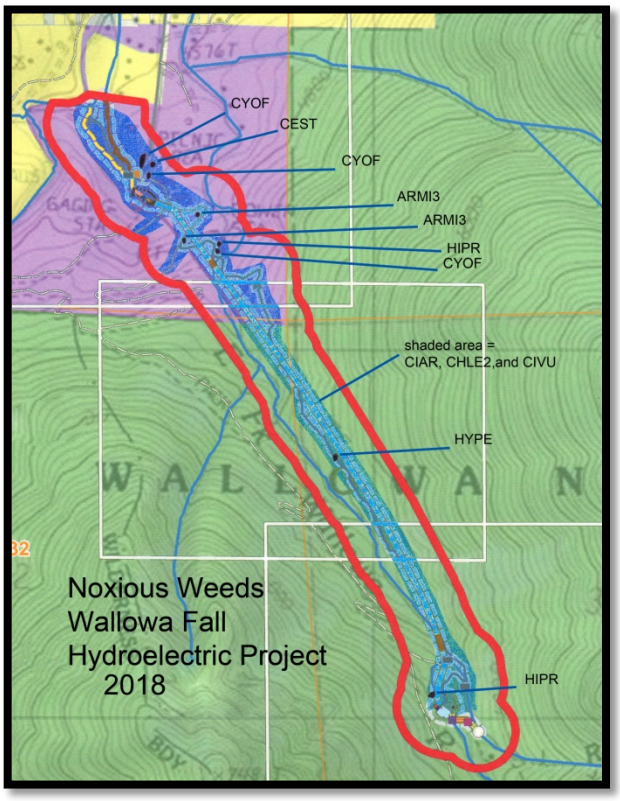
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Noxious Weeds
Wallowa Fall
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2018

Invasive Plant Inventory Form

General Site Information

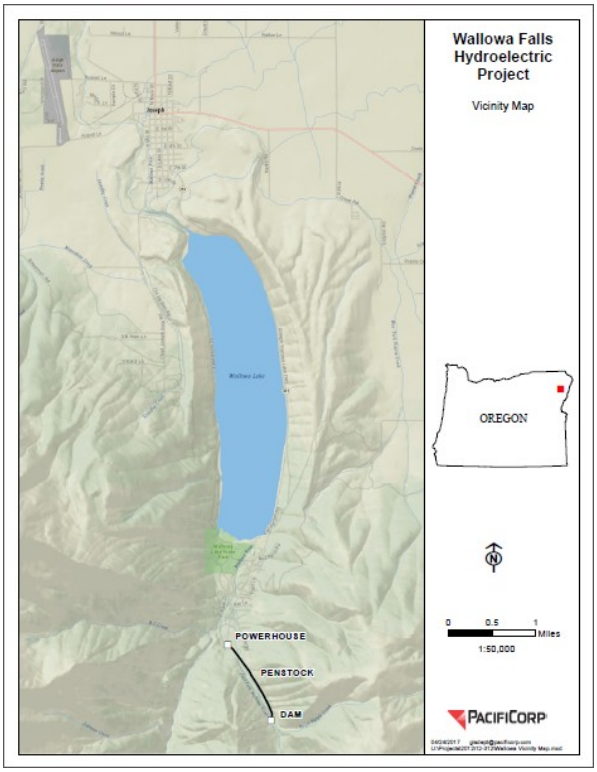
Site Name: Wallowa Falls Hydroelectric Project			**Date:** 8 July 2018
Photo Point (GPS):			Ownership: PacifiCorp
Photo Name:			**Examiner:** Kendrick Moholt, Bio-Resources, Inc.
Botanist Initial: Wildlife Biologist:	**Elevation:** 4700'-5000'	**GPS Coordinates:** 0483488E 5012298N and 0483529E 5012336N	**Datum:** UTM (NAD 27) Zone 11
EDRR: __Y __N	**GPS File Name:**	Other Observations:	
Access: Road__ Trail X **River_ Other** Campground			
Township: 3S **Range:** 45E **Section:** 29 **¼ sec:** SE of ¼ sec: SE			

Site Data Information

Target Species Code: ARMI3	**Common Name:** Common Burdock	
Scientific Name: *Arctium minus*	**Phenology: R__ B__ FL** X **S**	
Distribution: CLumped____**L**inear_____**SES**cattered even_____ **SP**Scattered Patchy X_ **C**ontinuous_____		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.1
% Cover or Count (weeds): ~5	Understory Cover % (all):60-90%	
Potential to Spread: High__ Med x_Low_____	**Distance to Water:** >30m	
Water Type: Perennial_ Ephemeral____	**System: Lake__ River__ Spring_ Stream**	
Soil Types: sandy loam	Slope % aspect: 2-10%, Aspect variable	
Other Species on Site:		

Comments

Map of Site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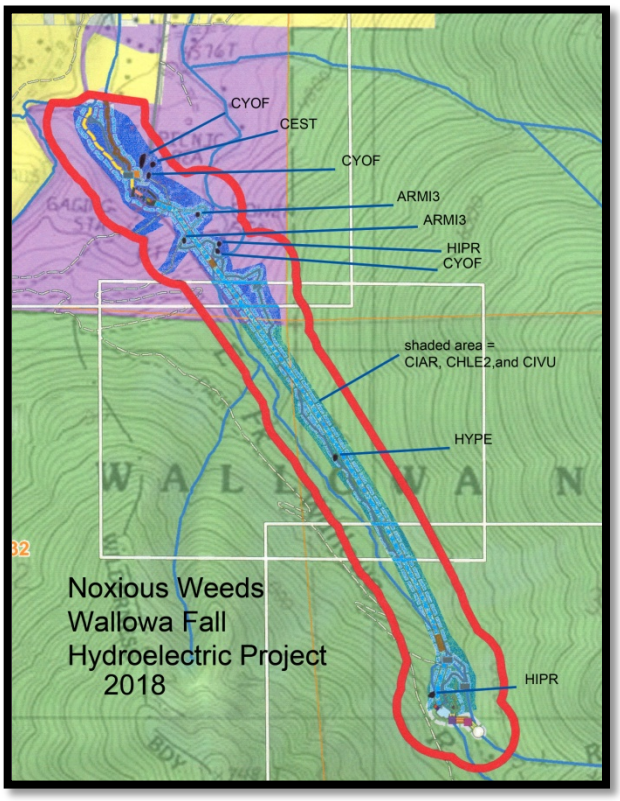
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Wallowa Fall
Hydroelectric Project
2018

Invasive Plant Inventory Form

General Site Information

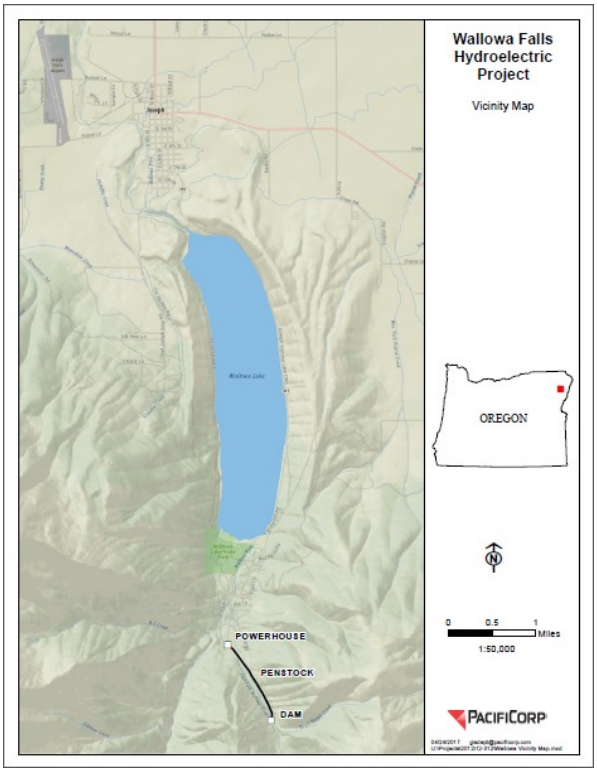
Site Name: Wallowa Falls Hydroelectric Project			**Date:** 8 July 2018
Photo Point (GPS):			Ownership: PacifiCorp
Photo Name:			**Examiner:** Kendrick Moholt, Bio-Resources, Inc.
Botanist Initial: Wildlife Biologist:	**Elevation:** 4700'-5000'	**GPS Coordinates:** 0483297 5012651N and 0483577E 5012260N	**Datum:** UTM (NAD 27) Zone 11
EDRR: __Y __N	**GPS File Name:**	Other Observations:	
Access: Road__ Trail X **River_ Other_____#**			
Township: 3S**Range:** 45E **Section:** 29 **¼ sec**: NW of ¼ sec: SE			
Township: 3S**Range:** 45E **Section:** 29 **¼ sec**: SE of ¼ sec: SE			

Site Data Information

Target Species Code: CYOF	**Common Name:** Houndstongue	
Scientific Name: *Cynoglossum officinale*		**Phenology: R__ B__ FL** X **S**
Distribution: CLumped____**L**inear_____**SES**cattered even_____ **SP**Scattered Patchy X_ **C**ontinuous_____		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.15
% Cover or Count (weeds): ~60		Understory Cover % (all):40-90%
Potential to Spread: High x Med__Low____		**Distance to Water:** >30m
Water Type: Perennial_ Ephemeral____		**System: Lake__ River__ Spring_ Stream**
Soil Types: sandy loam		Slope % aspect: 2-10%, Aspect variable
Other Species on Site:		

Comments

Map of Site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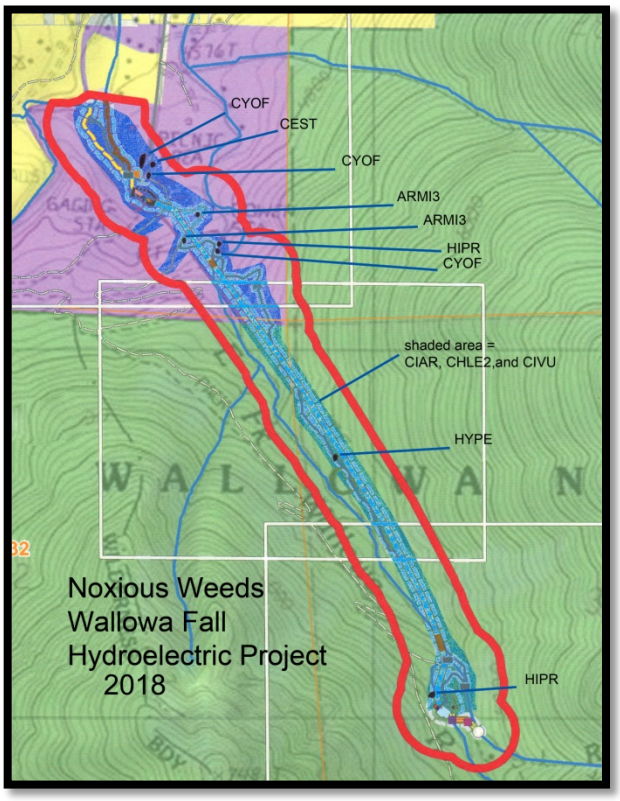
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CIAR, CHLE2,and CIVU
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Noxious Weeds
Wallowa Fall
Hydroelectric Project
2018

Invasive Plant Inventory Form

General Site Information

Site Name: Wallowa Falls Hydroelectric Project			**Date:** 8 July 2018
Photo Point (GPS):			Ownership/District: USFS, WWNF, Eagle Cap and PacifiCorp
Photo Name:			**Examiner:** Kendrick Moholt, Bio-Resources, Inc.
Botanist Initial: Wildlife Biologist:	**Elevation:** 4700'-5800'	**GPS Coordinates:** 0484195E 5011062N (USFS) 0484223E 5011018N (Pacif)	**Datum:** UTM (NAD 27) Zone 11
EDRR: __Y __N	**GPS File Name:**	Other Observations:	
Access: Road__ Trail X **River_ Other_____#**			
Township: 3S**Range:** 45E **Section:** 33 **¼ sec:** SE (USFS)			
Township: 3S**Range:** 45E **Section:** 29 **¼ sec:** SE of **¼ sec:** SE (PacifiCorp)			

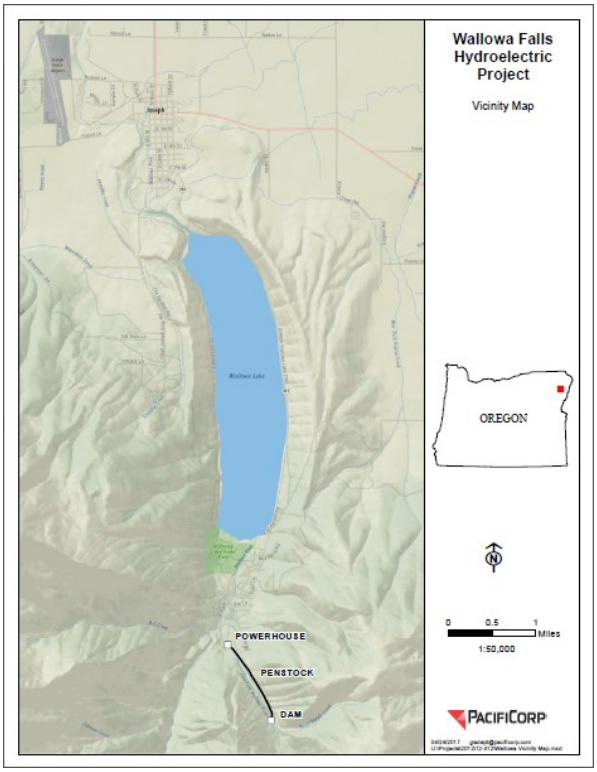
Site Data Information

Target Species Code: HIPR	**Common Name:** meadow hawkweed	
Scientific Name: *Hieracium caespitosum* (**Synonym: Hieracium pratense)**		**Phenology: R__ B__ FL** X **S**
Distribution: CLumped____**L**inear_____**SE**Scattered even_____ **SP**Scattered Patchy X_ **C**ontinuous_____		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.15
% Cover or Count (weeds): <1% (~60 plants)		Understory Cover % (all):40-90%
Potential to Spread: High x Med__Low____		**Distance to Water:** >30m
Water Type: Perennial_ Ephemeral____		**System: Lake__ River__ Spring_ Stream**
Soil Types: sandy loam to sandy lithosol		Slope % aspect: 2-20%, Aspect variable
Other Species on Site:		

Comments

The hawkweed treated here is not in the same location formerly recorded with the infestation ID numbers MH3555 and MH3560. Plants have not been relocated at these older infestation sites.

Map of Site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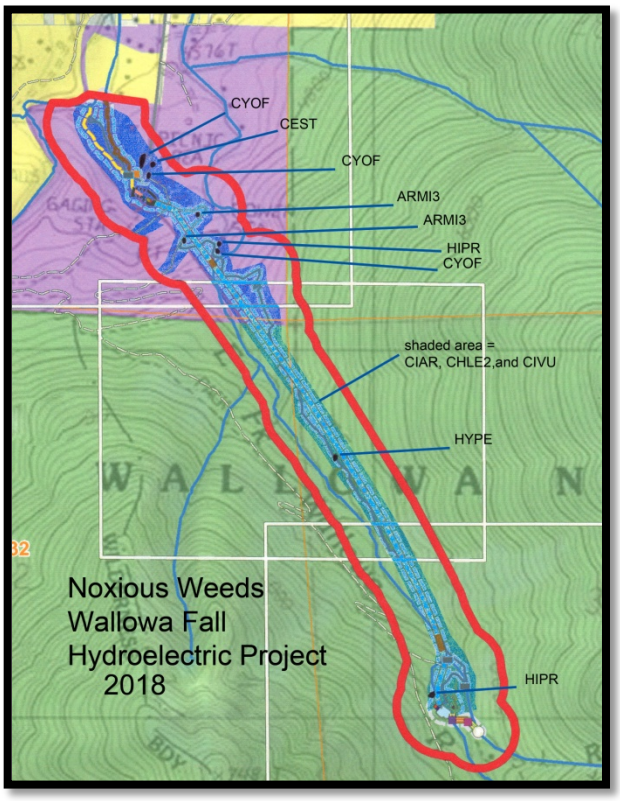
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Invasive Plant Inventory Form

General Site Information

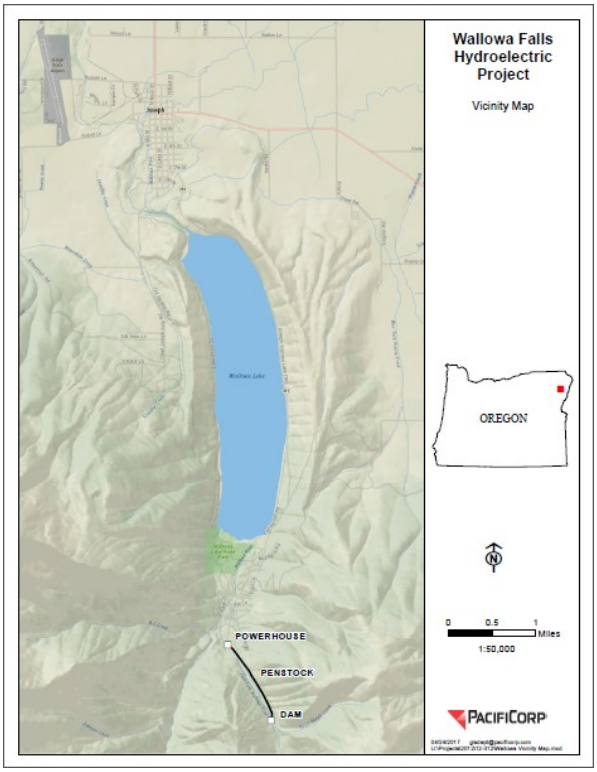
Site Name: Wallowa Falls Hydroelectric Project			**Date:** 8 July 2018
Photo Point (GPS):			Ownership/District:USFS, WWNF, Eagle Cap and PacifiCorp
Photo Name:			**Examiner:** Kendrick Moholt, Bio-Resources, Inc.
Botanist Initial: Wildlife Biologist:	**Elevation:** 4700'-5800'	**GPS Coordinates:** 0483259 E 5012652N to 0484159E 5011062N	**Datum:** UTM (NAD 27) Zone 11
EDRR:__Y__N	**GPS File Name:**	Other Observations:	
Access: Road__ Trail X **River_ Other** campground			
Township: 3S**Range:** 45E **Section:** 33 NW¼ of NW¼, SW¼ of NW¼, NW¼ of SW¼, SE¼ of SW¼			
Township: 3S**Range:** 45E **Section:** 29 SW ¼			
Township: 3S**Range:** 45E **Section:** 32 NE¼ of NE¼			

Site Data Information

Target Species Code: CHLE2	**Common Name:** Oxeye Daisy	
Scientific Name: *Leucanthemum vulgare* (Synonym- *Chrysanthemum leucanthemum*)		**Phenology: R__ B__ FL** X **S**
Distribution: CLumped____**L**inear_____**SE** Scattered even_____ **SP** Scattered Patchy X_ **C**ontinuous_____		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.3
% Cover or Count (weeds): ~1000		Understory Cover % (all):40-90%
Potential to Spread: High__ Med x_Low____		**Distance to Water:** >30m
Water Type: Perennial_ Ephemeral____		**System: Lake__ River__ Spring_ Stream**
Soil Types: sandy loam		Slope % aspect: 2-20%, Aspect variable
Other Species on Site:		

Comments

Map of Site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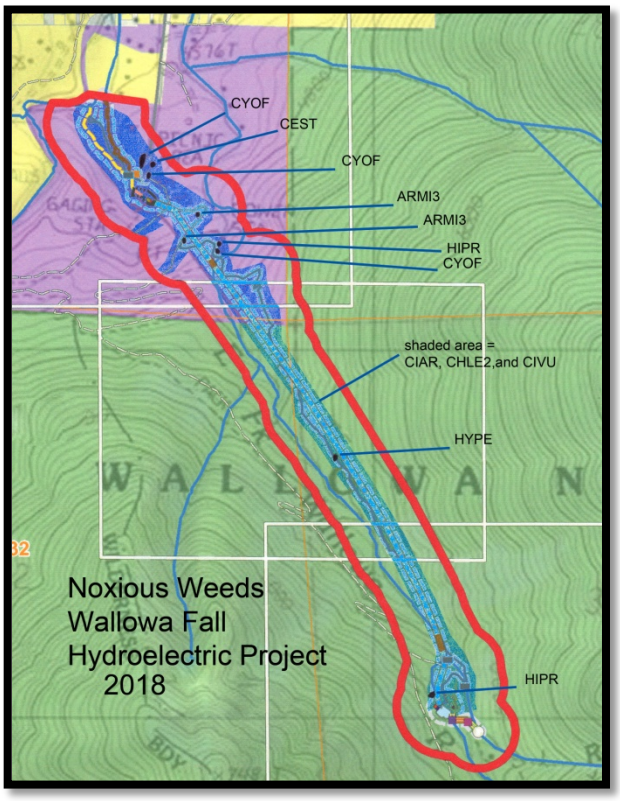
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Wallowa Fall
Hydroelectric Project
2018

Invasive Plant Inventory Form

General Site Information

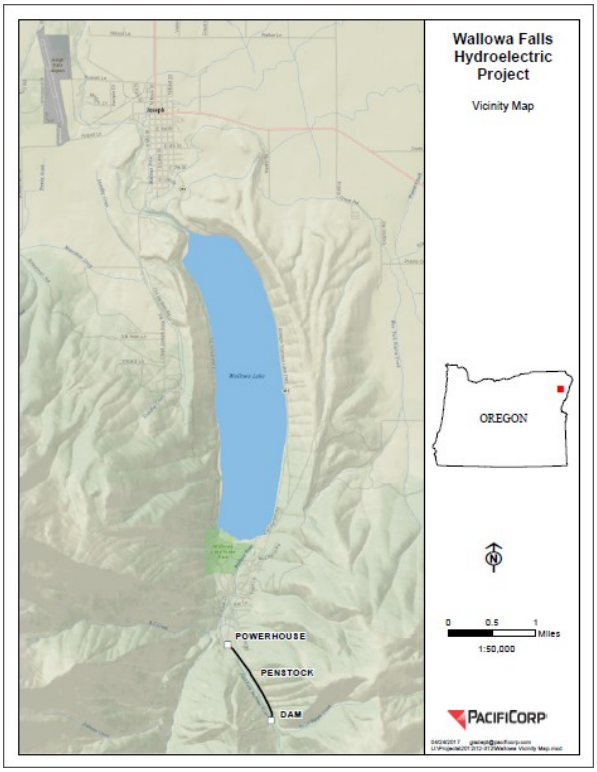
Site Name: Wallowa Falls Hydroelectric Project		**Date:** 8 July 2018	
Photo Point (GPS):		Ownership: PacifiCorp	
Photo Name:		**Examiner:** Kendrick Moholt, Bio-Resources, Inc.	
Botanist Initial: Wildlife Biologist:	**Elevation:** 4700'-5000'	**GPS Coordinates:** 0483409E 5012480N	**Datum:** UTM (NAD 27) Zone 11
EDRR: Y N	**GPS File Name:**	Other Observations:	
Access: Road X **Trail** **River** **Other** Campground			
Township: 3S **Range:** 45E **Section:** 29 **¼ sec:** NW of **¼ sec:** SE			

Site Data Information

Target Species Code: CEST	**Common Name:** Spotted Knapweed	
Scientific Name: *Centaurea stoebe* Synonym (*Centaurea maculosa*)		**Phenology: R** **B** **FL** X **S**
Distribution: CLumped **L**inear **SES**cattered even **SP**Scattered Patchy X **C**ontinuous		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.25
% Cover or Count (weeds): dozens		Understory Cover % (all):40-90%
Potential to Spread: High x Med Low		**Distance to Water:** >30m
Water Type: Perennial **Ephemeral**		**System: Lake River Spring Stream**
Soil Types: sandy loam		Slope % aspect: 2-10%, Aspect variable
Other Species on Site:		

Comments

Map of Site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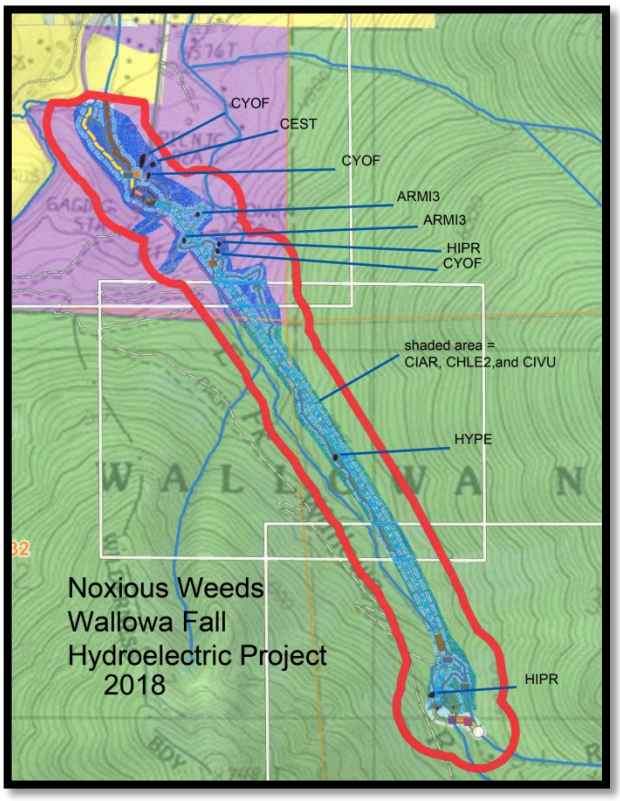
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Wallowa Fall
Hydroelectric Project
2018

Invasive Plant Inventory Form

General Site Information

Site Name: Wallowa Falls Hydroelectric Project		**Date:** 8 July 2018	
Photo Point (GPS):		Ownership/District:USFS, WWNF, Eagle Cap	
Photo Name:		**Examiner:** Kendrick Moholt, Bio-Resources, Inc.	
Botanist Initial: Wildlife Biologist:	**Elevation:** 5500'	**GPS Coordinates:** 0484018E 5011521N	**Datum:** UTM (NAD 27) Zone 11
EDRR: Y N	**GPS File Name:**	Other Observations:	
Access: Road Trail X **River Other #**			
Township: 3S **Range:** 45E **Section:** 33 **¼ sec:** NW			

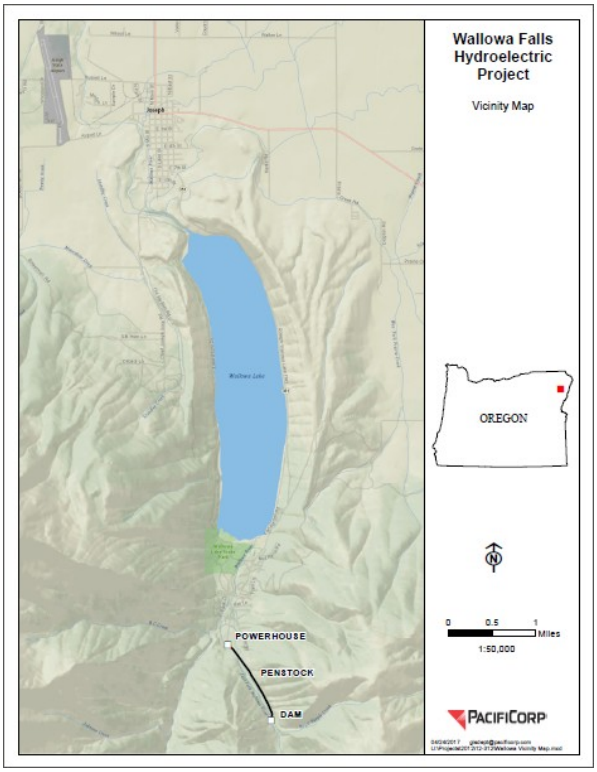
Site Data Information

Target Species Code: HIPE	**Common Name:** St. John's Wort	
Scientific Name: *Hypericum perforatum*		**Phenology: R B FL** X **S**
Distribution: CLumped **L**inear **SES**cattered even **SP**Scattered Patchy X **C**ontinuous		
Total Acres: 26	**Percent Infested:** <1%	**Infested Acres:** ~0.1
% Cover or Count (weeds): ~50		Understory Cover % (all): 90%
Potential to Spread: High Med Low X		**Distance to Water:** >30m
Water Type: Perennial Ephemeral		**System: Lake River Spring Stream**
Soil Types: sandy loam		Slope % aspect: 2%, 230°
Other Species on Site:		

Comments

Approximately 1 mile from trailhead on Wallowa Falls Maintenance Road (NE of the FS1804 trail switchback on the Sec. 32/33 border).

Map of Site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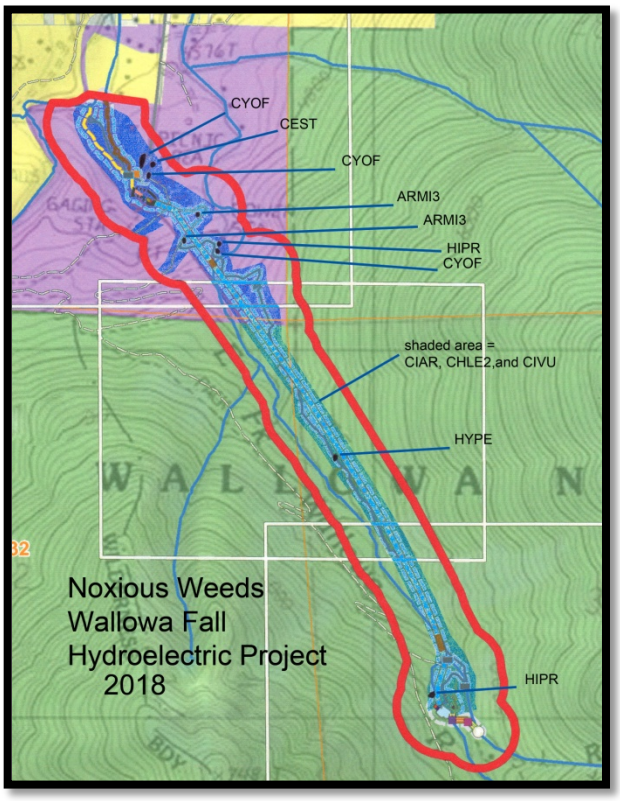
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Hydroelectric Project
2018

Herbicide Application (2510) Data Form

General Treatment Data

Treatment Area Name	Owner	FACTS ID #	Subunit	Project
Wallowa Falls Hydroelectric Project	USFS & PacifiCorp	_____	__	Wallowa Falls Hydroelectric Project
Equipment	**Fund Code**	Comments		
4-Wheeler spray rig, backpack spray rig	NA			

Infestation/Target Species

INFESTATION_ID	Species Name	% Infested	Infested Area Treat	Phenology
TBD	Meadow Hawkweed *Hieracium caespitosum*	<1%	0.10 ac USFS (spot app) 0.05ac PacifiCorp (spot app)	Flowering
TBD	Bull Thistle *Cirsium vulgare*	<1%	0.10 ac USFS (spot app) 0.05ac PacifiCorp (spot app)	Flowering
TBD	Canada Thistle *Cirsium arvense*	<1%	0.25ac USFS (spot app) 0.05ac PacifiCorp (spot app)	Flowering
TBD	Common Burdock *Arctium minus*	<1%	0.10ac PacifiCorp (spot app)	Flowering
TBD	Hounds' Tongue *Cynoglossum officinale*	<1%	0.15ac PacifiCorp (spot app)	Flowering
TBD	Oxeye Daisy *Leucanthemum vulgare*	<1%	0.25ac USFS (spot app) 0.05ac PacifiCorp (spot app)	Flowering
TBD	Spotted Knapweed *Centaurea stoebe*	<1%	0.25ac PacifiCorp (spot app)	Flowering
TBD	St. John's Wort *Hypericum perforatum*	<1%	0.10ac USFS (spot app)	Flowering

DailyLog

Application Site	Licensed Applicator Name and License #	Applicators (other)
Wallowa Falls Hydroelectric Project campground, trail and fore bay area	Veezy Contracting #AG-L 1009406 CPA	___

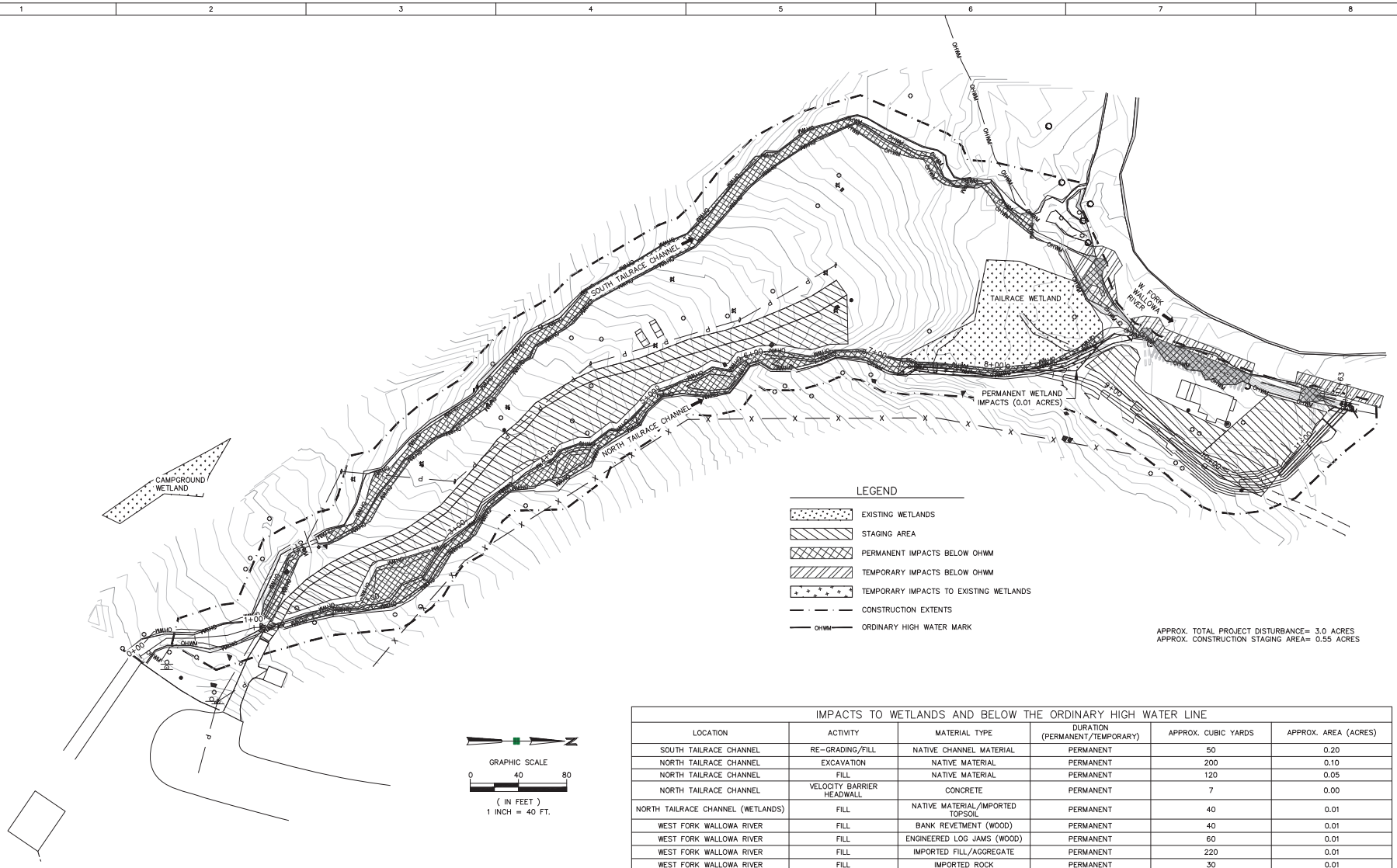
Application Date	Application Area (Acres)	Time Start	Time Stop	Temp (F)	Wind Speed (MPH)	Wind Direction	Cloud Cover	RH%	Water Distance
09 July 2018	1.5	0800	1600	60-70°F	1-5	NW	clear	30	>30m

Calibrated Volume	UOM	Volume Applied	UOM	Mix (oz/gal)	Dilutent
16	Gal/Acre	24	Gal	0.44	Water

Herb Product Name	EPA Reg #	Product Rate	UOM	Additives	Rate	UOM
Milestone	62719-519	7	Oz/Ac	INSIST 90	12	Oz/Ac

Remarks: Bio-Resources, Inc contract botanist, Kendrick Moholt, on site during application.

Appendix C
Tailrace reroute and Royal Purple Pipe extension construction limits



IMPACTS TO WETLANDS AND BELOW THE ORDINARY HIGH WATER LINE

LOCATION	ACTIVITY	MATERIAL TYPE	DURATION (PERMANENT/TEMPORARY)	APPROX. CUBIC YARDS	APPROX. AREA (ACRES)
SOUTH TAILRACE CHANNEL	RE-GRADING/FILL	NATIVE CHANNEL MATERIAL	PERMANENT	50	0.20
NORTH TAILRACE CHANNEL	EXCAVATION	NATIVE MATERIAL	PERMANENT	200	0.10
NORTH TAILRACE CHANNEL	FILL	NATIVE MATERIAL	PERMANENT	120	0.05
NORTH TAILRACE CHANNEL	VELOCITY BARRIER HEADWALL	CONCRETE	PERMANENT	7	0.00
NORTH TAILRACE CHANNEL (WETLANDS)	FILL	NATIVE MATERIAL/IMPORTED TOPSOIL	PERMANENT	40	0.01
WEST FORK WALLOWA RIVER	FILL	BANK REVETMENT (WOOD)	PERMANENT	40	0.01
WEST FORK WALLOWA RIVER	FILL	ENGINEERED LOG JAMS (WOOD)	PERMANENT	60	0.01
WEST FORK WALLOWA RIVER	FILL	IMPORTED FILL/AGGREGATE	PERMANENT	220	0.01
WEST FORK WALLOWA RIVER	FILL	IMPORTED ROCK	PERMANENT	30	0.01
WEST FORK WALLOWA RIVER	DEWATERING	COFFERDAM (GRAVEL/SAND)	TEMPORARY	100	0.10

Quadrant Consulting, Inc.

River Structures CONSULTING, LLC

SAP#
PL#
DATE SEPTEMBER 18, 2018
ENG NK DES
DR AE CH
APPROVAL

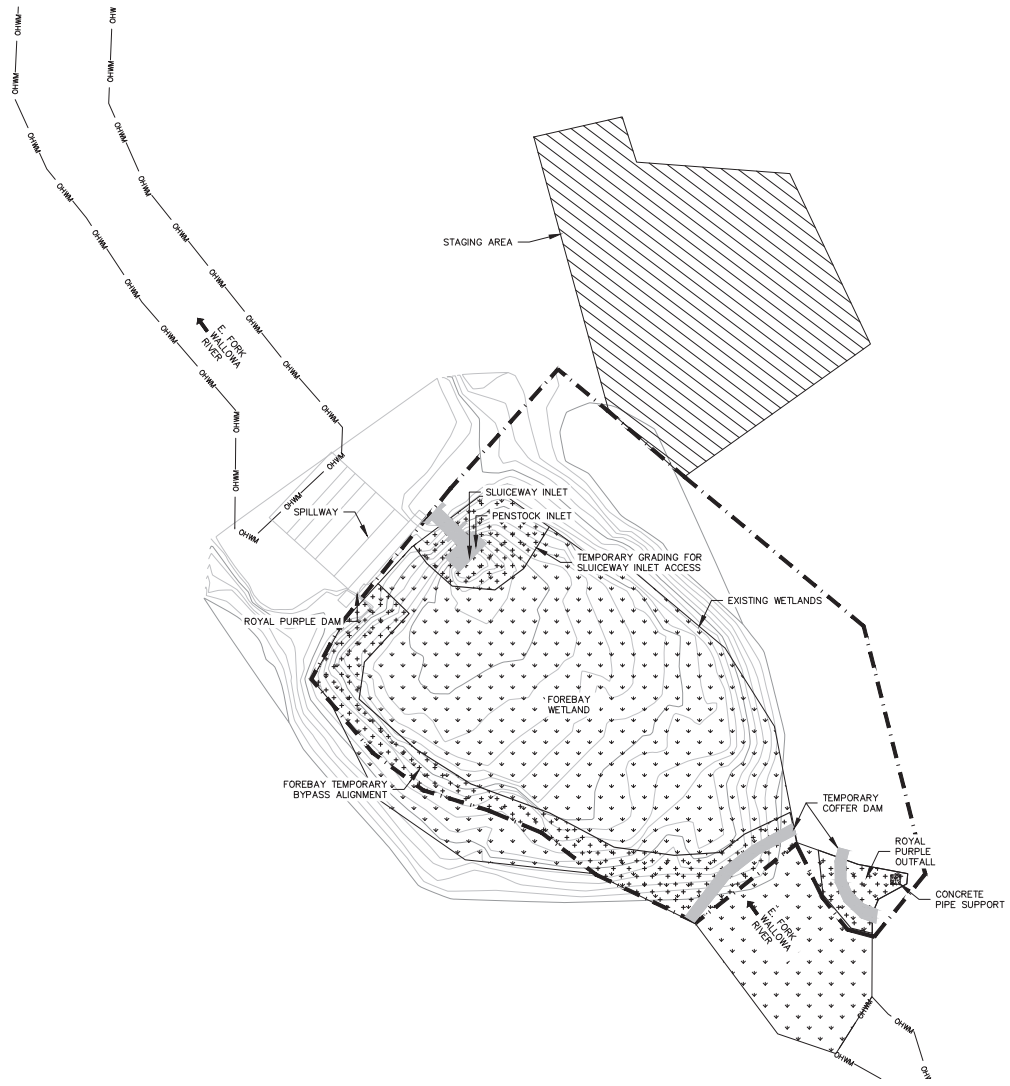
WALLOWA FALLS HYDROELECTRIC
INTAKE & TAILRACE MODIFICATIONS
ENVIRONMENTAL IMPACTS
TAILRACE

PACIFICORP
A BERKSHIRE HATHAWAY ENERGY COMPANY
HYDRO

SCALE: 1"=40' SHEET 1 E1 REV. B

No.	DATE	REVISION	BY	CHK	APP
A	2/26/18	50% DESIGN REVIEW	AE	NK	
B	4/02/18	90% DESIGN REVIEW	AE	NK	

REFERENCE DRAWINGS
DRAWING No.
REFERENCE DRAWINGS
DRAWING No.



LEGEND

- EXISTING WETLANDS
- STAGING AREA
- TEMPORARY IMPACTS TO EXISTING WETLANDS
- OHWM — ORDINARY HIGH WATER MARK
- CONSTRUCTION EXTENTS

IMPACTS TO WETLANDS AND BELOW THE ORDINARY HIGH WATER LINE

LOCATION	ACTIVITY	MATERIAL TYPE	DURATION	CUBIC YARDS	AREA (ACRES)
FOREBAY WETLAND	TEMPORARY COFFERDAMS	NATIVE AGGREGATE FILL	TEMPORARY	30	0.01
FOREBAY WETLAND	EXCAVATION	NATIVE MATERIAL	TEMPORARY	150	0.03
FOREBAY WETLAND	FILL	CONCRETE	PERMANENT	1	0.00

Quadrant Consulting, Inc.

River Structures CONSULTING, LLC

SAP#	
PL#	
DATE	SEPTEMBER 18, 2018
ENG	NK
DES	
DR	AE
CH	
APPROVAL	

WALLOWA FALLS HYDROELECTRIC
INTAKE & TAILRACE MODIFICATIONS
ENVIRONMENTAL IMPACTS
FOREBAY

PACIFICORP — HYDRO

SCALE: 1"=40' | SHEET 1 | E2 | REV. B

No.	DATE	REVISION	BY	CHK	APP
A	2/26/18	50% DESIGN REVIEW	AE	NK	
B	4/02/18	90% DESIGN REVIEW	AE	NK	

REFERENCE DRAWINGS | DRAWING No. | REFERENCE DRAWINGS | DRAWING No.

Appendix E

Agency Comments

AGENCY	COMMENT	UTILITY RESPONSE
U.S. Fish and Wildlife Service	Page 5 – Top of page, provide exact date of reprogramming the Programmed Logic Control (PLC)	Date has been provided.
U.S. Fish and Wildlife Service	Page 5 – Thank you for contacting us on 2 of the 3 outages. Why was the first not reported to us, and has this issue been resolved for future years reporting?	Failure to report the outage was a PacifiCorp oversight. Internal staff notification protocols have been implemented to reduce the likelihood of this occurring again.
U.S. Fish and Wildlife Service	Appendix A – Forebay flushing report – This year's flushing cleaned out just a limited amount of sediment. What are you plans for 2019, and future years, to be more successful in flushing the forebay sediment, while minimizing impacts to bull trout?	Due to the existing facilities and restriction on timing and duration of forebay flushing, limited quantities of sediment can be flushed from the forebay on an annual basis. PacifiCorp hopes that planned modifications to the intake structure will make flushing in future years more effective. Effects to bull trout will be minimized by flushing during the high flow month of June and limiting flushing events to 72 hours.
U.S. Fish and Wildlife Service	Turbidity Data – As the Service commented in 2017, we recommend that the report includes a map with the locations of the turbidity monitoring both above and below the forebay flushing. In addition, it would be helpful to have some photos of stream turbidity prior to flush, during high turbidity readings, and post flush showing low readings, to better interpret the numerical data at both the upstream forebay and downstream turbidity monitoring locations.	A map has been added to Section 3.0 of the report. Representative photos will be included in the 2019 Forebay Flushing Report.

U.S. Fish and Wildlife Service	Turbidity – Malfunction of the upper datasonde. The Service recalls this upstream turbidity monitoring site had issue in the past? It is important to locate this datasonde in a location that will not malfunction. We recommend putting two datasondes in the upper locations that are protected to ensure it is working. Without upper reference reach turbidity graph it is difficult to interpret what is above natural.	Agreed, given the remoteness of this area and volatile nature of the upper East Fork Wallowa River, turbidity readings at the upper site have been problematic. Care will be taken during 2019 monitoring to ensure as accurate as possible data is collected and presented.
U.S. Fish and Wildlife Service	Redd Monitoring Report – Great job on this redd monitoring effort! It is exciting to learn that fluvial/adfluvial bull trout are spawning in the East Fork Wallowa River.	Comment noted
U.S. Fish and Wildlife Service	There are a few things missing from the term and condition for redd monitoring. Please insure that our terms and conditions are implemented and reported.	Comment noted
U.S. Fish and Wildlife Service	Redd Monitoring Report – Table 1 – Thank you for providing a summary table of the data as request in 2017. In the 2018 report, PacifiCorp states that the bull trout were large fluvial size. However, the table indicates several smaller size fish. Do the <and > need to be edited?	Table revised
U.S. Fish and Wildlife Service	Redd Monitoring Report – In the biological opinion (BO), to be consistent with ongoing redd monitoring in NE Oregon, the Service requested fish size categories, <6 inches, <12 inches, <14 inches, and >14 inches. Instead PacifiCorp displays the fish data in two metric categories. We recommend PacifiCorp make the change or explain your reason for not following the BO terms and conditions.	Table revised

U.S. Fish and Wildlife Service	Redd Monitoring and BO – Size of redds – PacifiCorp generalizes fluvial size. Where is the redd size data?	Information added to Report
U.S. Fish and Wildlife Service	Redd Monitoring and BO – Were there any brook trout present when conducting pawning surveys, especially spawning bull trout? Please include; this was part of BO terms and conditions.	Information added to Report
U.S. Fish and Wildlife Service	Redd Monitoring and BO – what were the flows during redd surveys? Please add a brief summary.	Information added to Report
U.S. Fish and Wildlife Service	Redd Monitoring and BO Photo documentation of redds – Did this occur? If so please include. If not, please state reason.	Due to the dense riparian cover at all redd locations, no photo showing redd clearly enough to distinguish was possible.
U.S. Fish and Wildlife Service	Redd Monitoring Report – Data displayed in Figure 1 and page 7 – The Service recommend PacifiCorp number and date the bull trout redds on the GIS map. This will clarify for the reader where and when these bull trout redds were first documented. For example, redd number 1 (is this the first documented redd (9/1/18) and if so, where is it located on the map)?	Information added to Report
U.S. Fish and Wildlife Service	Redd Monitoring Report – Part of one of our terms and conditions in the consultation for the Wallowa Falls Hydropower license with FERC (FWS reference 01EOFW00-2016-F-0048), states – "If an emergency shutdown and ramping occurs during the spawning season, the East Fork Wallowa River spawning area will be field visited for any new redds built near the water's edge that could be dewatered due to shut down and ramping. Notify the Service of both positive and negative findings." Did this occur? If so, we recommend you include in this report.	No outage of long enough duration occurred in 2018 with which to trigger emergency redd survey prior to unit being brought back online. Information pertaining to the three very short unit outages that did occur during the prescribed bull trout spawn timeframe is included within the Report.

U.S. Fish and Wildlife Service	Future redd monitoring – As the Service commented in 2017, we recommend you give an indication of approximate start and end dates and number of repeat surveys planned for next year.	Information added to the Report
U.S. Fish and Wildlife Service	The Service requests communication between PacifiCorp and the Service, ODFW, DEQ and Forest Service, and other agencies, as to the details of planned construction activities in 2019. We received notification of a permit application with DSL and would like to know your plans for construction work in 2019.	PacifiCorp received the Service's June 7, 2018 dated comments on the 90% construction plans for the FERC license mandated Wallowa Falls Intake and Tailrace Modification projects. Comments were considered and addressed in the final construction plans for the projects. PacifiCorp is currently addressing comments from the Oregon Department of State Lands (DSL) on the Joint Permit Application (JPA) for the projects and intends to have a final JPA submitted to permitting agencies in first weeks of 2019. PacifiCorp will post the Joint Permit Application (JPA) and all associated appendices, sans design drawings (they contain Critical Energy Infrastructure Information), on the PacifiCorp Wallowa Falls website for your reference.

U.S. Fish and Wildlife Service	The Service has been notified that PacifiCorp is asking for an instream work variance for riming of instream work. PacifiCorp needs to coordinate with the Service on this request. In the consultation for the Wallowa Falls Hydropower license with FERC (FWS reference 01EOFW00-2016-F-0048), one of our terms and conditions was that, "All work within the East Fork and West Fork Wallowa Rivers will be conducted during instream work window for July 15 – August 15. Any adjustment in the in-water work period will first be approved by, and coordinated with the Service and ODFW.	PacifiCorp, or any permit applicant, is required to submit a formal In-Water Work Period Variance Request to DSL and the U.S. Army Corps of Engineers (USACE) Project Managers. Permitting agencies coordinate all approvals through ODFW, USFWS and NMFS, as appropriate, based on species and habitat present in the work area. PacifiCorp intends to request an extension to the in-water work window for the sole purpose of allowing adequate time to place the concrete for the FERC required permanent tailrace barrier.
Oregon Department of Environmental Quality	Figure 2-2 is difficult to read and interpret. It needs to be enlarged and properly labeled so it is clear that ramping rate limits were met during the re-start of the project.	Table 2.0 has been added to the report to show that the Standard Operating Procedure (Down-Ramping Plan) was followed during project re-starts.
Oregon Department of Environmental Quality	A map showing location of turbidity monitoring location should be added to Appendix A (Forebay Flushing Report).	A map has been added to Appendix A
Oregon Department of Environmental Quality	Actions should be taken to assure the function of all turbidity datasondes during flushing events. Backup monitoring equipment may be needed.	Agreed, given the remoteness of this area and volatile nature of the upper East Fork Wallowa River, turbidity readings at the upper site have been problematic. Care will be taken during 2019 monitoring to ensure as accurate as possible data is collected and presented.

Oregon Department of Environmental Quality	A plan for flushing effectiveness appears necessary, hopefully the modifications to the forebay dam outlet will improve performance.	Due to the existing facilities and restriction on timing and duration of forebay flushing, limited quantities of sediment can flushed from the forebay on an annual basis. PacifiCorp hopes that planned modifications to the intake structure will make flushing in future years more effective.
Oregon Department of Environmental Quality	Updates to agencies on planning and implementation of construction activities are needed during the construction phase. The updates should include the status of permits such as those required for in-water work and storm water control.	The Intake and Tailrace Modification Projects are scheduled for construction in 2019. The 90% Design Plans for these projects were submitted to the Agencies for review and comment in April 2018. An initial Joint Permit Application (JPA) has been submitted to the Oregon Department of State Land and U.S. Army Corps of Engineers. PacifiCorp is currently addressing comments on the JPA from DSL and intends to have a final revised JPA filed in the first weeks of 2019. PacifiCorp will not proceed with any work prior to receiving all legally required permits and approvals. PacifiCorp will post the Joint Permit Application (JPA) and all associated appendices, sans design drawings (they contain Critical Energy Infrastructure Information), on the PacifiCorp Wallowa Falls website for your reference.

Oregon Department of Fish and Wildlife	Section 2.1.2 Ramping PacifiCorp reports three (3) unplanned outages that resulted in implementation of the Down-Ramping Plan. All three unplanned outages occurred during the Bull Trout spawning period, during which four (4) redds were observed in the East Fork Wallowa River. Was any consideration given to the redds when the turbine was brought back online?	No outage of long enough duration occurred in 2018 with which to trigger emergency redd survey prior to unit being brought back online. Information pertaining to the three very short unit outages that did occur during the prescribed bull trout spawn timeframe is included within the Report
Oregon Department of Fish and Wildlife	Figure 2-2 shows generation, flow and stage in the East Fork from August 28, 2018, to November 6, 2018, however no axis labels are provided. Please provide axis labels. In addition, please provide detailed graphs of each unit trip event at a scale that allows for the rate of stage change (feet per hour) while the unit was brought back on-line to be acertained.	Axis labels have been added. Table 2.0 has been added to the report to show that the Standard Operating Procedure (Down-Ramping Plan) was followed during project re-starts.
Oregon Department of Fish and Wildlife	Section 3.0 Forebay Flushing The report indicates the forebay was flushed from June 10 through June 12, 2018. However, in Appendix A, Forebay Flushing Report, the sequence of events on page 2 indicates that the actual forebay flushing was initiated on June 11, 2018, when the low level outlet gate was opened to 100 percent and continued through June 14, 2018, when the lower level outlet drain valve was lowered. Please clarify or verify the dates that the forebay flushing occurred.	The dates have been corrected in the Report.

Oregon Department of Fish and Wildlife	Appendix A, Forebay Flushing Report, indicates some problems that occurred during the forebay flushing, particularly the failure of the turbidity meter above the Project Forebay and the failure to completely drawdown the forebay which resulted in limited quantities of sediment movement out of the forebay. These operational problems should be discussed in the OCMP Report, including PacifiCorp's assessment on whether they are likely to be repeated and how PacifiCorp will avoid such problems in the future to ensure compliance with license requirements.	Comment noted.
Oregon Department of Fish and Wildlife	Appendix A: Forebay Flushing Report The second paragraph on page 1 indicates that the forebay was flushed from June 10 through June 12, 2018. However, based on the sequence of events on page 2, it appears that the actual forebay flushing was initiated on June 11, 2018, when the low level outlet gate was opened to 100 percent and continued through June 14, 2018, (when the lower level outlet drain valve was lowered). Please clarify the dates that the forebay flushing occurred.	The dates have been corrected in the Forebay Flushing Report in Appendix A.

Oregon Department of Fish and Wildlife	The report indicates that the turbidity meter that was deployed above the forebay to record background turbidity malfunctioned and no data is available to for comparison with the downstream turbidity measurements. The report should identify the problem that precluded turbidity measurements and indicate whether this problem is expected to persist in future years and how PacifiCorp will avoid this problem occurring again. If problems with measurement and reporting of license requirements continue, PacifiCorp should develop alternative measures that ensure that license requirements are addressed.	Given the remoteness of this area and volatile nature of the upper East Fork Wallowa River, turbidity readings at the upper site have been problematic. Care will be taken during 2019 monitoring to ensure as accurate as possible data is collected and presented.
Oregon Department of Fish and Wildlife	The report states that PacifiCorp was unable to completely drawdown the forebay and sediment mobilization was limited. In the past, such circumstances have resulted in high accumulation of sediment and extreme difficulties conducting the forebay flush in the following year (e.g. 2016 and 2017). This issue should be discussed in the OCMP Report, including PacifiCorp's assessment on whether these are likely to be repeated and how PacifiCorp will avoid such problems in the future to ensure compliance with license requirements.	Due to the existing facilities and restriction on timing and duration of forebay flushing, limited quantities of sediment can flushed from the forebay on an annual basis. PacifiCorp hopes that planned modifications to the intake structure will make flushing in future years more effective.

Oregon Department of Fish and Wildlife	To allow for interpretation of the turbidity data, please include flow data, so turbidity variation due to stream flow unrelated to forebay flushing (such as precipitation) can be ascertained.	An additional graph and data table, which include top of the hour average flow data, have been added to the Forebay Flushing Report in Appendix A. Where there are blanks in hourly flow data the USGS did not provide a reading.
Oregon Department of Fish and Wildlife	Appendix B: Fish Salvage and Temporary Tailrace Barrier Report On page 6, Figure 2, please add a figure title including a date the photo was taken.	Edit made to Report
Oregon Department of Fish and Wildlife	Appendix C: Bull Trout Redd Monitoring Report The report indicates that nine Bull Trout redd surveys were performed from early September through the end of October. ODFW appreciates the extra effort of PacifiCorp to provide additional data which will increase the understanding of Bull Trout in the East Fork Bypassed Reach.	Comment noted
Oregon Department of Fish and Wildlife	On page 7, Figure 2, please provide a map with a flat perspective that indicates the path of the East Fork and West Fork with blue lines. In addition to the locations of the bull trout redds, please also indicate the location of the migratory fish passage barrier (i.e. East Fork falls).	Map revised within Report
Oregon Department of Fish and Wildlife	On page 8, Figure 3, please add a figure title, including the date the photo was taken and the approximate location or redd number.	Information added to Report

Oregon Department of Fish and Wildlife	By inclusion of the US Fish and Wildlife Service (USFWS) Biological Opinion Terms and Conditions, the FERC License requires specific data to be collected during the Bull Trout redd monitoring (Condition 4a). The information required by USFWS should be included in the Bull Trout Redd Monitoring report.	Information added to Report

Oregon Department of Fish and Wildlife	The Department appreciates the opportunity to comment on the OCMP Report. In addition, the Department has become aware that PacifiCorp has developed construction plans for rerouting the tailrace and the new permanent tailrace barrier. The Department has also become aware that PacifiCorp may wish to conduct construction work below the high-water mark outside of the established in-water work window of July 15 to August 15. We strongly recommend that PacifiCorp should contact ODFW and USFWS to discuss their request for a variance from the in-water work period to ensure an understanding by all parties of the proposed work and its purpose, and the potential impacts to aquatic resources. The Department looks forward to this discussion, to reviewing the construction plans and to continuing work with PacifiCorp on the implementation of the Wallowa Falls Hydroelectric Project License.	PacifiCorp received ODFW's June 6, 2018 dated comments on the 90% construction plans for the FERC license mandated Wallowa Falls Intake and Tailrace Modification projects. Comments were considered and addressed in the final construction plans for the projects. PacifiCorp is currently addressing comments from the Oregon Department of State Lands (DSL) on the Joint Permit Application (JPA) for the projects and intends to have a final JPA submitted to permitting agencies in the first weeks of 2019. PacifiCorp, or any permit applicant, is required to submit a formal In-Water Work Period Variance Request to DSL and the U.S. Army Corps of Engineers (USACE) Project Managers. Permitting agencies coordinate all approvals through ODFW, USFWS and NMFS, as appropriate, based on species and habitat present in the work area. PacifiCorp intends to request an extension to the in-water work window for the sole purpose of allowing adequate time to place the concrete for the FERC required permanent tailrace barrier.