



## **2021 Annual Operational Compliance Report**

### **Wallowa Falls Hydroelectric Project**

**(FERC No. P-308)**

### **Grande Ronde River Basin**

### **Wallowa County, Oregon**



***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.

Condition 1(e) of the Water Quality Certification for the relicensing and continued operation of the Wallowa Falls Project required that the OCMP be revised within three months of completion of the tailrace realignment channel, upstream passage barrier (tailrace barrier), and a modified forebay flow release valve or gate. The OCMP was revised in consultation with the Oregon Department of Environmental Quality (ODEQ), Oregon Department of Fish and Wildlife (ODFW), U.S. Fish and Wildlife Service (USFWS), Oregon Water Resources Department (OWRD) and the U.S. Forest Service (USFS). The revised OCMP was submitted to the Commission on September 22, 2020. To date, no response to the September 2020 filing has been received from the Commission.

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 2021 Wallowa Falls Bull Trout Redd Monitoring Report required by Article 412 of the license and the 2021 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) were implemented by PacifiCorp before July 5, 2018. PacifiCorp contracted the United States Department of the Interior, U.S. Geological Survey (USGS) to install the required stream gage. USGS continues to 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<sup>1</sup>. As required by license Appendix A, Condition 1(b), the East Fork Wallowa River gage

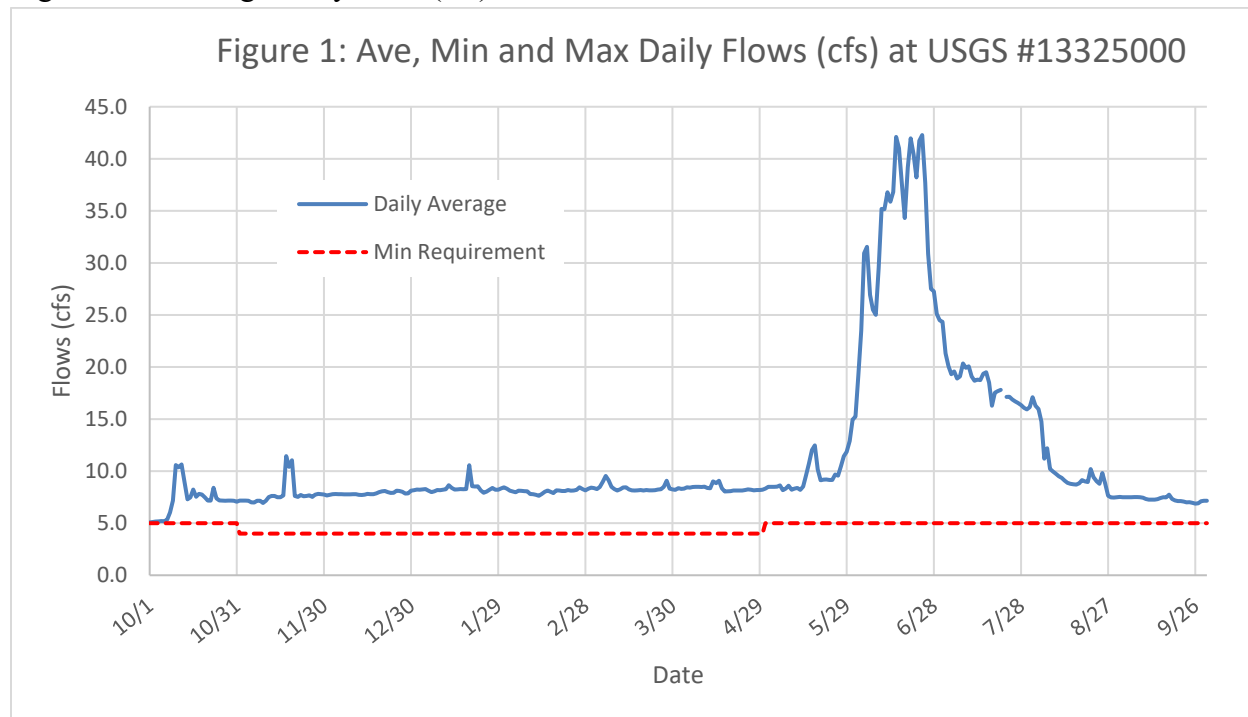
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<sup>1</sup> The Gage and associated communications system are located on the East Fork of the Wallowa River on a parcel of property owned by PacifiCorp and designated by Wallowa County, Oregon, as tax lot number 03S4500009900.

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, 2020 through September 30, 2021, the Project operated with 5 cubic feet per second (cfs) or greater, as measured at the compliance gage in the bypassed reach of the East Fork Wallowa River. Figure 2-1 shows the average daily flow during the 2021 water year.

Figure 2-1: Average Daily Flow (cfs)





### 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.<sup>2</sup> All increases in generation, will comply with the Standard Operating Procedure (Down-Ramping Plan) for ramping. Improvements in automation and communication infrastructure at the Project 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 has the added benefit of holding a steadier river stage in the bypassed reach of the East Fork Wallowa River. The PLC also receives real-time data from the USGS compliance gage and is programmed to alarm locally at the plant as well as to the Hydro Control Center, in Ariel, Washington, if there is a drop in minimum flows. 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 steady stage. PacifiCorp's water right of 16 cfs is the maximum used for generation. Therefore, any inflow greater than 16 cfs will always spill over the dam.

In 2021 all generation changes were made in compliance with the Down-Ramping Plan, meaning the automated Programmed Logic Control (PLC) made all generation increases in steps of 300 kW/h or less. The following unplanned and approved emergency outages occurred during the October 1, 2020 through September 30, 2021 timeframe.

#### **September 17, 2021**

The generating unit tripped offline September 17, due to an unknown electrical fault. The East Fork Wallowa River experienced increased flow for approximately 1.5 hours. All prescribed ramp rates were followed during unit start-up. Outages with a duration of less than 8-hours do not require a redd survey be conducted.

#### **October 19, 2021**

Although this ramping event occurred in water year 2022, for fluidity of reporting it is being included in this annual report. The generating unit tripped offline October 19, due to an unknown electrical fault. The East Fork Wallowa River experienced increased flow for approximately 2

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<sup>2</sup> 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 contrasts with 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.

hours. All prescribed ramp rates were followed during unit start-up. Outages with a duration of less than 8-hours do not require a redd survey be conducted.

### **October 23, 2021**

Although this ramping event occurred in water year 2022, for fluidity of reporting it is being included in this annual report. The generating unit tripped offline October 23, due to an unknown electrical fault. Bypassed reach flow increased from a gage height of 4.31 feet (6.87 cfs) to 4.4 feet (10.0 cfs) and fluctuated between 4.39 feet and 4.40 feet for 9 hours and 10 minutes then dropped back to base flow. All prescribed ramp rates were followed during unit start-up.

A redd survey was not conducted. During the spawning period of September 1 to October 31, Standard Operating Procedures (SOP) call for an emergency redd survey to be conducted and the results considered prior to bringing the unit back online, if the unit cannot be brought back online in under eight hours.

PacifiCorp has reviewed the SOP with operations staff.

A routine redd survey was conducted on Friday October 22, 2021. The survey results found no active spawning activity in the East Fork Wallowa Bypassed Reach. Therefore, bull trout spawning activity is believed to have concluded for the 2021 season prior to the event. All identified redds were recorded in deep pools that would not be adversely affected by a depth change of 0.1 inch.

## **3.0 Forebay Flushing**

PacifiCorp successfully flushed the Project forebay for 66.5 hours commencing at 3:00 PM on June 11 and completing at 9:30 AM on June 14, 2021. The use of both the low-level outlet pipe and a 20-inch siphon pipe to pass full natural inflow, allowed the forebay to be drained and sediment to be evacuated downstream. Prior to the flush PacifiCorp notified agency stakeholders, via e-mail May 31, 2021 of the planned flushing event. Agency stakeholders declined the offer of a pre-flush coordination call.

Prior to the flushing event two In-Situ data sondes were deployed 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. Throughout the flushing period hourly turbidity data was recorded at the upstream and downstream monitoring sites. Visual inspection of the East Fork Wallowa River immediately following forebay flushing found no distressed or dead fish. A Forebay Flushing Report was filed with the Commission and the Oregon Department of Environmental Quality July 30, 2021 and is included as Appendix A to this report.

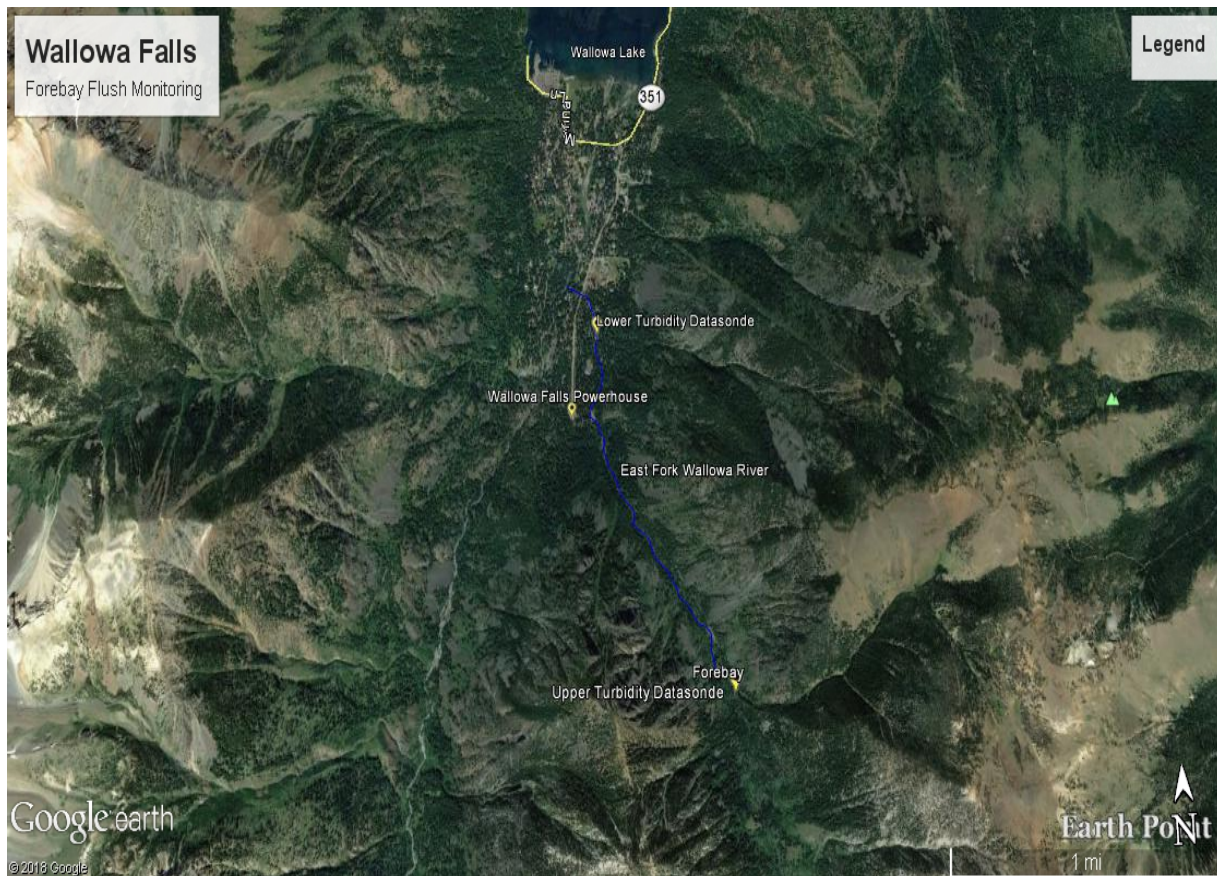


Figure 3.0. Location of Wallowa Falls forebay flush monitoring datasondes in 2021.

## 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 was originally intended to be 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), was installed and operational.

With the bringing online of the permanent tailrace fish barrier in June 2020, it was anticipated that construction of temporary tailrace fish barriers and tailrace fish salvages would no longer be necessary. The unexpected identification of a small side-channel of the West Fork Wallowa River immediately downstream of the tailrace discharge plume made it necessary for this Plan to continue to be implemented moving forward. Accordingly, the 2021 Fish Salvage and Temporary Tailrace Barrier Report is included as Appendix B to this report.

No unit trips of long enough duration with subsequent headgate closure occurred at the Wallowa Falls Project between November 16, 2020 and July 30, 2021. Thus, no fish salvages were ever required. One fish salvage occurred on the Project during 2021. A salvage of the West Fork Wallowa River side-channel was conducted immediately downstream of the permanent tailrace barrier discharge plume following the installation of temporary fish barriers on July 14, 2021. No fish were encountered or observed.

## **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).

No fish were handled for work-site isolation as there was no in-water construction on the Wallowa Falls Hydroelectric Project in 2021. Per license Article 412 and Appendix C, condition 4(a), the results of bull trout redd monitoring for calendar year 2021 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 2021 Noxious Weed Control Plan Annual Report is included as Appendix D to this report.

## **7.0 Deviations and Unanticipated Events**

There were no unanticipated events for the 2020-2021 reporting period.

## West Fork Wallowa River Potential Stranding Issue

As described in the 2020 Annual Report, the permanent tailrace barrier was commissioned in June 2020. As-built inspection of the fish barrier and direct observation and measurement completed during tailrace commissioning verified that the barrier was constructed and is operating in compliance with the National Marine Fisheries Service design criteria and is indeed a passage barrier for adult salmonids. Given this, PacifiCorp will not be conducting fish salvage of the “new” single tailrace channel during future unit outages or trips. However, immediately downstream of the new tailrace outlet and permanent fish passage barrier there is a side-channel on the right bank of the West Fork Wallowa River that is at risk of becoming dewatered if the project headgate closes when the West Fork is at base flow. Under agreement with the resource agencies, PacifiCorp will be following the fish salvage procedure, previously used for the old tailrace channels, for the side-channel habitat in the West Fork Wallowa River. For all planned and unplanned unit outages where the headgate closes, between November 16th–July30th (period when no temporary fish barrier is in place), the West Fork side-channel immediately downstream of the tailrace outlet will be inspected for dewatering, electrofished and salvaged if necessary. These procedures will be followed for the next five years (2021 through 2025). After the five-year period, these procedures will be reevaluated by the licensee and stakeholders to determine next steps. PacifiCorp is in the process of revising the OCMP in consultation with the agencies to reflect this change. Upon completion of the revisions, the updated OCMP will be filed with the Commission.

## 8.0 Implementation Projects

In calendar year 2021, PacifiCorp fabricated and installed the Wallowa Lake trailhead sign panels, Nez Perce Interpretive panels, wilderness registration box, trail directional signs and trail drainage improvements as prescribed in the Recreation, Visual and Aesthetic Management Plan. Table 1 provides a summary of work completed in 2021. Photos are provided in Appendix E.

**Table 1 – 2021 Implementation Projects**

<b>Requirement</b>	<b>2021 Action</b>	<b>Photo Reference</b>
Recreation, Visual and Aesthetic Management Plan	The new USDA-FS Wallowa Lake Trailhead sign panels were installed.	Photos 1-2
Recreation, Visual and Aesthetic Management Plan	Nez Perce Interpretive sign panels were installed near powerhouse.	Photo 3
Recreation, Visual and Aesthetic Management Plan	Wallowa Lake Trailhead wilderness registration box was installed.	Photo 2

<b>Requirement</b>	<b>2021 Action</b>	<b>Photo Reference</b>
Recreation, Visual and Aesthetic Management Plan	Six trail directional signs were installed.	
Recreation, Visual and Aesthetic Management Plan	Drainage improvement project at connector trail between forebay access road and East Fork Wallowa River Trail.	

## 9.0 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**

### **2021 Wallowa Falls Forebay Flushing Report**

Electronically filed July 30, 2021

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
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**Subject:     Wallowa Falls Hydroelectric Project (FERC No. P-308)  
              2021 Forebay Flushing Report**

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 66.5 hours commencing at 3:00 PM on June 11 and completing at 9:30 AM on June 14, 2021. Prior to the flush, PacifiCorp notified agency stakeholders<sup>1</sup> via e-mail on May 31, 2021 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 8:00 AM June 12, 2021, was 38.2 cfs. Bypassed reach flows remained greater than 34 cfs for the duration of the 66.5-hour flushing event.

For forebay flushing the following general sequence of events occurred:

June 10, 2021

PacifiCorp's contract biologist mobilized to site and deployed two In-Situ datasondes in the East Fork Wallowa River at each the upstream and downstream monitoring sites. The upstream site is located upstream of the inlet to the Project forebay and downstream site is located at the USGS gage site.

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<sup>1</sup> Oregon Department of Environmental Quality, Oregon Department of Fish and Wildlife, U.S. Fish and Wildlife Service and U.S. Forest Service.



A graph and hourly turbidity data recorded at the upper and lower monitoring sites for the period of June 10, 2021 through June 16, 2021 are provided in Attachment 1 to this letter report.

#### June 11, 2021

- PacifiCorp personnel mobilized to the Project forebay, shut down the generating unit and initiated penstock head gate closure.
- Personnel waited for the penstock to drain and then closed the penstock isolation valve downstream of the steel wye and opened the bypass valve on the upstream side of the wye<sup>2</sup>.
- Personnel re-opened the penstock head gate and the slide gate on the 16-inch low level outlet pipe to initiate forebay draining and flushing.
- Once the forebay was drained, personnel used trash pumps with a suction hose to mobilize sediment into the water flowing through the center of the forebay and discharging to the bypass reach.

#### June 14, 2021

- The forebay flush was completed and the low level outlet slide gate, penstock head gate and penstock bypass valve were closed.
- The penstock isolation valve was opened and the penstock head gate was opened to re-water the penstock for generation.
- Generation was resumed.

#### June 17, 2021

- In-Situ datasondes were removed from the East Fork Wallowa River upstream and downstream locations.
- PacifiCorp's contract biologist conducted a survey of the lower East Fork of the Wallowa River searching for any fish that may have been impacted by flushing activities. No live, dead or injured fish were located.

With the use of both the low level outlet pipe and the penstock with the wye installed in 2019, we were able to drain the Project forebay and successfully mobilize accumulated sediment into the East Fork Wallowa River below the Project dam (see Attachment 2: Photos). Throughout the flushing period

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<sup>2</sup> As described in the 2020 Forebay Flushing Report, the penstock wye with knife gate valves (penstock isolation and bypass valves) was installed during the intake rebuild project of 2019 to allow more water to be bypassed through the dam during annual forebay flushing

hourly turbidity was recorded at the upstream and downstream monitoring site (see Attachment 1: Turbidity Data).

This letter report and its attachments are being filed electronically. If you have any questions please contact Briana Weatherly at 503-819-2281 or [Briana.weatherly@pacificorp.com](mailto:Briana.weatherly@pacificorp.com).

Sincerely,

*Mark Sturtevant*

Mark Sturtevant (Jul 29, 2021 10:44 PDT)

Mark A. Sturtevant  
Vice President, Renewable Resources

MAS: BW: km

Encl:	Letter – Public	
	Attachment 1 – Wallowa Falls 2021 Forebay Flush Photos - Public	
	Attachment 2 – Wallowa Falls 2021 Forebay Flush Turbidity Data - Public	
eFile:	Kimberly D. Bose, Secretary Via eLibrary at <a href="http://www.ferc.gov">www.ferc.gov</a>	eMail: John Dadoly, ODEQ <a href="mailto:DADOLY.John@deq.state.or.us">DADOLY.John@deq.state.or.us</a>
Cc:	Gretchen Sausen, USFWS	Cc: Adrian Cuzick, USDA- FS
Cc:	Aaron Maxwell, ODFW	

## Attachment 1 – Wallowa Falls Forebay Flush Photos



Photo 1 –Wallowa Falls Forebay – some sediment cutting along edges during draining on June 11, 2021





Photo 2 – Wallowa Falls Forebay: Low forebay June 11, 2021





Photo 3:Wallowa Falls Forebay - June 12, 2021



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

Electronically filed August 3, 2021

Ms. Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, DC 20426

Subject:     Wallowa Falls Hydroelectric Project (FERC No. P-308)  
              2021 Forebay Flushing Report – Attachment 2 REVISION

Dear Ms. Bose:

Upon receipt of the Commission's July 30, 2021 email acknowledging the 2021 Forebay Flushing Report (Report) filing for the Wallowa Falls Hydroelectric Project we discovered an error that the "upstream" and "downstream" turbidity plot lines were mislabeled in the graph legend in Attachment 2 of the Report.

We apologize for any inconvenience associated with this clerical mistake and have enclosed the correct Attachment 2 of the 2021 Forebay Flushing Report for your review.

This letter and its attachment are being filed electronically. If you have any questions, please contact Briana Weatherly at 503-819-2281 or [Briana.weatherly@pacificorp.com](mailto:Briana.weatherly@pacificorp.com).

Sincerely,

Mark Sturtevant (Aug 2, 2021 12:12 PDT)

Mark A. Sturtevant  
Vice President, Renewable Resources

MAS: BW: km

<b>Encl:</b>	Attachment 2 – Wallowa Falls 2021 Forebay Flush Turbidity Data (REVISED) - Public
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<b>eFile:</b>	Kimberly D. Bose, Secretary Via eLibrary at <a href="http://www.ferc.gov">www.ferc.gov</a>
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## Attachment 2 – Wallowa Falls Forebay Flush Turbidity Data

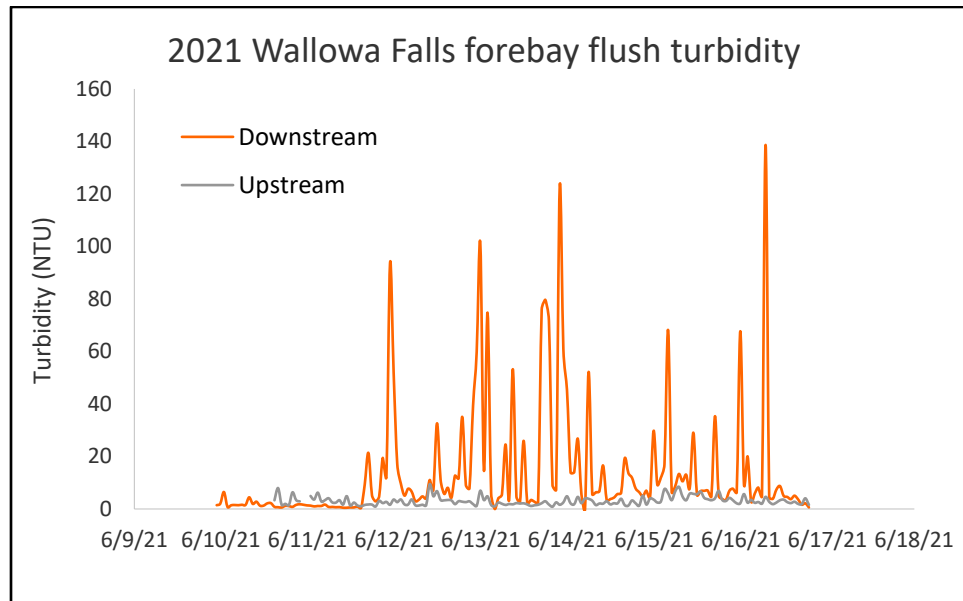




Table 1 – Wallowa Falls 2020 Forebay Flush: Turbidity Data in East Fork Wallowa River

\*These reading appear to be errors and are not included in the graphed data set.

The gray shaded portion of the table represents data recorded during the 66.5 hour active flush period.

Date/Time	Downstream Turbidity (NTU)	Upstream Turbidity (NTU)
6/9/2021 22:48	1.449	3.983*
6/9/2021 23:48	2.017	52.128*
6/10/2021 0:48	6.476	62.544*
6/10/2021 1:48	0.762	207.51*
6/10/2021 2:48	1.411	538.07*
6/10/2021 3:48	1.513	341.57*
6/10/2021 4:48	1.443	311.37*
6/10/2021 5:48	1.605	198.51*
6/10/2021 6:48	1.555	328.63*
6/10/2021 7:48	4.455	129.92*
6/10/2021 8:48	1.925	53.89*
6/10/2021 9:48	2.786	180.51*
6/10/2021 10:48	1.247	112.28*
6/10/2021 11:48	1.282	79.749*
6/10/2021 12:48	2.134	50.107*
6/10/2021 13:48	2.23	20.911*
6/10/2021 14:48	0.824	3.309
6/10/2021 15:48	0.681	7.977
6/10/2021 16:48	0.569	1.541
6/10/2021 17:48	1.194	1.978
6/10/2021 18:48	1.09	1.476
6/10/2021 19:48	0.814	6.352
6/10/2021 20:48	1.564	3.383
6/10/2021 21:48	1.79	2.899
6/10/2021 22:48	1.613	15.206*
6/10/2021 23:48	1.372	89.206*
6/11/2021 0:48	1.274	4.955
6/11/2021 1:48	0.984	3.582
6/11/2021 2:48	1.138	6.237
6/11/2021 3:48	1.149	2.837
6/11/2021 4:48	1.679	3.382
6/11/2021 5:48	0.782	4.094
6/11/2021 6:48	0.797	2.503
6/11/2021 7:48	0.674	2.418
6/11/2021 8:48	0.722	3.362

<b>Date/Time</b>	<b>Downstream Turbidity (NTU)</b>	<b>Upstream Turbidity (NTU)</b>
6/11/2021 9:48	0.486	1.664
6/11/2021 10:48	0.475	4.912
6/11/2021 11:48	0.602	1.286
6/11/2021 12:48	0.59	2.44
6/11/2021 13:48	0.908	1.333
6/11/2021 14:48	0.47	1.031
6/11/2021 15:48	9.337	1.537
6/11/2021 16:48	21.392	1.703
6/11/2021 17:48	5.263	1.678
6/11/2021 18:48	2.882	0.917
6/11/2021 19:48	4.822	3.104
6/11/2021 20:48	19.476	2.231
6/11/2021 21:48	12.349	2.712
6/11/2021 22:48	93.562	1.589
6/11/2021 23:48	52.049	3.595
6/12/2021 0:48	17.164	2.607
6/12/2021 1:48	9.672	3.63
6/12/2021 2:48	5.091	1.756
6/12/2021 3:48	7.701	1.656
6/12/2021 4:48	6.595	3.655
6/12/2021 5:48	3.039	1.432
6/12/2021 6:48	3.532	1.311
6/12/2021 7:48	4.828	1.629
6/12/2021 8:48	4.07	1.39
6/12/2021 9:48	11.065	9.46
6/12/2021 10:48	7.223	4.843
6/12/2021 11:48	32.621	6.809
6/12/2021 12:48	11.183	3.426
6/12/2021 13:48	5.759	3.302
6/12/2021 14:48	8.085	3.434
6/12/2021 15:48	4.259	3.284
6/12/2021 16:48	12.754	1.847
6/12/2021 17:48	11.693	2.97
6/12/2021 18:48	35.112	2.773
6/12/2021 19:48	9.137	2.618
6/12/2021 20:48	7.89	2.911
6/12/2021 21:48	39.423	1.859
6/12/2021 22:48	59.865	1.209
6/12/2021 23:48	101.26	6.966
6/13/2021 0:48	14.672	3.373
6/13/2021 1:48	74.808	4.838
6/13/2021 2:48	5.89	1.521
6/13/2021 3:48	0	1.018

<b>Date/Time</b>	<b>Downstream Turbidity (NTU)</b>	<b>Upstream Turbidity (NTU)</b>
6/13/2021 4:48	4.113	2.439
6/13/2021 5:48	5.556	1.984
6/13/2021 6:48	24.575	1.536
6/13/2021 7:48	3.643	1.898
6/13/2021 8:48	53.258	1.766
6/13/2021 9:48	4.748	2.243
6/13/2021 10:48	2.71	2.071
6/13/2021 11:48	25.973	2.169
6/13/2021 12:48	2.175	1.714
6/13/2021 13:48	3.429	1.126
6/13/2021 14:48	2.767	1.417
6/13/2021 15:48	2.339	1.599
6/13/2021 16:48	75.941	2.204
6/13/2021 17:48	79.717	2.95
6/13/2021 18:48	71.723	1.688
6/13/2021 19:48	8.966	0.859
6/13/2021 20:48	7.328	2.519
6/13/2021 21:48	123.16	1.597
6/13/2021 22:48	60.937	2.512
6/13/2021 23:48	45.415	4.857
6/14/2021 0:48	13.91	2.152
6/14/2021 1:48	13.99	1.804
6/14/2021 2:48	26.753	4.615
6/14/2021 3:48	5.622	2.204
6/14/2021 4:48	0	4.037
6/14/2021 5:48	52.237	3.859
6/14/2021 6:48	5.596	3.174
6/14/2021 7:48	6.391	1.478
6/14/2021 8:48	6.813	2.093
6/14/2021 9:48	16.575	2.008
6/14/2021 10:48	3.299	2.952
6/14/2021 11:48	3.784	1.758
6/14/2021 12:48	4.316	2.189
6/14/2021 13:48	5.72	2.126
6/14/2021 14:48	6.139	3.895
6/14/2021 15:48	19.354	1.446
6/14/2021 16:48	13.706	1.285
6/14/2021 17:48	11.916	3.249
6/14/2021 18:48	7.86	2.18
6/14/2021 19:48	6.398	1.245
6/14/2021 20:48	4.868	5.104
6/14/2021 21:48	6.979	1.662
6/14/2021 22:48	4.357	3.986

<b>Date/Time</b>	<b>Downstream Turbidity (NTU)</b>	<b>Upstream Turbidity (NTU)</b>
6/14/2021 23:48	29.804	3.573
6/15/2021 0:48	9.342	2.47
6/15/2021 1:48	11.944	2.79
6/15/2021 2:48	17.025	7.6
6/15/2021 3:48	68.229	6.002
6/15/2021 4:48	6.372	3.335
6/15/2021 5:48	8.778	6.789
6/15/2021 6:48	13.34	8.454
6/15/2021 7:48	10.516	4.735
6/15/2021 8:48	13.085	3.311
6/15/2021 9:48	7.984	5.849
6/15/2021 10:48	29.081	5.762
6/15/2021 11:48	5.298	5.616
6/15/2021 12:48	6.827	6.664
6/15/2021 13:48	6.911	4.249
6/15/2021 14:48	7.006	3.712
6/15/2021 15:48	4.802	3.333
6/15/2021 16:48	35.354	4.075
6/15/2021 17:48	5.046	6.926
6/15/2021 18:48	3.842	3.436
6/15/2021 19:48	3.426	3.031
6/15/2021 20:48	6.971	4.232
6/15/2021 21:48	7.718	3.267
6/15/2021 22:48	6.305	2.145
6/15/2021 23:48	67.728	2.18
6/16/2021 0:48	9.607	5.691
6/16/2021 1:48	20.08	2.401
6/16/2021 2:48	2.851	3.486
6/16/2021 3:48	5.86	2.341
6/16/2021 4:48	8.153	2.657
6/16/2021 5:48	4.854	2.019
6/16/2021 6:48	138.68	4.634
6/16/2021 7:48	4.381	2.721
6/16/2021 8:48	3.83	1.833
6/16/2021 9:48	7.403	2.452
6/16/2021 10:48	8.716	3.348
6/16/2021 11:48	4.988	3.566
6/16/2021 12:48	4.593	2.618
6/16/2021 13:48	3.734	2.236
6/16/2021 14:48	5.069	2.769
6/16/2021 15:48	3.664	1.93
6/16/2021 16:48	1.636	1.842
6/16/2021 17:48	2.163	4.07

<b>Date/Time</b>	<b>Downstream Turbidity (NTU)</b>	<b>Upstream Turbidity (NTU)</b>
6/16/2021 18:48	0.59	1.581

## **Appendix B**

### **2021 Fish Salvage & Temporary Tailrace Barrier Report**



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

**(FERC No. P-308)**

**December 15, 2021**



***Prepared by:***

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## 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.*”

With the bringing online of the permanent tailrace fish barrier in June 2020, it was anticipated that construction of temporary tailrace fish barriers and tailrace fish salvages would no longer be necessary. The unexpected identification of a small side-channel of the West Fork Wallowa River immediately downstream of the tailrace discharge plume made it necessary for this Plan to continue to be implemented moving forward.

It was identified that this small side-channel would lose connectivity with the main channel of the West Fork Wallowa River as the main channel receded to base flow, at which time the total flow into the side-channel would be provided by the Project tailrace channel discharge. The concern was then raised that if the Project unit tripped and the tailrace dewatered, the small side-channel would also then dewater. An Emergency Action Plan was developed to identify measures to limit risk to aquatic species in the vicinity of the side-channel should the unit trip and tailrace dewater (Appendix A).

A stakeholder meeting consisting of representatives from USFWS, ODFW, USDA-FS, ODEQ, and PacifiCorp took place after the first-year implementation of the emergency temporary barrier in 2020. Discussion centered around next steps moving forward concerning mitigation for the potential side-channel dewatering issue. It was agreed during this meeting to continue to install and maintain a temporary barrier at the inlet and outlet of the side-channel during the base flow period of the year, August 15 – November 15, for the next five years. This Plan will be reevaluated after the five-year period.

Though no empirical fishery data existed for the small West Fork Wallowa River side-channel, it was assumed that resident and migratory fish species encountered at other locations nearby would also currently inhabit the channel at varying densities, depending on time of year. Fish species encountered within the vicinity consist of rainbow trout (*Oncorhynchus mykiss*), bull trout (*Salvelinus confluentus*), brook trout (*Salvelinus fontinalis*), mountain whitefish (*Prosopium williamsoni*), kokanee (*Oncorhynchus nerka*), and cottid *ssp.*

This Report and the information contained therein 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.

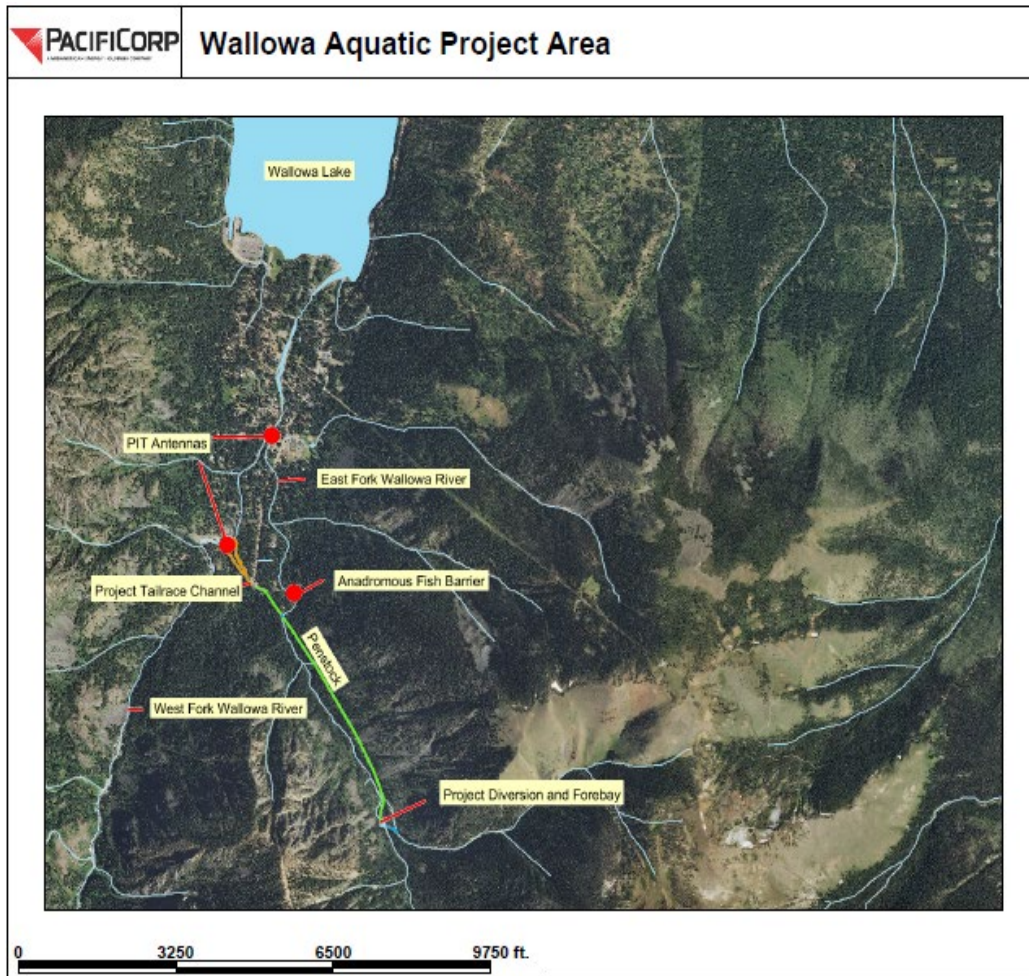


Figure 1 Wallowa Falls Hydroelectric Project.

### 3.0 METHODS

November 16 – July 30, upon notification of a unit trip with corresponding headgate closure, regardless of time of day, a local on-call qualified biologist is immediately notified by an operator at Merwin Hydro Control and commences with physically rescuing stranded fish from the side-channel of the West Fork Wallowa immediately below the tailrace discharge. The local qualified biologist lives in close proximity to the Project so as to be on-site and walking the side-channel within 60 minutes of the unplanned unit trip. 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 result in no salvage response as the amount of water available flowing down the tailrace channel to the West Fork side-channel during this scenario is sufficient for fish survival until the unit is brought back online and full flow once again commences.

A Smith-Root LR-24 (or similar model) backpack electrofisher or long-handled dip net is utilized to capture stranded fish. If a backpack electrofisher is utilized, it is set to Direct Current (DC) and applied at the lowest voltage setting possible to still allow capture of stranded fish species. All electrofishing activities follow 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 ensures that fish capture and removal operations are conducted by a qualified biologist, and that all staff participating in the operation have the necessary knowledge, skills, and abilities to ensure safe handling of fish.

Prior to liberation, all captured fish are 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 complies 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.

Additionally, in 2021, as stipulated within the Introduction, a sandbag and block net barrier were constructed to serve as a temporary fish exclusionary device at the top, middle, and bottom end of the small West Fork Wallowa River side-channel located immediately downstream of the tailrace barrier discharge plume. The fish barrier at the upstream end, and middle of the side-channel utilized sandbags, stacked one on top the other for the entire width of the side-channel (Figure 2 and Figure 3). A barrier net was strung across the entire bottom end exit of the side-channel (Figure 4). The openings of this barrier net were 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. Further specifics to the Emergency Action Plan concerning this side-channel can be found in Appendix A.



**Figure 2. Photo of Wallowa Falls side-channel barrier on upstream end.**





**Figure 3. Photo of Wallowa Falls side-channel barrier of small channel halfway down the main side-channel.**



**Figure 4. Photo of Wallowa Falls side-channel barrier at the downstream end.**



## **4.0 RESULTS**

### **Fish Salvage**

No unit trips of long enough duration with subsequent headgate closure occurred at the Wallowa Falls Project November 16 – July 30, 2021 and as such no fish salvages were ever required. One fish salvage occurred on the Project during 2021, that of a salvage of the West Fork Wallowa River side-channel immediately downstream of the tailrace barrier discharge plume after fish barriers were installed on July 14, 2021. No fish were encountered or observed.

### **Temporary Fish Barrier**

Per the Action Plan submitted to stakeholders on August 17, 2020, a temporary fish barrier was installed at the upstream and downstream end of the West Fork Wallowa River side-channel immediately downstream of the Project tailrace barrier discharge plume on July 14, 2021. The tailrace fish barrier was visually inspected twice per week until taken out on November 15, 2021. At no time during weekly inspections was the barrier visually assessed to be ineffective in precluding fish from entering the side-channel.

## **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**  
**EMERGENCY ACTION PLAN – WF WALLOWA SIDE-CHANNEL TEMPORARY**  
**FISH BARRIERS**



**August 10, 2020**

**Emergency Action Plan: Wallowa Falls Temporary Fish Barriers to identified side-channel below Project Tailrace discharge**

**Background:**

Upon completion of the newly realigned tailrace and permanent tailrace fish barrier at the Wallowa Falls Hydroelectric Project, a side-channel directly below the tailrace discharge outlet was identified as being susceptible to unplanned Project induced dewatering events. Under normal water years, the side-channel in question may lose connectivity to the main channel of the West Fork Wallowa River as it recedes to base flow and may naturally go dry. With construction complete, the Project tailrace now will provide some flow to the side-channel even at times of loss of hydraulic connectivity with the West Fork Wallowa River. Under this scenario, in the event of an unplanned unit trip with subsequent headgate closure at the Wallowa Falls Project, the side-channel could now unexpectedly dewater. Potential impacts of this possible event are exacerbated during the bull trout and kokanee spawn timeframe, as redds that may have been excavated earlier would then become desiccated.

**Study Area:**

The side-channel in question (stranding channel) is located immediately downstream of the Wallowa Falls Project tailrace discharge channel, and within the flood plain of the West Fork Wallowa River (see Figure A, Sketch of side-channel and approximate locations of tailrace discharge outlet and barrier placements: Location 1). It is approximately 79 meters (260 feet) long, with an average wetted-width of 3 meters (10 feet). Figure 1 shows Location 1 on the sketch, the top-end of the stranding side-channel looking downstream. The West Fork Wallowa River main channel is on the left, the tailrace discharge is in the middle and the side-channel is on the right. The photograph in Figure 1 was taken on August 8, 2020, during West Fork Wallowa River midsummer flows. Based on August 8 field observation, the West Fork main channel has recently further down-cut below the entrance of the stranding side-channel. As a result, the tailrace is now providing most of the flow, approximately 3cfs, into the stranding channel. However, during the August 8 field visit, it was discovered that a small channel connecting the main thalweg of the West Fork to the stranding channel also exists (Figure A, location 2). The channel in Location 2 (Figure 2) is contributing very little flow (approximately 0.5-1 cfs) to the stranding channel.

**Action:**

To prohibit fish from entering the stranding side-channel immediately below the Project tailrace discharge outlet from the downstream side during the bull trout and kokanee spawn, a block net (barrier net) will be installed by August 24, 2020 to serve as a temporary fish exclusionary device (Figure A, Location 3). The barrier net will be laid across the entire bottom of the upstream side of the side channel (Figure 3). The openings of the barrier net will be 6.35 mm. The net will be held in place by large sandbags placed end to end along the stream bottom and spanning the entire stream-width. The net will span the entire wetted-width of the side channel, rise above the water surface, and be pinned to the stream bank on either side with rebar to hold it in place in the event of higher than anticipated flows. The barrier net will be visited on a bi-weekly basis to clean debris and assess it is functioning as intended.

To prohibit fish and tailrace discharge from accessing the stranding side-channel from the top end immediately below the weir (Figure 1), a diversion (using sandbags, bio-blocks, or similar) will be built. The planned construction method is a sandbag berm approximately 3 meters (10 feet) long and 0.75 meter (2.5 feet) high. The diversion will prohibit water flow and connection between the West Fork Wallowa River, and the stranding side-channel, while diverting water from the tailrace discharge to the main thalweg of the West Fork.

To prohibit fish and main West Fork channel water from entering the stranding side-channel at Location 2 (Figure 2), a diversion using sandbags will be built. The planned construction method is a sandbag berm approximately 1.5 meters (5 feet) long and 0.6 meter (2 feet) high. After the three side-channel temporary barriers are placed, all fish will be salvaged from the stranding side-channel and liberated to the main channel West Fork Wallowa River by means of electrofishing. All side-channel barriers will be dismantled and taken out of the river no earlier than November 15, 2020, after conclusion of the bull trout and kokanee spawn season.

## **Appendix C**

### **2021 Bull Trout Redd Monitoring Report**



## **Bull Trout Redd Monitoring Report for the Wallowa Falls Hydroelectric Project**



East Fork Wallowa River  
photo courtesy of Kendrick Moholt

**(FERC No. P-308)**

**December 27, 2021**

*Prepared by:*

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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.

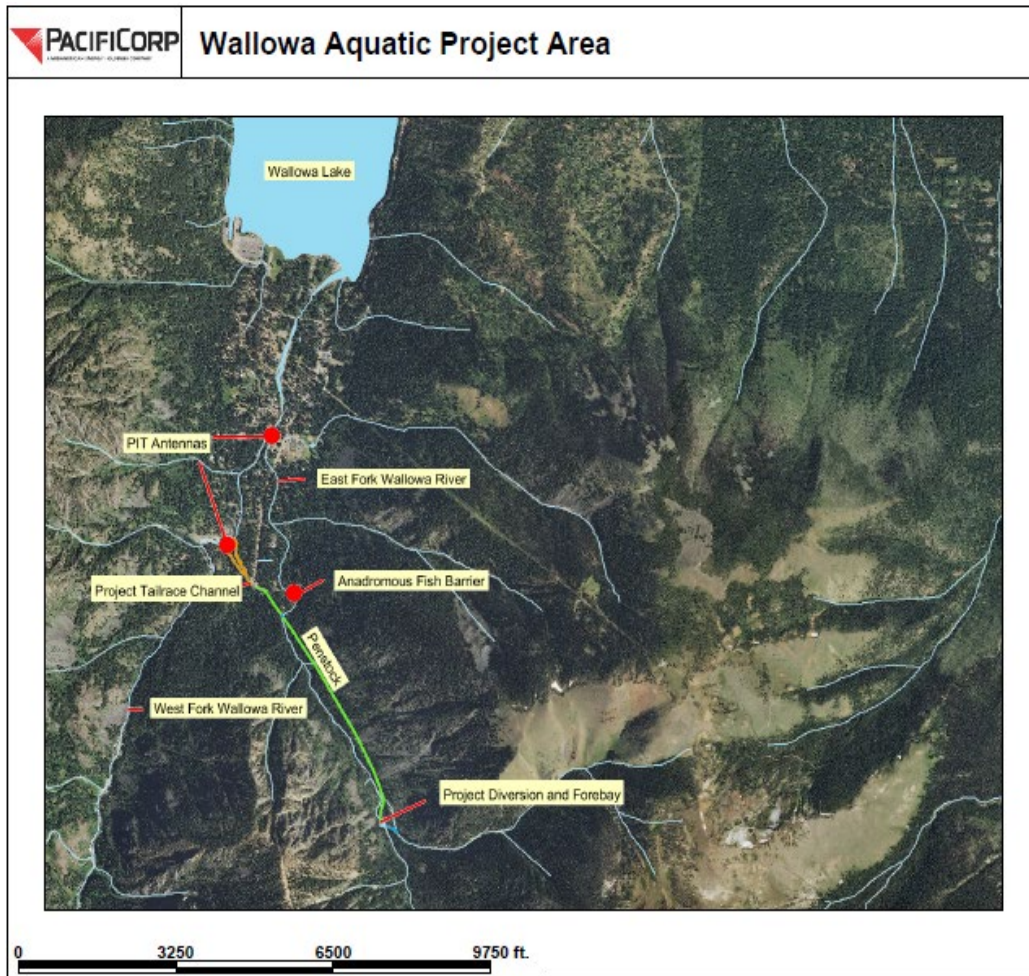
The USFWS listed five reasonable and prudent measures (RPM) to be undertaken to minimize incidental take of bull trout by Project operations. Elements within this Plan pertain specifically to RPM 4 which seeks to “*minimize the risk of adverse effects to bull trout from emergency shut-down and ramping*”. Section 8.4 4(a) of the BiOp adds specific language and actions to be taken 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 August 27, 2021 and continued weekly through October 22, 2021 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, an approximately 7-meter vertical falls. To standardize inherent observer error, the same experienced surveyor was utilized for all nine surveys in 2021.

All encountered bull trout redds were demarcated by handheld GPS, flagged for visual reference within the stream, measured, and photographed. 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 to assess redd life. Though the Planning document called for only four redd surveys during the spawning period, this being the fourth year of study and redd life still being characterized, ten surveys were again performed to gain an accurate understanding of visual redd persistence within this watershed. Average and minimum observed redd life will be utilized to adjust frequency of surveys moving forward. Flows during the survey period (Sep-Oct) remained relatively stable and measured between 9-20 cubic feet per second as measured at the United States Geological Survey gage.

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**

Nine bull trout redds were identified and marked by GPS during the nine redd surveys performed in the East Fork Wallowa River in 2021 (Figure 2). Four of the bull trout redds were large and indicative of being constructed by large migratory-sized fish, while five were smaller and possibly indicative of being constructed from smaller resident-sized fish (Table 1). All redd observations in 2021 occurred between September 10 and October 1, with the peak of six counted on September 24. Four of the nine observed redds had bull trout either on, actively constructing or in very close proximity to, the redd. Pictures of all nine identified bull trout redds are included in Appendix A.

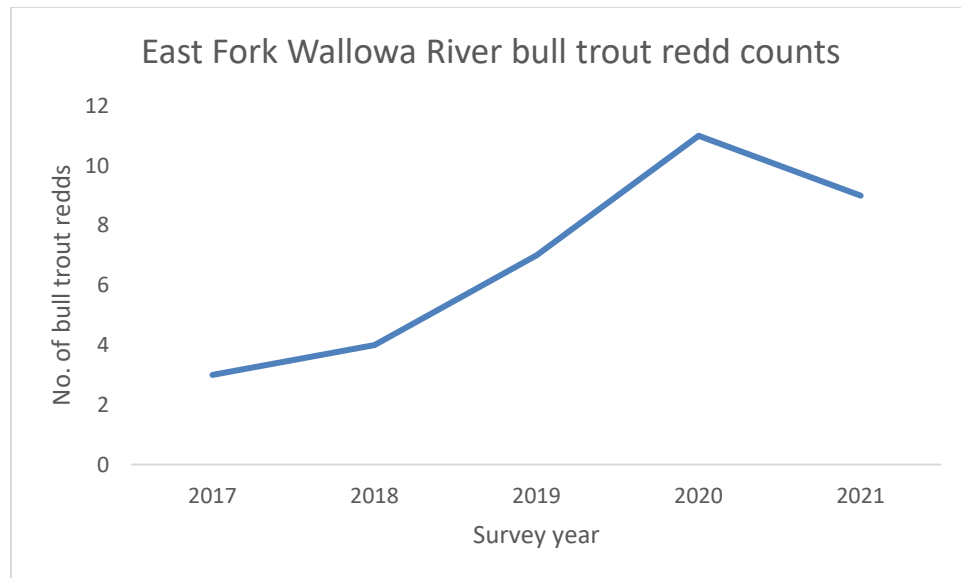


**Table 1. East Fork Wallowa River bull trout redd data.**

Date	Survey Location	Redd #	Redd Dimension (cm)	Live bull trout				Survey Conditions	Redd location same as year prior
				<6 in.	<12 in.	<14 in.	>14 in.		
8/27/2021	EFW, mouth to barrier	n/a						Sunny, clear. Water clarity excellent.	
9/2/2021	EFW, mouth to barrier	n/a						Sunny, clear. Water clarity excellent.	
9/10/2021	EFW, mouth to barrier	1	50 x 21	n/a	n/a	n/a	n/a	Sunny, clear. Water clarity excellent.	n/a
9/20/2021	EFW, mouth to barrier	n/a						Partial clouds. Water clarity excellent.	
9/24/2021	EFW, mouth to barrier	2	99 x 53	n/a	n/a	n/a	n/a	Clear. Water clarity excellent.	n/a
9/24/2021	EFW, mouth to barrier	3	84 x 33	n/a	n/a	n/a	1	Clear. Water clarity excellent.	n/a
9/24/2021	EFW, mouth to barrier	4	69 x 36	n/a	n/a	n/a	n/a	Clear. Water clarity excellent.	n/a
9/24/2021	EFW, mouth to barrier	5	56 x 26	n/a	1	n/a	n/a	Clear. Water clarity excellent.	n/a
9/24/2021	EFW, mouth to barrier	6	48 x 20	n/a	1	n/a	n/a	Clear. Water clarity excellent.	n/a
9/24/2021	EFW, mouth to barrier	7	36 x 20	n/a	n/a	n/a	n/a	Clear. Water clarity excellent.	n/a
10/01/2021	EFW, mouth to barrier	8	94 x 53	n/a	n/a	n/a	2	Clear. Water clarity excellent.	n/a
10/01/2021	EFW, mouth to barrier	9	29 x 15	n/a	n/a	n/a	n/a	Clear. Water clarity excellent.	n/a
10/08/2021	EFW, mouth to barrier	n/a						Cloudy with rain. Water clarity marginal.	n/a
10/15/2021	EFW, mouth to barrier	n/a						Clear. Water clarity excellent.	
10/22/2021	EFW, mouth to barrier	n/a						Cloudy with rain. Water clarity marginal.	



**Figure 2. GPS marked locations (red dots, n=9) of bull trout redds within the East Fork Wallowa River**



**Figure 3. Bull trout redd counts by survey year (2017-2021).**

All nine bull trout redds were in the upper portion of available habitat below the barrier. Redds in 2021 visually persisted for an average of 23 days, with the longest time a redd remained visible being 40 days, and the shortest 19 days. No brook trout were definitively observed during any 2021 East Fork Wallowa River redd surveys.

Flows during the survey period remained stable and never deviated below the prescribed minimum instream flow as measured at the United States Geological Survey gage site.

Given length of redd persistence within the East Fork Wallowa observed for the first five seasons of these surveys (average time of 28 days, 2017-2021), in 2022 it is anticipated bull trout redd surveys will occur on a 10-day rotation during the months of September and October.

## 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 A**

### **2021 Bull Trout Redd Photo Documentation**

#### **Redd #1**



**Redd #2**





**Redd #3**

**Redd #4**





**Redd #5**



**Redd #6**



**Redd #7**





**Redd #8**





**Redd #9**

## **Appendix D**

### **2021 Noxious Weed Control Plan Annual Report**



# **2021 Noxious Weed Control Plan Annual Report**

Wallowa Falls Hydroelectric Project

FERC Project No. 308



*Prepared by:*



December 2021



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# 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 2005a) and Record of Decision (ROD) (October 2005b).
- 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 2005a) and Record of Decision (ROD) (October 2005b). 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. This 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.

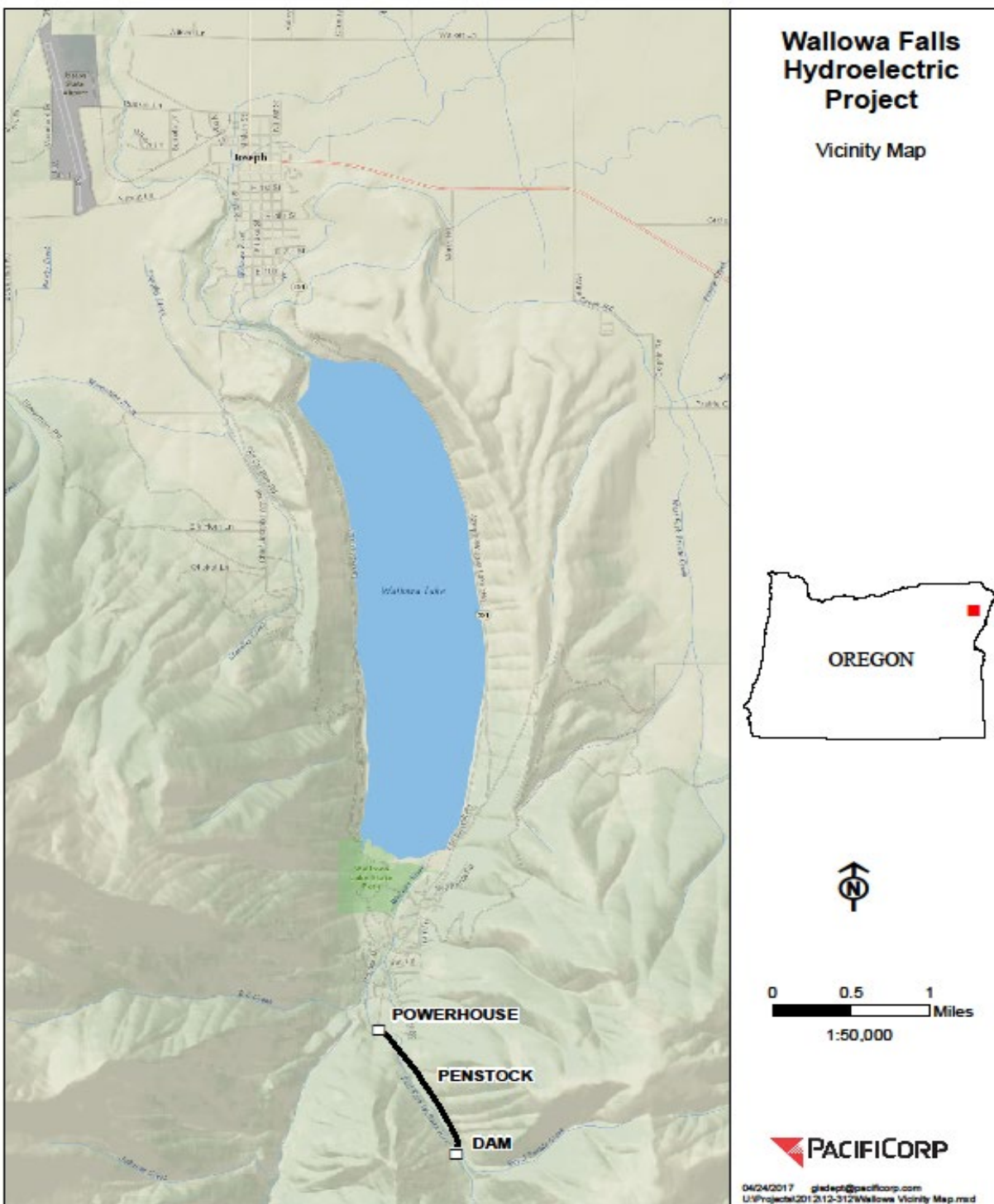
**High Priority:** areas with frequent or continued soil disturbance, frequent or constant exposure to weed seed vectors, or is known to have existing noxious weeds. These areas include the campground, forebay area, and portions of the WWNF trail within the Project Boundary.

**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.). In 2019 the new tailrace location was included High Priority Noxious area due to the 2019 construction and expected exposure to weed seed vectors.

**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. The laws are as follows and PacifiCorp complied with these regulations and guidelines for all noxious weed monitoring and management in 2021:

### 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 2021:

- 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 2020):

**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.

**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 2021 NWCP monitoring:

**Table 1: 2021 Oregon State and Wallowa County Listed Noxious Weeds**

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

**Table 1: 2021 Listed Oregon and Wallowa County Listed Noxious Weeds (continued)**

<b>Common Name <sup>2,3</sup></b>	<b>Scientific Name<sup>1,2</sup></b>	<b>Oregon State Category<sup>2</sup></b>	<b>Wallowa County Category<sup>3</sup></b>
European water chestnut	<i>Trapa natans</i>	A	
False Brome	<i>Brachypodium sylvaticum</i>	B	
Field Bindweed*	<i>Convolvulus arvensis</i>	B	B
Five-angled Dodder	<i>Cuscuta pentagona</i>	B	
Floating Primrose Willow	<i>Ludwigia peploides</i>	B (T)	
Flowering Rush	<i>Butomus umbellatus</i>	A (T)	
French Broom	<i>Genista monspessulana</i>	B	
Garden yellow loosestrife	<i>Lysimachia vulgaris</i>	A (T)	
Garlic Mustard	<i>Alliaria petiolata</i>	B (T)	A(T)
Giant hogweed	<i>Heracleum mantegazzianum</i>	A (T)	
Giant Knotweed	<i>Polygonum sachalinense</i>	B	A
Giant reed	<i>Arundo donax</i>	B	
Goatsrue	<i>Galega officinalis</i>	A (T)	
Gorse	<i>Ulex europaeus</i>	B (T)	
Hairy whitetop *	<i>Lepidium pubescens</i>	B	A (T)
Halogeton	<i>Halogeton glomeratus</i>	B	
Herb Robert	<i>Geranium robertianum</i>	B	
Himalayan knotweed	<i>Polygonum polystachum</i>	B	
Hoary Alyssum (False Hoary Alyssum) *	<i>Berteroa incana</i>	A (T)	A(T)
Hoary cress whitetop *	<i>Lepidium draba</i>	B	T
Houndstongue**	<i>Cynoglossum officinale</i>	B	B
Hydrilla	<i>Hydrilla verticillata</i>	A	
Iberian star-thistle	<i>Centaurea iberica</i>	A (T)	A
Indigo bush	<i>Amorpha fruticosa</i>	B	
Italian Thistle	<i>Cardus pycnocephalus</i>	B	A(T)
Japanese dodder	<i>Cuscuta japonica</i>	A	
Japanese knotweed*	<i>Polygonum cuspidatum</i>	B	T
Johnsongrass	<i>Sorghum halepense</i>	B	
Jointed goatgrass *	<i>Aegilops cylindrica</i>	B	T
Jubata grass	<i>Cortaderia jubata</i>	B	
King devil hawkweed	<i>Pilosella piloselloides</i>	A	
Kochia*	<i>Kochia scoparia</i>	B	B
Kudzu	<i>Pueraria lobata</i>	A(T)	
Large-flower Primrose Willow	<i>Ludwigia grandiflora</i>	B (T)	
Leafy Spurge*	<i>Euphorbia esula</i>	B(T)	A (T)
Lens podded whitetop*	<i>Cardaria chalapensis</i>	B	
Lesser celandine	<i>Ranunculus ficaria</i>	B	

**Table 1: 2021 Listed Oregon and Wallowa County Listed Noxious Weeds (continued)**

<b>Common Name <sup>2,3</sup></b>	<b>Scientific Name<sup>1,2</sup></b>	<b>Oregon State Category<sup>2</sup></b>	<b>Wallowa County Category<sup>3</sup></b>
Long-Spine sandbur	<i>Cenchrus longispinus</i>		B
Matgrass	<i>Nardus stricta</i>	A (T)	
Meadow Hawkweed*	<i>Hieracium pratense</i>	B (T)	T
Meadow Knapweed*	<i>Centaurea pratensis</i>	B	A(T)
Mediterranean Sage	<i>Salvia aethiopis</i>	B	A(T)
Medusahead Rye*	<i>Taeniatherum canput-medusae</i>	B	B(T)
Milk thistle	<i>Silybum marianum</i>	B	
Mouse-ear hawkweed	<i>Pilosella pilosella</i>	A (T)	
Musk thistle	<i>Carduus nutans</i>	B	A(T)
Myrtle Spurge	<i>Euphorbia myrsinites</i>	B	A(T)
Oblong spurge	<i>Euphorbia oblongata</i>	A (T)	
Old man's beard	<i>Clematis vitalba</i>	B	
Orange Hawkweed*	<i>Pilosella aurantiacum</i>	A (T)	A(T)
Oregano	<i>Origanum vulgare</i>		A(T)
Ovate goatgrass	<i>Aegilops ovata</i>	A	
Oxeye Daisy*	<i>Leucanthemum vulgare</i>		B
Parrot's feather	<i>Myriophyllum aquaticum</i>	B	
Paterson's curse	<i>Echium plantagineum</i>	A (T)	
Perennial peavine	<i>Lathyrus latifolius</i>	B	
Perennial Pepperweed*	<i>Lepidium latifolium</i>	B (T)	A(T)
Pheasanteye (Blooddrop)*	<i>Adonis aestivalis</i>	B (T)	
Plumeless Thistle*	<i>Carduus acanthoides</i>	A (T)	A(T)
Poison Hemlock*	<i>Conium maculatum</i>	B	B
Policeman's Helmet	<i>Impatiens glandulifera</i>	B	
Portuguese broom	<i>Cytisus striatus</i>	B(T)	
Puncturevine*	<i>Tribulus terrestris</i>	B	A(T)
Purple Loosestrife*	<i>Lythrum salicaria</i>	B	A(T)
Purple nutsedge	<i>Cyperus rotundus</i>	A	
Purple Star-thistle	<i>Centaurea calcitrapa</i>	A (T)	T
Ragweed	<i>Ambrosia artemisiifolia</i>	B	
Ravennagrass	<i>Saccharum ravennae</i>	A (T)	A(T)
Reed Canarygrass (Ribbon grass)	<i>Phalaris arundinaceae</i> var. <i>Picta</i>	B (T)	B
Rose campion	<i>Lychnis coronaria</i>		A
Rush Skeletonweed*	<i>Chondrilla juncea</i>	B(T)	B(T)
Russian Knapweed*	<i>Acroptilon repens</i>	B	A(T)
Saltcedar*	<i>Tamarix ramoissima</i>	B (T)	
Salt meadow cordgrass	<i>Spartina patens</i>	A (T)	

**Table 1: 2021 Listed Oregon and Wallowa County Listed Noxious Weeds (continued)**

<b>Common Name</b> <sup>2,3</sup>	<b>Scientific Name</b> <sup>1,2</sup>	<b>Oregon State Category</b> <sup>2</sup>	<b>Wallowa County Category</b> <sup>3</sup>
Scotch Broom*	<i>Cytisus scoparius</i>	B	A(T)
Scotch Thistle*	<i>Onopordium acanthium</i>	B	B(T)
Shiny leaf geranium	<i>Geranium lucidum</i>	B	
Silverleaf nightshade	<i>Solanum elaeagnifolium</i>	A	
Slender flowered thistle	<i>Cardus tenuiflorus</i>	B	
Small broomrape	<i>Orobancha minor</i>	B	
Smooth Cordgrass	<i>Spartina alterniflora</i>	A (T)	
Smooth distaff thistle	<i>Carthamus baeticus</i>	A	
Smoothseed alfalfa (Dodder)	<i>Cuscuta approximata</i>	B	
South American waterweed	<i>Egeria densa</i>	B	
Spanish Broom	<i>Spartium juneceum</i>	B	
Spanish Heath	<i>Erica lusitanica</i>	B	
Spiny cocklebur	<i>Xanthium spinosum</i>	B	
Spotted Cats Ear	<i>Hypochoeris maculata</i>		T
Spotted Knapweed**	<i>Centaurea maculosa</i>	B (T)	A(T)
Spurge laurel	<i>Daphne Laureola</i>	B	
Squarrose knapweed	<i>Centaurea virgata</i>	A (T)	
St. Johnswort*	<i>Hypericum perforatum</i>	B	
Sulfur Cinquefoil*	<i>Potentilla recta</i>	B	T
Swainsonpea	<i>Sphaerophysa salsula</i>	B	
Sweetbriar Rose*	<i>Rosa rubiginosa</i>		B
Syrian bean-caper	<i>Zygophyllum fabago</i>	A	
Tall Buttercup*	<i>Ranunculus acris</i>		B
Tansy Ragwort*	<i>Senecio jacobaea</i>	B (T)	A(T)
Tuarian thistle	<i>Onopordum tauricum</i>	A(T)	
Tree of Heaven*	<i>Ailanthus altissima</i>	B	
Turkish Thistle	<i>Cardus cineris</i>	A(T)	
Velvetleaf	<i>Abutilon theophrasti</i>	B	
Ventenata (North Africa grass)*	<i>Ventenata dubia</i>	B	B
Water soldier	<i>Stratiotes aloides</i>	A	
Waterprimrose	<i>Ludwigia hexapetala</i>	B (T)	
Wetted Thistle*	<i>Cardus crispis</i>	A (T)	A(T)
West Indian spongeplant	<i>Limnolobos laevigatus</i>	A	
White bryonia (white bryony)	<i>Byronia alba</i>	A	A
White Champion	<i>Silene latifolia</i>		B
Woolly distaff thistle	<i>Carthamus lanatus</i>	A (T)	
Yellow archangel	<i>Lamium galeobdolon</i>	B	
Yellow flag iris*	<i>Iris pseudocorus</i>	B	A(T)

**Table 1: 2021 Listed Oregon and Wallowa County Listed Noxious Weeds (continued)**

<b>Common Name</b> <sup>2,3</sup>	<b>Scientific Name</b> <sup>1,2</sup>	<b>Oregon State Category</b> <sup>2</sup>	<b>Wallowa County Category</b> <sup>3</sup>
Yellow floating heart	<i>Nymphoides peltata</i>	A (T)	
Yellow hawkweed*	<i>Pilosella floribundum</i>	A (T)	
Yellow nutsedge	<i>Cyperus esculentus</i>	B	
Yellow starthistle*	<i>Centuarea solstitialis</i>	B	A
Yellow toadflax*	<i>Linaria vulgaris</i>	B	B
Yellowtuft	<i>Alyssum coriscan</i>	A(T)	

\***Noxious weeds are known to exist within Wallowa County** <sup>1, 2</sup>

\*\*Noxious weeds are known to exist within the Project Boundary (Bio-Resources 2021)

<sup>1</sup> Natural Resources Conservation Service 2018 <sup>2</sup> Oregon Department of Agriculture 2020

<sup>3</sup> Wallowa County 2021

## 4.0 2021 Monitoring and Management

The following is description of noxious weed monitoring, control and other management strategies that occurred in 2021 within the Project Boundary.

### 4.1 Prevention

In June 2021 an inventory of noxious weeds along the Wallowa Falls Hydroelectric Project forebay maintenance road was conducted by Bio-Resources, Inc. botanist Kendrick Moholt. This survey was conducted in preparation for maintenance work to be initiated in July 2021 to replace a communication cable that runs underground under and along the maintenance road. Although the annual weed survey was scheduled in late summer 2021, it was felt an assessment of invasive species infestations was appropriate prior to construction for planning purposes. Aggressive weed control has been conducted by PacifiCorp under the direction of Bio-Resources for several years and most invasive species have been eliminated or controlled.

### 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 17, 2021 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 2021 within the Project Boundary.**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Oregon State Category</b>	<b>Wallowa County Category</b>	<b>Location</b>
Scotch thistle	<i>Onopordium acanthium</i>	B	B (T)	Campground
Bull thistle	<i>Cirsium vulgare</i>	B		Trail
Canada thistle	<i>Cirsium arvense</i>			Trail
Common Burdock	<i>Arctium minus</i>		B	Trail
Houndstongue	<i>Cynoglossum officinale</i>	B	B	Trail
Oxeye daisy	<i>Leucanthemum vulgare</i>		B	Trail
Spotted knapweed	<i>Centaurea maculosa</i>	B (T)	A (T)	Road

Though previously located, meadow hawkweed (*Hieracium caespitosum*) and St. John's wort (*Hypericum perforatum*) were not located in 2020 nor during the current survey along the access road. The small patch of St. John's wort may have been extirpated but hawkweed seeds are likely still dormant in the area. Small infestations and individual plants of Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), and oxeye daisy (*Leucanthemum vulgare*; Synonym-*Chrysanthemum leucanthemum*) were located in and along the access road. Control of these species in post construction efforts is recommended. Two Scotch thistle (*Onopordum acanthium*) plants were found near the velocity barrier at the end of the tailrace. No meadow hawkweed plants were located.

On July 17, 2021, a complete inventory of noxious weeds within the Wallowa Falls Hydroelectric Project was conducted by Bio-Resources, Inc. botanist, Kendrick Moholt. Invasive Plant Inventory Forms, maps, and photographs are included in Appendix B.

### **4.3 Control Methods**

On July 17, 2021, a complete inventory of noxious weeds within the Wallowa Falls Hydroelectric Project was conducted by Bio-Resources, Inc. botanist, Kendrick Moholt. Invasive Plant Inventory Forms, maps, and photographs are included in Appendix B. On August 13 and 14, 2021, a Bio-Resources, Inc. botanist (Mr. Moholt) and a biological technician performed a manual removal control operation targeting weeds within the Project Area. These techniques consisted of both hand pulling individual plants and digging plants with a shovel. The manual control technique was used on both PacifiCorp property and property managed by the US Forest Service.

### **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. The 2019 construction at the forebay and tailrace realignment are monitored and have met this criterion in 2021.

## 5.0 2022 Monitoring and Management

The construction of the tailrace reroute and royal purple pipe extension began in 2019 and was completed in 2020. The royal purple pipe extension is currently within a high priority portion of the current Noxious Weed Monitoring Area. The portion of the new tailrace reroute has been included in the high priority area in the Noxious Weed Monitoring Area (Appendix A).

The planned 2022 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 USFS made the following recommendations that will be incorporated into the 2022 noxious weed monitoring and management:

- Photo points of noxious weed treatment sites will be established and taken at each Noxious Weed Monitoring survey to document the changes over time.
- Implement manual control, where possible, to minimize the use of chemicals.

We also recommend continuing post-construction weed monitoring and control efforts in the late summer/early fall through 2024. Particular attention should be paid to any meadow hawkweed that may germinate. Though never seen along the access road in past surveys, Scotch thistle (*Onopordum acanthium*) has been observed recently invading the valley below the area currently schedule for disturbance. If either meadow hawkweed or Scotch thistle are found, they should be aggressively treated with a chemical control. Other, less aggressive species may be more appropriately treated with mechanical methods.

## 6.0 References

Bio-Resources, Inc. 2021. Wallowa Falls Hydroelectric Project Special Status Plant and Noxious Weed Management. August 2021.

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

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- Oregon Department of Agriculture. 2020. Noxious Weed Policy and Classification System 2020.
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- United States Forest Service. 1990. Land and Resource Management Plan Wallowa-Whitman National Forest, as amended. United States Forest Service. URL: [http://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb5260139.pdf](http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5260139.pdf). (September 24, 2013).
- United States Forest Service. 2005a. Pacific Northwest Region Invasive Plant Program Preventing and Managing Invasive Plants Final Environmental Impact Statement. United States Forest Service April 2005. URL: [https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprd3812803.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3812803.pdf). (April 20, 2017)
- United States Forest Service. 2005b. Pacific Northwest Region Invasive Plant Program Preventing and Managing Invasive Plants Record of Decision. United States Forest Service October 2005. URL: [https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb5302164.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5302164.pdf) (April 20, 2017).
- United States Forest Service. 2010a. Wallowa-Whitman National Forest Invasive Plants Treatment Project Final Environmental Impact Statement. United States Forest Service. March 2010. URL: <http://www.fs.usda.gov/detail/wallowawhitman/landmanagement/planning/?cid=stelprdb5192845> (September 24, 2013).
- United States Forest Service. 2010b. Wallowa-Whitman National Forest Invasive Plants Treatment Project Record of Decision. United States Forest Service April 2010. URL: <http://www.fs.usda.gov/detail/wallowa-whitman/landmanagement/planning/?cid=stelprdb5192845> (September 24, 2013).
- Wallowa County. 2021. 2017 Noxious Plant List. URL: <https://co.wallowa.or.us/public-works/vegetation/2017-noxious-plant-list/> (November 8, 2021).

## **Appendix A**

### **Noxious Weed Monitoring Area and 2021 Wallowa Falls Noxious Weeds Maps**

# Wallowa Falls Hydroelectric Project

## Noxious Weed Monitoring Area

Page 1 of 3

### Legend

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

### Priority Noxious Weed Areas

- High
- Medium
- Low

### Land Ownership

- PacifiCorp
- USFS
- State
- Private

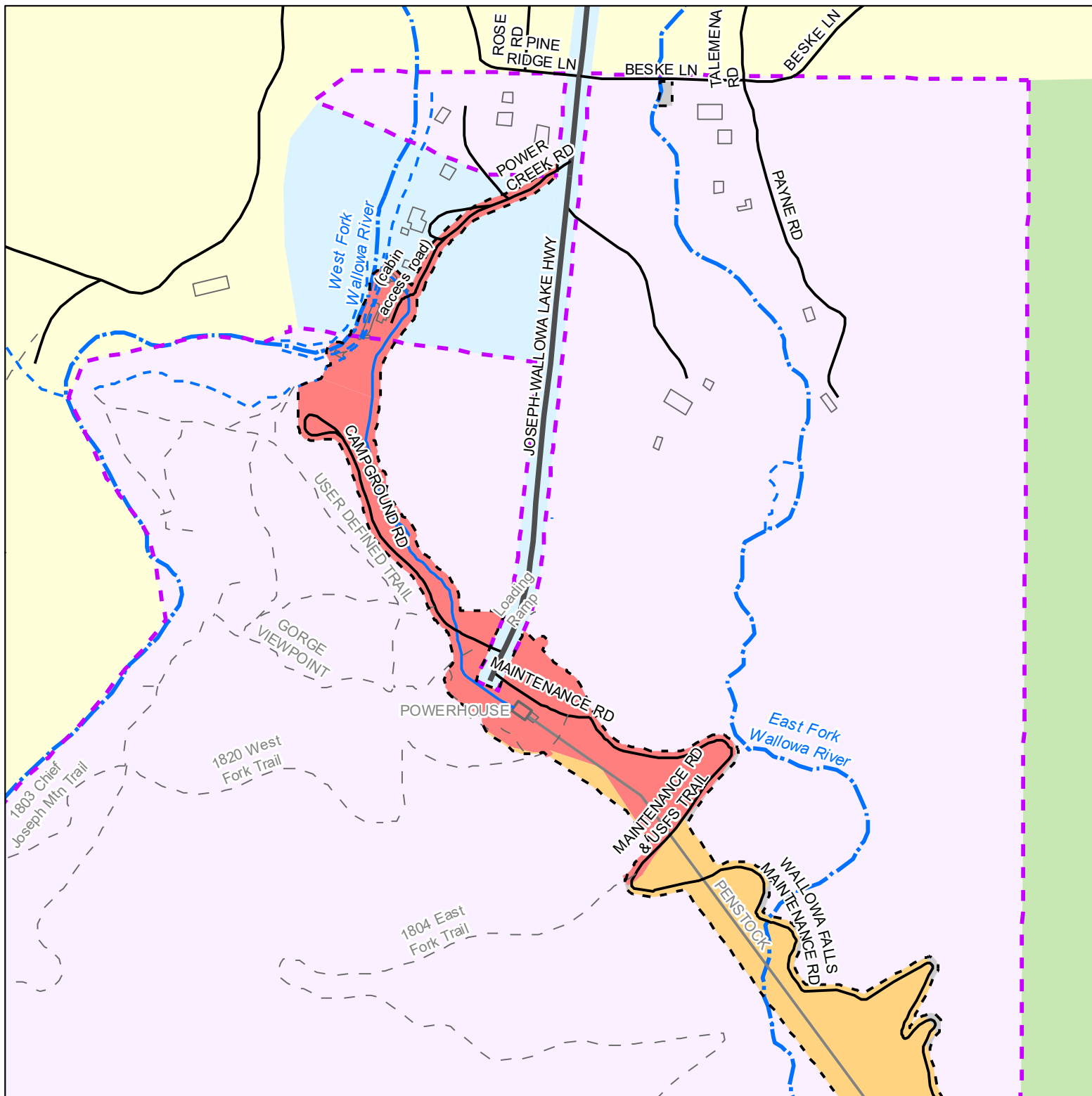


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Feet

1:4,000



03/29/2021 gisdept@pacifiCorp.com  
U:\Projects\Hydro\Wallowa\Noxious  
Weeds\Noxious Weed Monitoring Area Map.mxd





# Wallowa Falls Hydroelectric Project

## Noxious Weed Monitoring Area

Page 2 of 3

### Legend

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

### Priority Noxious Weed Areas

- High
- Medium
- Low

### Land Ownership

- PacifiCorp
- USFS
- State
- Private

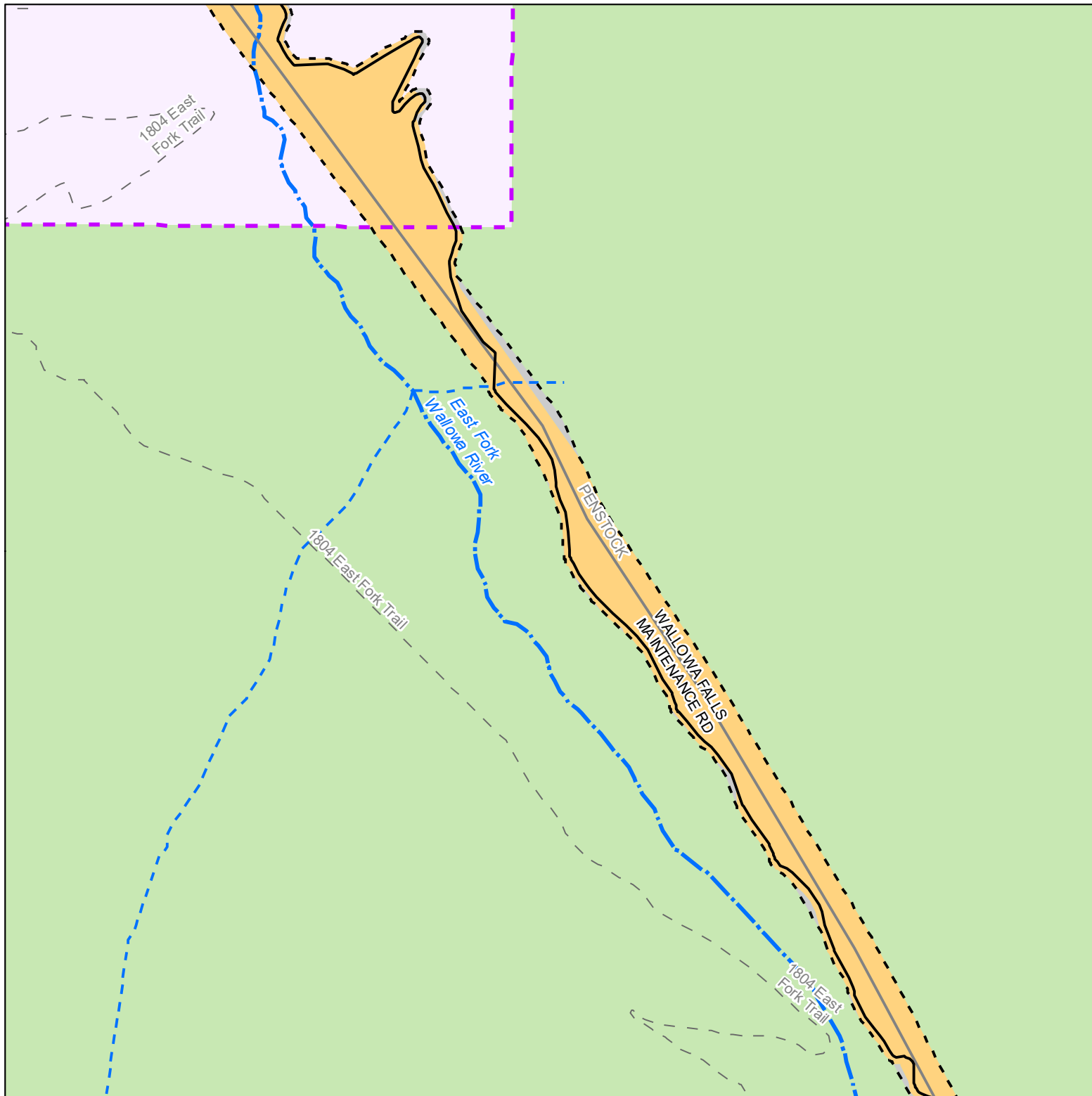


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1:4,000



03/29/2021 gisdept@pacifiCorp.com  
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Weeds\Noxious Weed Monitoring Area Map.mxd



# Wallowa Falls Hydroelectric Project

## Noxious Weed Monitoring Area

Page 3 of 3

### Legend

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

### Priority Noxious Weed Areas

- High
- Medium
- Low

### Land Ownership

- PacifiCorp
- USFS
- State
- Private

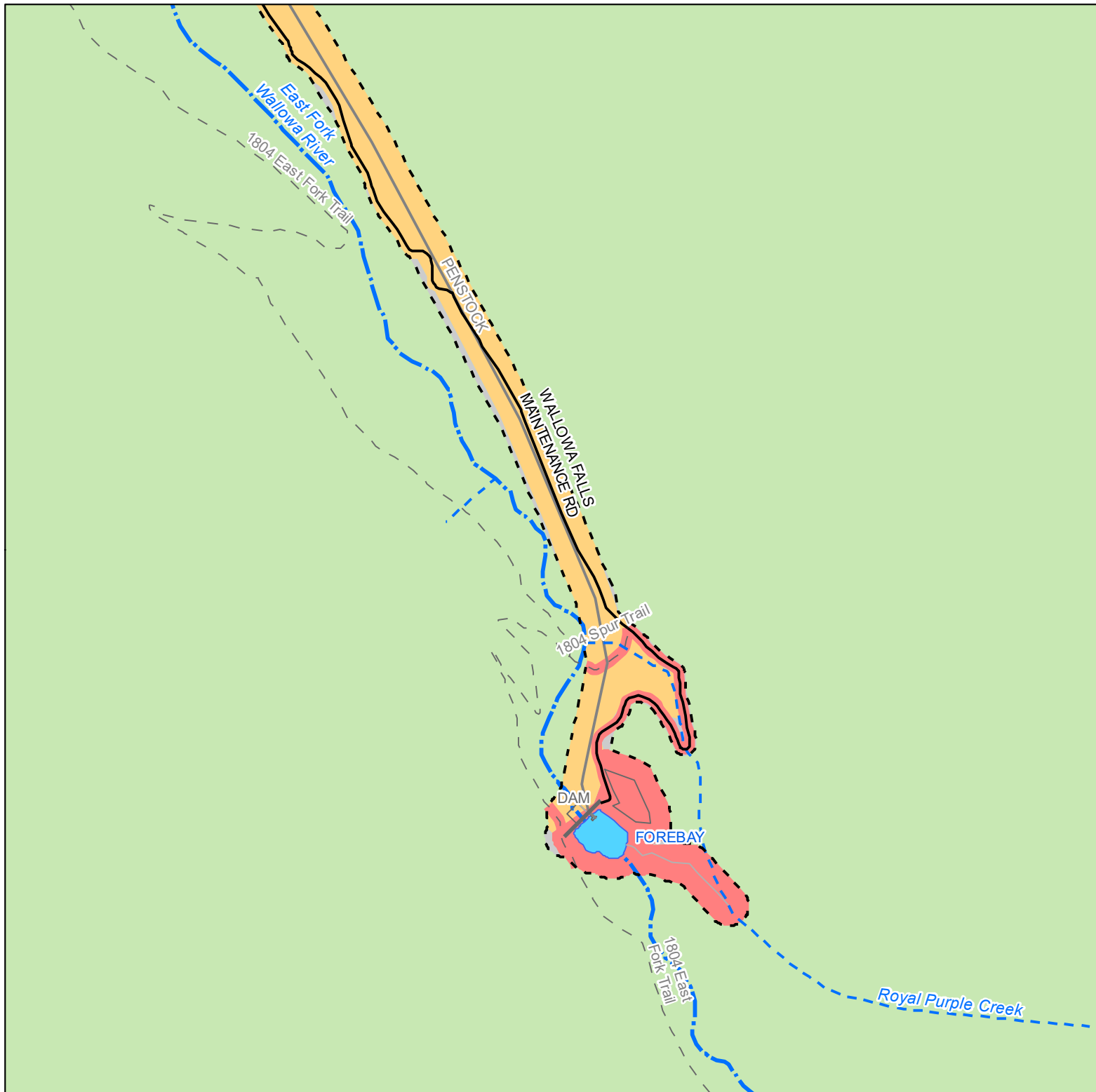


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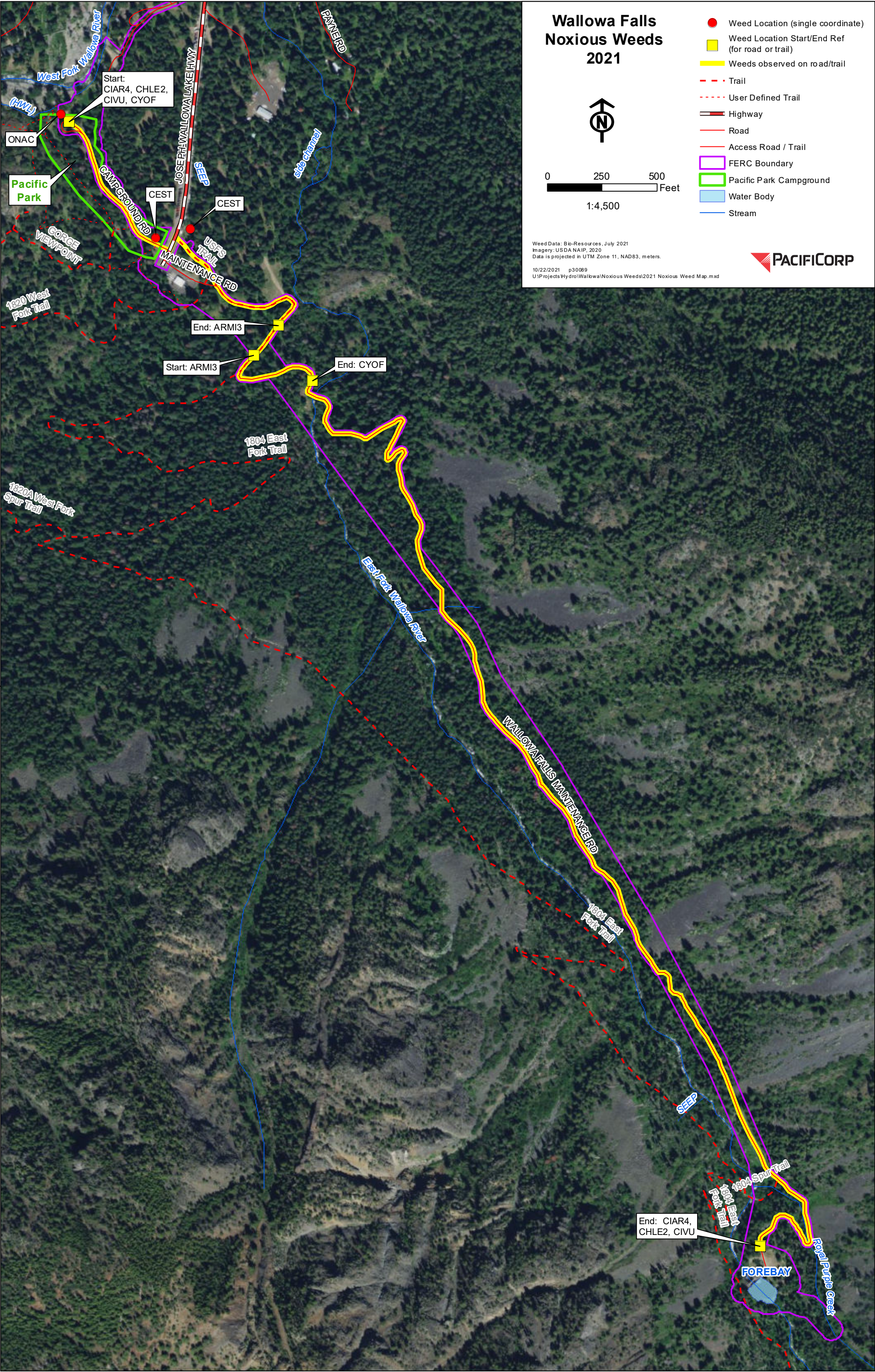
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03/29/2021 gisdept@pacifiCorp.com  
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Weeds\Noxious Weed Monitoring Area Map.mxd









**Appendix B**  
**Invasive Plant Inventory Form and**  
**Herbicide Application (2510) Forms**

# Invasive Plant Inventory Form

## General Site Information

<b>Site Name:</b> Wallowa Falls Hydroelectric Project		<b>Date:</b> 17 July 2021	
Photo Point (GPS):		Ownership/District: USFS, WWNF, Eagle Cap and PacifiCorp	
Photo Name:		<b>Examiner:</b> Kendrick Moholt, Bio-Resources, Inc.	
<b>Botanist Initial:</b>	<b>Elevation:</b> 4700'- 5800'	<b>GPS Coordinates:</b> 0483259 E 5012652N to 0484159E 5011062N	<b>Datum:</b> UTM (NAD 27) Zone 11
<b>Wildlife Biologist:</b>			
EDRR: __Y__N	<b>GPS File Name:</b>	Other Observations:	
<b>Access:</b> Road__ Trail <u>X</u> River__ Other campground			
<b>Township:</b> <u>3S</u> <b>Range:</b> <u>45E</u> <b>Section:</b> <u>33</u> NW <sup>1</sup> / <sub>4</sub> of NW <sup>1</sup> / <sub>4</sub> , SW <sup>1</sup> / <sub>4</sub> of NW <sup>1</sup> / <sub>4</sub> , NW <sup>1</sup> / <sub>4</sub> of SW <sup>1</sup> / <sub>4</sub> , SE <sup>1</sup> / <sub>4</sub> of SW <sup>1</sup> / <sub>4</sub>			
<b>Township:</b> <u>3S</u> <b>Range:</b> <u>45E</u> <b>Section:</b> <u>29</u> SW <sup>1</sup> / <sub>4</sub>			
<b>Township:</b> <u>3S</u> <b>Range:</b> <u>45E</u> <b>Section:</b> <u>32</u> NE <sup>1</sup> / <sub>4</sub> of NE <sup>1</sup> / <sub>4</sub>			

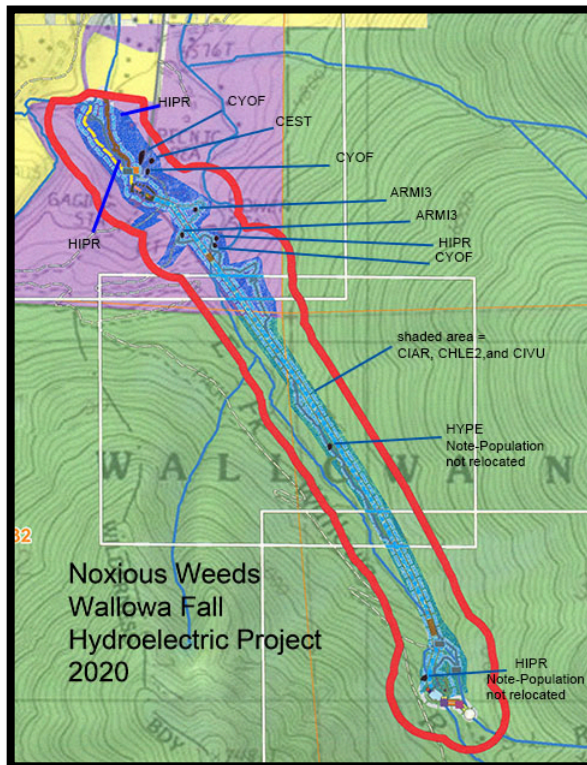
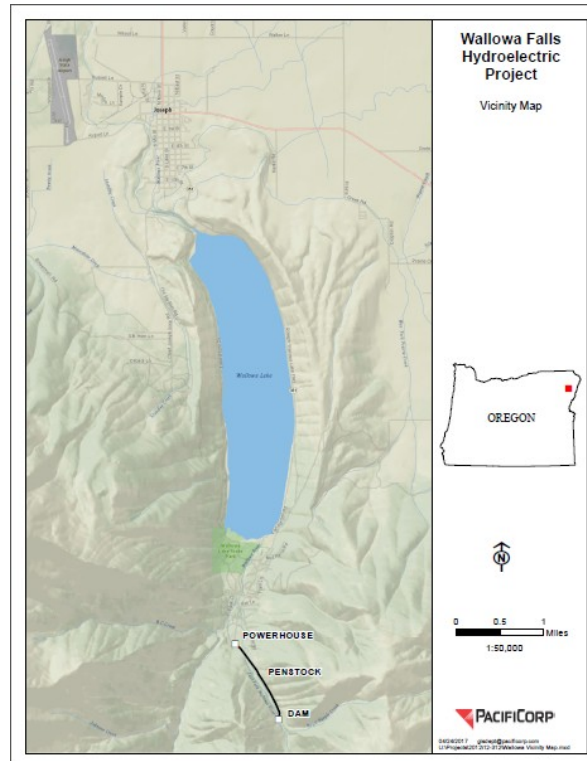
## Site Data Information

<b>Target Species Code:</b> CIVU	<b>Common Name:</b> Bull Thistle		
<b>Scientific Name:</b> <i>Cirsium vulgare</i>		<b>Phenology:</b> R__ B__ FL <u>X</u> S	
<b>Distribution:</b> C Lumped__ Linear__ SE Scattered even__ SP Scattered Patchy <u>X</u> Continuous__			
<b>Total Acres:</b> 26	<b>Percent Infested:</b> <1%	<b>Infested Acres:</b> ~0.10	
% Cover or Count (weeds): ~25		Understory Cover % (all): 40-90%	
Potential to Spread: High__ Med <u>x</u> Low__		<b>Distance to Water:</b> >30m	
<b>Water Type:</b> Perennial__ Ephemeral__		<b>System:</b> Lake__ River__ Spring__ Stream	
Soil Types: sandy loam		Slope % aspect: 2-20%, Aspect variable	
Other Species on Site:			

## Comments



# Map of Site





Bull Thistle  
*Cirsium vulgare*

# Invasive Plant Inventory Form

## General Site Information

<b>Site Name:</b> Wallowa Falls Hydroelectric Project		<b>Date:</b> 17 July 2021	
Photo Point (GPS):		Ownership/District: USFS, WWNF, Eagle Cap and PacifiCorp	
Photo Name:		<b>Examiner:</b> Kendrick Moholt, Bio-Resources, Inc.	
Botanist Initial:	<b>Elevation:</b> 4700'-5800'	<b>GPS Coordinates:</b> 0483259 E 5012652N to 0484159E 5011062N	<b>Datum:</b> UTM (NAD 27) Zone 11
Wildlife Biologist:			
EDRR: __Y__N	<b>GPS File Name:</b>	Other Observations:	
<b>Access:</b> Road__ Trail <u>X</u> River__ Other campground			
<b>Township:</b> <u>3S</u> <b>Range:</b> <u>45E</u> <b>Section:</b> <u>33</u> NW¼ of NW¼, SW¼ of NW¼, NW¼ of SW¼, SE¼ of SW¼			
<b>Township:</b> <u>3S</u> <b>Range:</b> <u>45E</u> <b>Section:</b> <u>29</u> SW ¼			
<b>Township:</b> <u>3S</u> <b>Range:</b> <u>45E</u> <b>Section:</b> <u>32</u> NE¼ of NE¼			

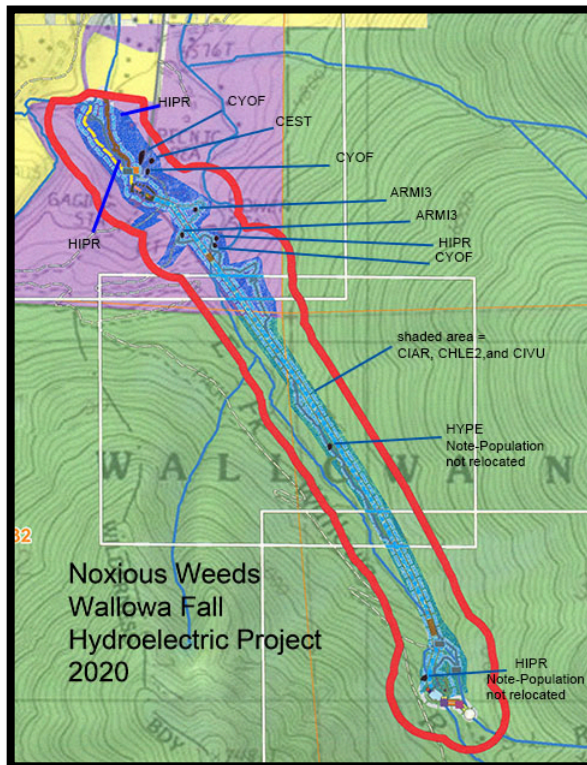
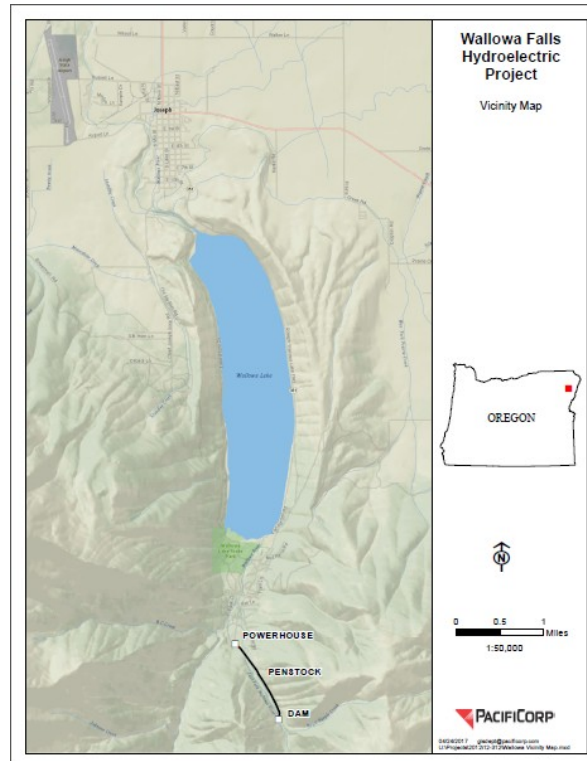
## Site Data Information

<b>Target Species Code:</b> CIAR4		<b>Common Name:</b> Canada Thistle	
<b>Scientific Name:</b> <i>Cirsium arvense</i>		<b>Phenology:</b> R__ B__ FL <u>X</u> S	
<b>Distribution:</b> CLumped__ Linear__ SE Scattered even__ SP Scattered Patchy <u>X</u> Continuous__			
<b>Total Acres:</b> 26	<b>Percent Infested:</b> <1%	<b>Infested Acres:</b> ~0.3	
% Cover or Count (weeds): ~1000		Understory Cover % (all): 40-90%	
Potential to Spread: High__ Med <u>x</u> Low__		<b>Distance to Water:</b> >30m	
<b>Water Type:</b> Perennial__ Ephemeral__		<b>System:</b> Lake__ River__ Spring__ Stream	
Soil Types: sandy loam		Slope % aspect: 2-20%, Aspect variable	
Other Species on Site:			

## Comments



# Map of Site





Canada Thistle  
*Cirsium arvense*



# Invasive Plant Inventory Form

## General Site Information

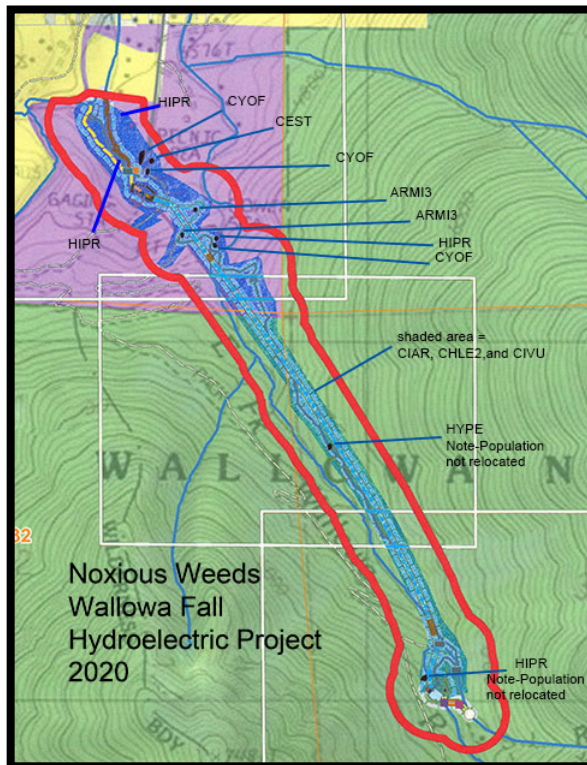
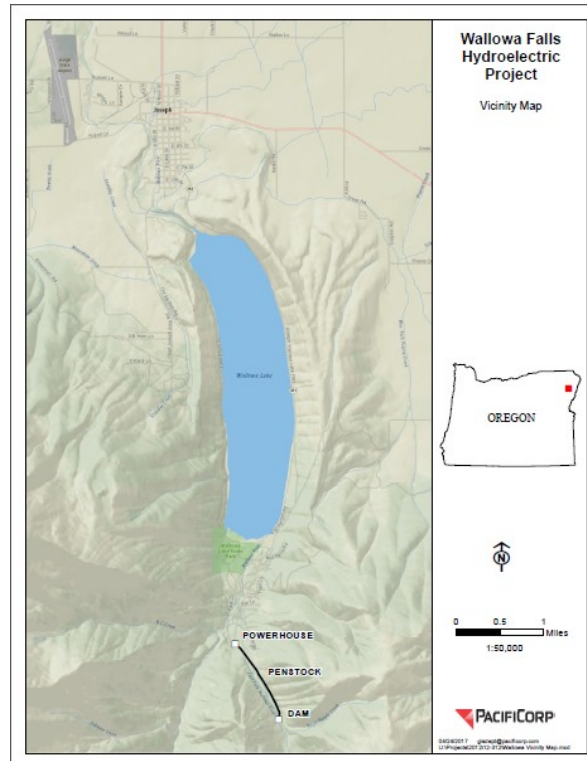
<b>Site Name:</b> Wallowa Falls Hydroelectric Project		<b>Date:</b> 17 July 2021	
Photo Point (GPS):		Ownership: PacifiCorp	
Photo Name:		<b>Examiner:</b> Kendrick Moholt, Bio-Resources, Inc.	
Botanist Initial:	<b>Elevation:</b> 4700'- 5000'	<b>GPS Coordinates:</b> 0483488E 5012298N and 0483529E 5012336N	<b>Datum:</b> UTM (NAD 27) Zone 11
Wildlife Biologist:			
EDRR: __Y__N	<b>GPS File Name:</b>	Other Observations:	
<b>Access:</b> Road__ Trail <u>X</u> River__ Other Campground			
<b>Township:</b> <u>3S</u> <b>Range:</b> <u>45E</u> <b>Section:</b> <u>29</u> ¼ sec: <u>SE</u> of ¼ sec: <u>SE</u>			

## Site Data Information

<b>Target Species Code:</b> ARMI3		<b>Common Name:</b> Common Burdock	
<b>Scientific Name:</b> <i>Arctium minus</i>		<b>Phenology:</b> R__ B__ FL <u>X</u> S	
<b>Distribution:</b> C Lumped__ Linear__ SE Scattered even__ SP Scattered Patchy <u>X</u> Continuous__			
<b>Total Acres:</b> 26	<b>Percent Infested:</b> <1%	<b>Infested Acres:</b> ~0.1	
% Cover or Count (weeds): ~5		Understory Cover % (all): 60-90%	
Potential to Spread: High__ Med <u>x</u> Low__		<b>Distance to Water:</b> >30m	
<b>Water Type:</b> Perennial__ Ephemeral__		<b>System:</b> Lake__ River__ Spring__ Stream	
Soil Types: sandy loam		Slope % aspect: 2-10%, Aspect variable	
Other Species on Site:			

## Comments

# Map of Site





Common Burdock

*Arctium minus*

# Invasive Plant Inventory Form

## General Site Information

<b>Site Name:</b> Wallowa Falls Hydroelectric Project		<b>Date:</b> 17 July 2021	
Photo Point (GPS):		Ownership: PacifiCorp	
Photo Name:		<b>Examiner:</b> Kendrick Moholt, Bio-Resources, Inc.	
Botanist Initial:	<b>Elevation:</b> 4700'- 5000'	<b>GPS Coordinates:</b> 0483297 5012651N and 0483577E 5012260N	<b>Datum:</b> UTM (NAD 27) Zone 11
Wildlife Biologist:			
EDRR: __Y__N	<b>GPS File Name:</b>	Other Observations:	
<b>Access:</b> Road__ Trail <u>X</u> River__ Other_____#			
<b>Township:</b> <u>3S</u> <b>Range:</b> <u>45E</u> <b>Section:</b> <u>29</u> ¼ sec: <u>NW</u> of ¼ sec: <u>SE</u>			
<b>Township:</b> <u>3S</u> <b>Range:</b> <u>45E</u> <b>Section:</b> <u>29</u> ¼ sec: <u>SE</u> of ¼ sec: <u>SE</u>			

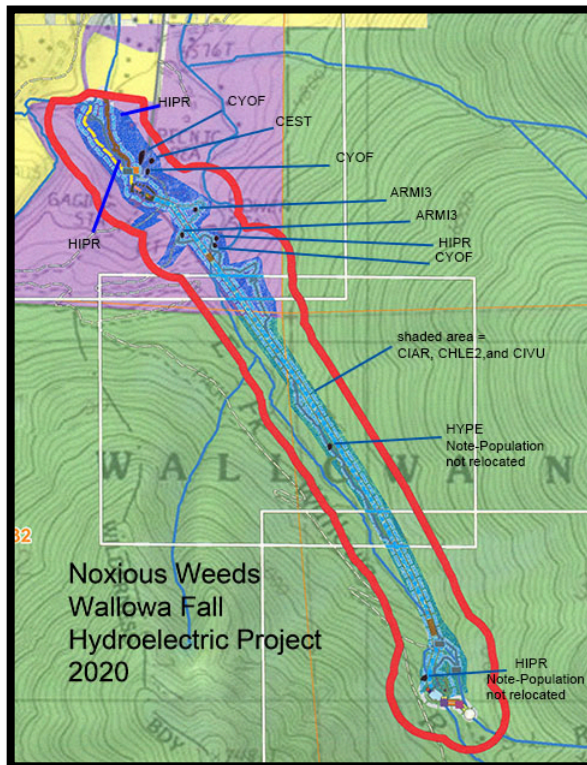
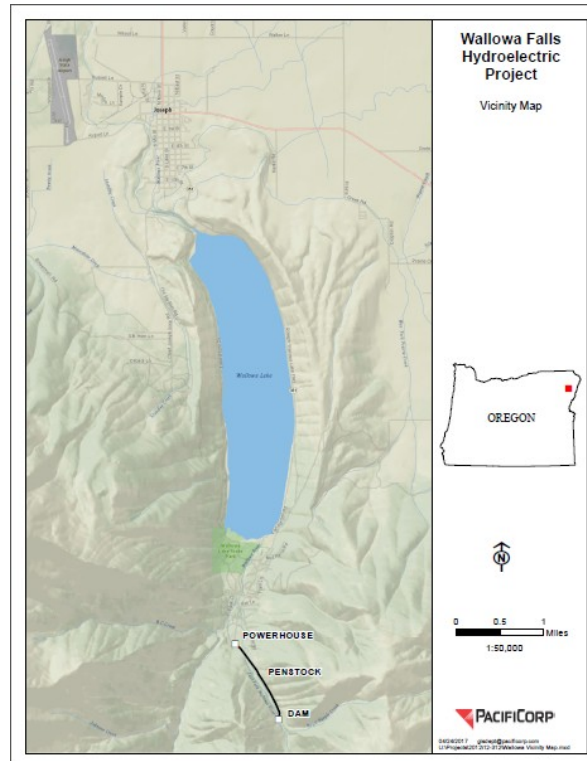
## Site Data Information

<b>Target Species Code:</b> CYOF		<b>Common Name:</b> Houndstongue	
<b>Scientific Name:</b> <i>Cynoglossum officinale</i>		<b>Phenology:</b> R__ B__ FL <u>X</u> S	
<b>Distribution:</b> CLumped__ Linear__ SE Scattered even____ SP Scattered Patchy <u>X</u> Continuous_____			
<b>Total Acres:</b> 26	<b>Percent Infested:</b> <1%	<b>Infested Acres:</b> ~0.15	
% Cover or Count (weeds): ~60		Understory Cover % (all): 40-90%	
Potential to Spread: High <u>x</u> Med__ Low__		<b>Distance to Water:</b> >30m	
<b>Water Type:</b> Perennial__ Ephemeral__		<b>System:</b> Lake__ River__ Spring__ Stream	
Soil Types: sandy loam		Slope % aspect: 2-10%, Aspect variable	
Other Species on Site:			

## Comments



# Map of Site







Houndstongue  
*Cynoglossum officinale*



# **Invasive Plant Inventory Form**

## **General Site Information**

No meadow hawkweed *Hieracium caespitosum* (Synonym: *Hieracium pratense*) were located during the initial survey nor during control efforts.

# Invasive Plant Inventory Form

## General Site Information

<b>Site Name:</b> Wallowa Falls Hydroelectric Project		<b>Date:</b> 17 July 2021	
Photo Point (GPS):		Ownership/District: USFS, WWNF, Eagle Cap and PacifiCorp	
Photo Name:		<b>Examiner:</b> Kendrick Moholt, Bio-Resources, Inc.	
<b>Botanist Initial:</b>	<b>Elevation:</b> 4700'- 5800'	<b>GPS Coordinates:</b> 0483259 E 5012652N to 0484159E 5011062N	<b>Datum:</b> UTM (NAD 27) Zone 11
<b>Wildlife Biologist:</b>			
EDRR: __Y__N	<b>GPS File Name:</b>	Other Observations:	
<b>Access:</b> Road__ Trail <u>X</u> River__ Other campground			
<b>Township:</b> <u>3S</u> <b>Range:</b> <u>45E</u> <b>Section:</b> <u>33</u> NW <sup>1</sup> / <sub>4</sub> of NW <sup>1</sup> / <sub>4</sub> , SW <sup>1</sup> / <sub>4</sub> of NW <sup>1</sup> / <sub>4</sub> , NW <sup>1</sup> / <sub>4</sub> of SW <sup>1</sup> / <sub>4</sub> , SE <sup>1</sup> / <sub>4</sub> of SW <sup>1</sup> / <sub>4</sub>			
<b>Township:</b> <u>3S</u> <b>Range:</b> <u>45E</u> <b>Section:</b> <u>29</u> SW <sup>1</sup> / <sub>4</sub>			
<b>Township:</b> <u>3S</u> <b>Range:</b> <u>45E</u> <b>Section:</b> <u>32</u> NE <sup>1</sup> / <sub>4</sub> of NE <sup>1</sup> / <sub>4</sub>			

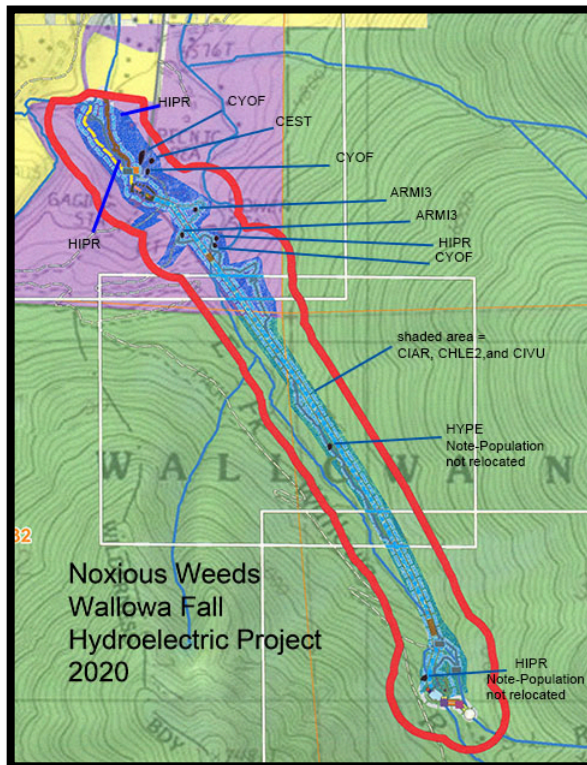
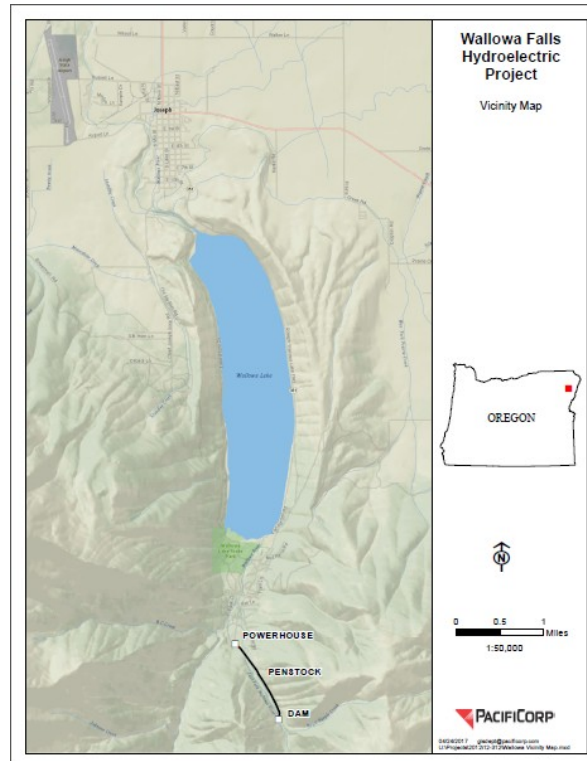
## Site Data Information

<b>Target Species Code:</b> CHLE2		<b>Common Name:</b> Oxeye Daisy	
<b>Scientific Name:</b> <i>Leucanthemum vulgare</i> (Synonym- <i>Chrysanthemum leucanthemum</i> )		<b>Phenology:</b> R__ B__ FL <u>X</u> S	
<b>Distribution:</b> C Lumped__ Linear__ SE Scattered even__ SP Scattered Patchy <u>X</u> Continuous__			
<b>Total Acres:</b> 26	<b>Percent Infested:</b> <1%	<b>Infested Acres:</b> ~1.0	
% Cover or Count (weeds): ~1000		Understory Cover % (all): 40-90%	
Potential to Spread: High__ Med <u>x</u> Low__		<b>Distance to Water:</b> >30m	
<b>Water Type:</b> Perennial__ Ephemeral__		<b>System:</b> Lake__ River__ Spring__ Stream	
Soil Types: sandy loam		Slope % aspect: 2-20%, Aspect variable	
Other Species on Site:			

## Comments



# Map of Site





Oxeye Daisy  
*Leucanthemum vulgare*

# Invasive Plant Inventory Form

## General Site Information

<b>Site Name:</b> Wallowa Falls Hydroelectric Project		<b>Date:</b> 17 July 2021	
Photo Point (GPS):		Ownership: PacifiCorp	
Photo Name:		<b>Examiner:</b> Kendrick Moholt, Bio-Resources, Inc.	
<b>Botanist Initial:</b>	<b>Elevation:</b> 4700'- 5000'	<b>GPS Coordinates:</b> 0483409E 5012480N	<b>Datum:</b> UTM (NAD 27) Zone 11
<b>Wildlife Biologist:</b>			
EDRR: __Y__N	<b>GPS File Name:</b>	Other Observations:	
<b>Access:</b> Road <u>X</u> Trail <u>  </u> River <u>  </u> Other Campground			
<b>Township:</b> <u>3S</u> <b>Range:</b> <u>45E</u> <b>Section:</b> <u>29</u> $\frac{1}{4}$ sec: <u>NW</u> of $\frac{1}{4}$ sec: <u>SE</u>			

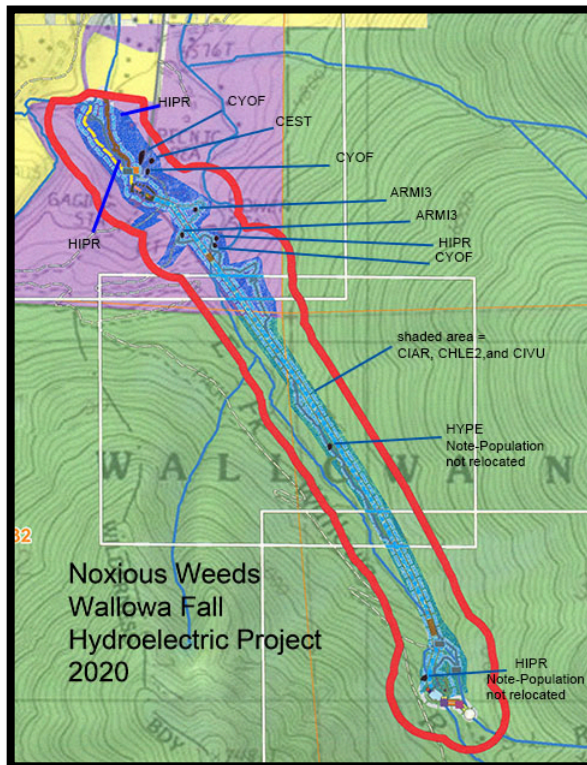
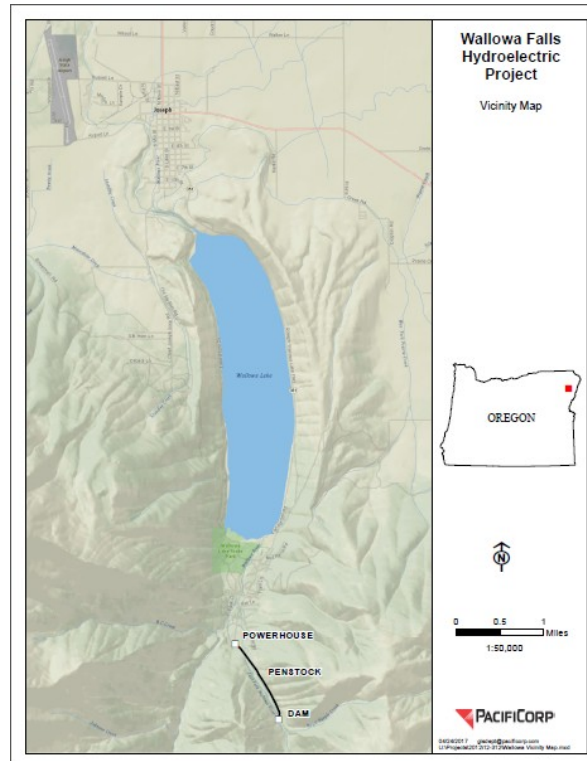
## Site Data Information

<b>Target Species Code:</b> CEST		<b>Common Name:</b> Spotted Knapweed	
<b>Scientific Name:</b> <i>Centaurea stoebe</i> Synonym ( <i>Centaurea maculosa</i> )		<b>Phenology:</b> R__ B__ FL <u>X</u> S	
<b>Distribution:</b> CLumped__ Linear__ SE Scattered even__ SP Scattered Patchy <u>X</u> Continuous__			
<b>Total Acres:</b> 26	<b>Percent Infested:</b> <1%	<b>Infested Acres:</b> ~0.25	
% Cover or Count (weeds): dozens		Understory Cover % (all): 40-90%	
Potential to Spread: High <u>x</u> Med__ Low__		<b>Distance to Water:</b> >30m	
<b>Water Type:</b> Perennial__ Ephemeral__		<b>System:</b> Lake__ River__ Spring__ Stream	
Soil Types: sandy loam		Slope % aspect: 2-10%, Aspect variable	
Other Species on Site:			

## Comments



# Map of Site







Spotted Knapweed (rosette)

*Centaurea stoebe*

# Invasive Plant Inventory Form

## General Site Information

<b>Site Name:</b> Wallowa Falls Hydroelectric Project		<b>Date:</b> 13 August 2021	
Photo Point (GPS):		Ownership: PacifiCorp	
Photo Name:		<b>Examiner:</b> Kendrick Moholt, Bio-Resources, Inc.	
<b>Botanist Initial:</b>	<b>Elevation:</b> 4700'- 5000'	<b>GPS Coordinates:</b> 0483122E 5012854N	<b>Datum:</b> UTM (NAD 83) Zone 11
<b>Wildlife Biologist:</b>			
EDRR: __Y__N	<b>GPS File Name:</b>	Other Observations:	
<b>Access:</b> Road__ Trail__ River__ Other: <u>Campground</u>			
<b>Township:</b> <u>3S</u> <b>Range:</b> <u>45E</u> <b>Section:</b> <u>29</u> ¼ sec: <u>NW</u> of ¼ sec: <u>SE</u>			

## Site Data Information

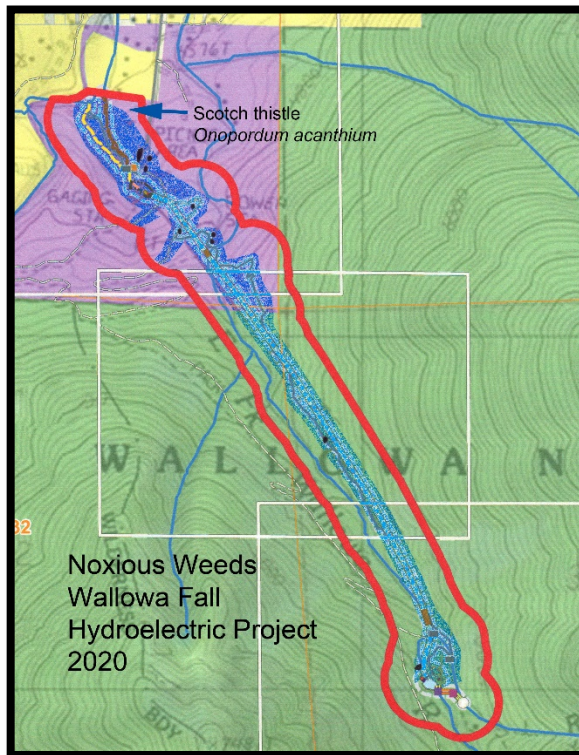
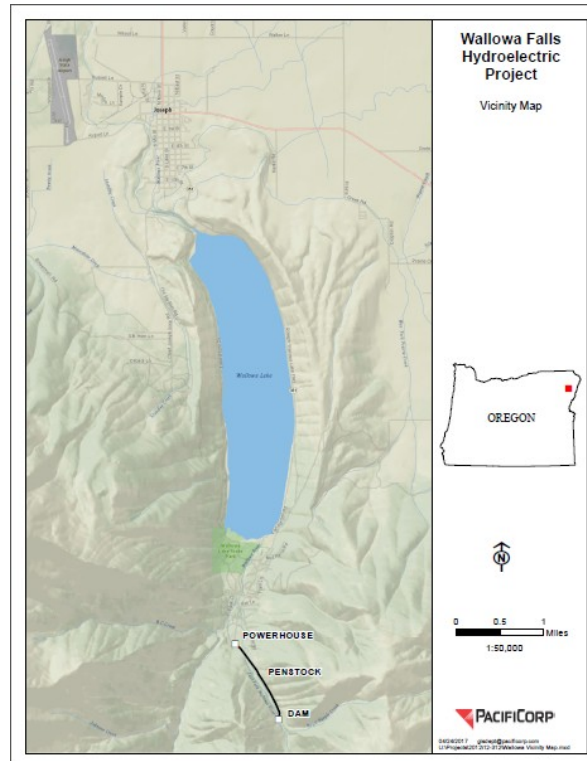
<b>Target Species Code:</b> ONAC		<b>Common Name:</b> Scotch Thistle	
<b>Scientific Name:</b> <i>Onopordum acanthium</i>		<b>Phenology:</b> R__ B__ FL <u>X</u> S	
<b>Distribution:</b> CLumped__ Linear__ SEScattered even__ SPScattered Patchy <u>X</u> Continuous__			
<b>Total Acres:</b> 26	<b>Percent Infested:</b> <1%	<b>Infested Acres:</b> ~0.01	
% Cover or Count (weeds): Two plants		Understory Cover % (all): 40-90%	
Potential to Spread: High <u>x</u> Med__ Low__		<b>Distance to Water:</b> >30m	
<b>Water Type:</b> Perennial__ Ephemeral__		<b>System:</b> Lake__ River__ Spring__ Stream	
Soil Types: sandy loam		Slope % aspect: 1%, Aspect variable	
Other Species on Site:			

## Comments

Two blooming plants were found and removed.



# Map of Site







Scotch Thistle (rosette)

*Onopordum acanthium*



# **Invasive Plant Inventory Form**

## **General Site Information**

St. John's Wort (*Hypericum perforatum*)

**THIS SMALL WEED POPULATION APPEARS TO HAVE BEEN ERADICATED**

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

## **Appendix E**

### **2021 Construction Photos**









## **Appendix F**

### **Agency Comments**

AGENCY	COMMENT	UTILITY RESPONSE
U.S. Fish and Wildlife Service	<i>Page 5. Oct 19, 2021 and Oct 23, 2021 – Do you mean water year 2022?</i>	PacifiCorp’s intent was that the entries for October 19, and 23, 2021 occurred in water-year 2022. The document has been revised accordingly.
U.S. Fish and Wildlife Service	<i>Page 3. Forebay Flush Report. The Service recommends updating names in future correspondence to current contacts (e.g., current USDA contacts are Cecil Rich and Doug Young).</i>	Comment noted
U.S. Fish and Wildlife Service	<i>Page 13. (Noxious Weed Control Plan Annual Report) 5.0 2021 Monitoring and Management. Confusion on years, whether should be this year, 2021 or next year 2022, both in heading and in narrative?</i>	The intent of Section 5 of the Noxious Weed Control Plan is to discuss monitoring and management plans for the 2022 calendar year. The document has been revised accordingly.
Oregon Department of Fish and Wildlife	<i>Page 6, 2.1.2 Ramping, October 23, 2021 event. While no new redds were observed during the October 22, 2021 Bull Trout redd survey, the survey was conducted on a rainy day with marginal water clarity. All prior surveys were conducted when water clarity was reported to be “excellent” (Table 1, Appendix C). ODFW recommends that if the last survey is conducted prior to October 31st, it be conducted under visually optimal conditions such to conclusively declare that spawning has concluded for the season. Additionally, because the October 22 survey was conducted during marginal survey conditions, an emergency redd survey following the October 23 ramping event should have been conducted to determine that no new redds were affected by the ramping event.</i>	Comment noted
Oregon Department of Fish and Wildlife	<i>Referenced figures are not included.</i>	Referenced figures have been added to the document.