Final

Bull Trout Redd Monitoring Report for the Wallowa Falls Hydroelectric Project

Bull trout on redd in East Fork Wallowa River, Sept 16, 2019 photo courtesy of Kendrick Moholt

(FERC No. P-308)

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1.0 INTRODUCTION

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

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

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

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

2.0 STUDY AREA

The bypassed portion of the East Fork Wallowa River within and near the Project area is approximately 2,800 meters (m) long from the Project diversion dam to its confluence with the Wallowa River (Figure 1). Gradient in this reach is high, with the upper 1,600 m averaging 19 percent and the lower 1,200 m averaging 8.5 percent. Channel morphology within most of the upper reach is dominated mainly by steep bedrock, vertical waterfalls, and cascades over boulders; though the upper reaches are steep, the lower 800 m to the confluence with the Wallowa River has a shallower gradient, consisting of numerous riffles and pools. Over the course of its length, the bypassed East Fork Wallowa River drops approximately 365 m from the dam to the confluence with the Wallowa River. The upper and lower portions are divided by a 3.7 m vertical falls (Report cover photo), an impassible upstream migration fish barrier.

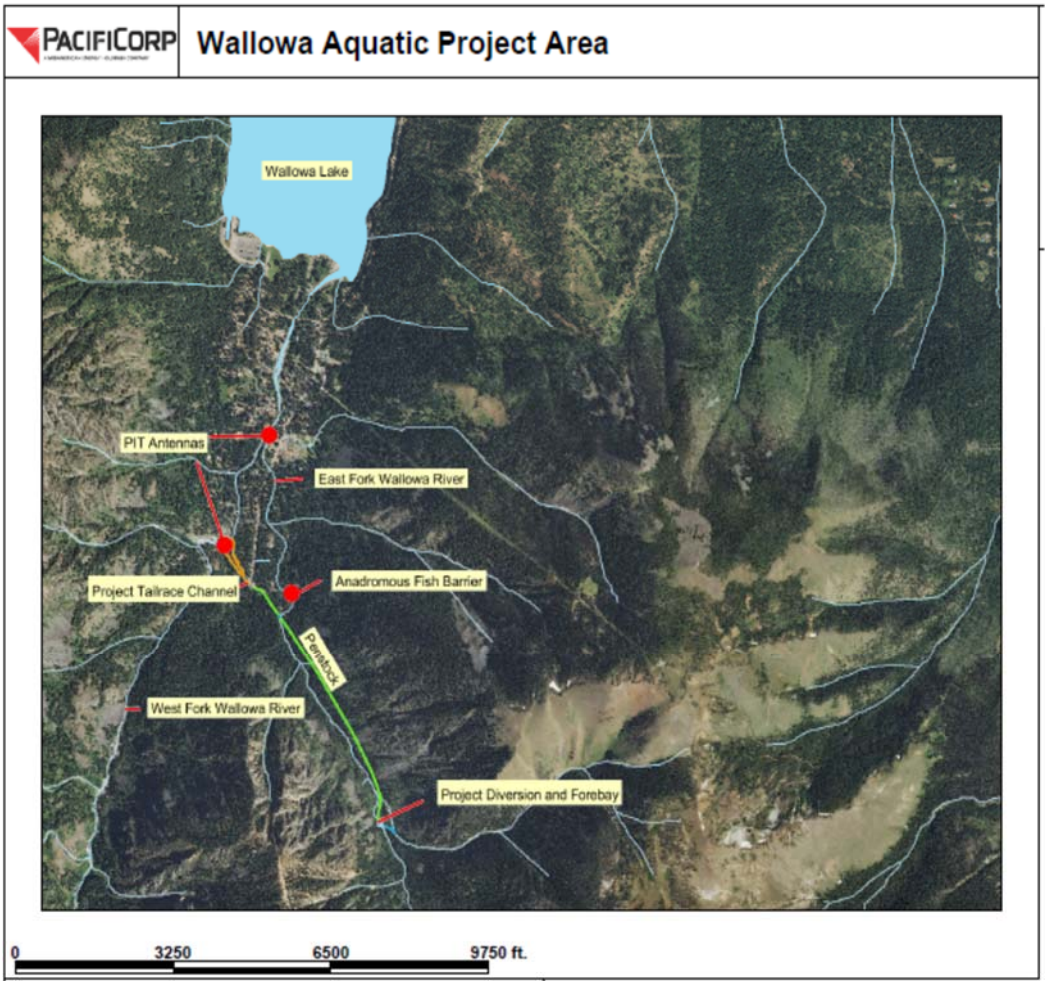

Figure 1. Wallowa Falls Hydroelectric Project.

3.0 METHODS

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

Bull trout redd surveys of the lower portion of the East Fork Wallowa River began September 1, 2019 and continued weekly through October 31, 2019 for a total of ten redd surveys. During each survey the entire lower portion of the East Fork Wallowa River was walked by an experienced qualified biologist, from the confluence with the West Fork Wallowa River upstream 800 m to the migratory fish barrier. In order to standardize inherent observer error, the same experienced surveyor was utilized for all ten surveys in 2019. 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 in order to assess redd life. Though the Planning document called for only four redd surveys during the spawning period, this being the third year of study and redd life still being characterized, ten surveys were performed in order 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

Seven bull trout redds were identified and marked by GPS during the ten redd surveys performed of the East Fork Wallowa River in 2019 (Figure 2). Five of the bull trout redds were large and indicative of being constructed by large migratory-sized fish, while two were smaller and indicative of being constructed from smaller resident-sized fish (Table 1). Six of the seven identified bull trout redds were observed on surveys between September 3 and September 16, with the peak occurring on September 16 when three redds were counted. One final redd was observed

on October 24. Six of the seven observed redds had bull trout either on, actively constructing or in very close proximity to the redd. Three of the seven redds had a pair, one male/one female, associated with the redd (Table 1). Pictures of all seven identified bull trout redds are included in the Appendix A.

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

Date	Survey Location	Redd #	Redd Dimension	Live bull trout				Survey Conditions
				<6 in.	<12 in.	<14 in.	>14 in.	
9/1/2019	EFW, mouth to barrier	n/a	n/a	n/a	n/a	n/a	n/a	Sunny, calm
9/3/2019	EFW, mouth to barrier	1	80cm x 120cm	n/a	n/a	n/a	1	Sunny, calm
9/11/2019	EFW, mouth to barrier	2	60cm x 85cm	n/a	n/a	n/a	1	Partly cloudy, calm
9/11/2019	EFW, mouth to barrier	3	30cm x 70cm	n/a	n/a	n/a	n/a	Partly cloudy, calm
9/16/2019	EFW, mouth to barrier	4	75cm x 100cm	n/a	n/a	1	1	Overcast, light wind
9/16/2019	EFW, mouth to barrier	5	85cm x 110cm	n/a	n/a	n/a	2	Overcast, light wind
9/16/2019	EFW, mouth to barrier	6	80cm x 105cm	n/a	n/a	n/a	2	Overcast, light wind
9/26/2019	EFW, mouth to barrier	n/a	n/a	n/a	n/a	n/a	n/a	Overcast, light wind
10/3/2019	EFW, mouth to barrier	n/a	n/a	n/a	n/a	n/a	n/a	Overcast, light wind
10/10/2019	EFW, mouth to barrier	n/a	n/a	n/a	n/a	n/a	n/a	Sunny, calm
10/17/2019	EFW, mouth to barrier	n/a	n/a	n/a	n/a	n/a	n/a	Partly cloudy, calm
10/24/2019	EFW, mouth to barrier	7	35cm x 65 cm	n/a	1	n/a	n/a	Sunny, calm
10/31/2019	EFW, mouth to barrier	n/a	n/a	n/a	n/a	n/a	n/a	Partly cloudy, shelf ice on banks

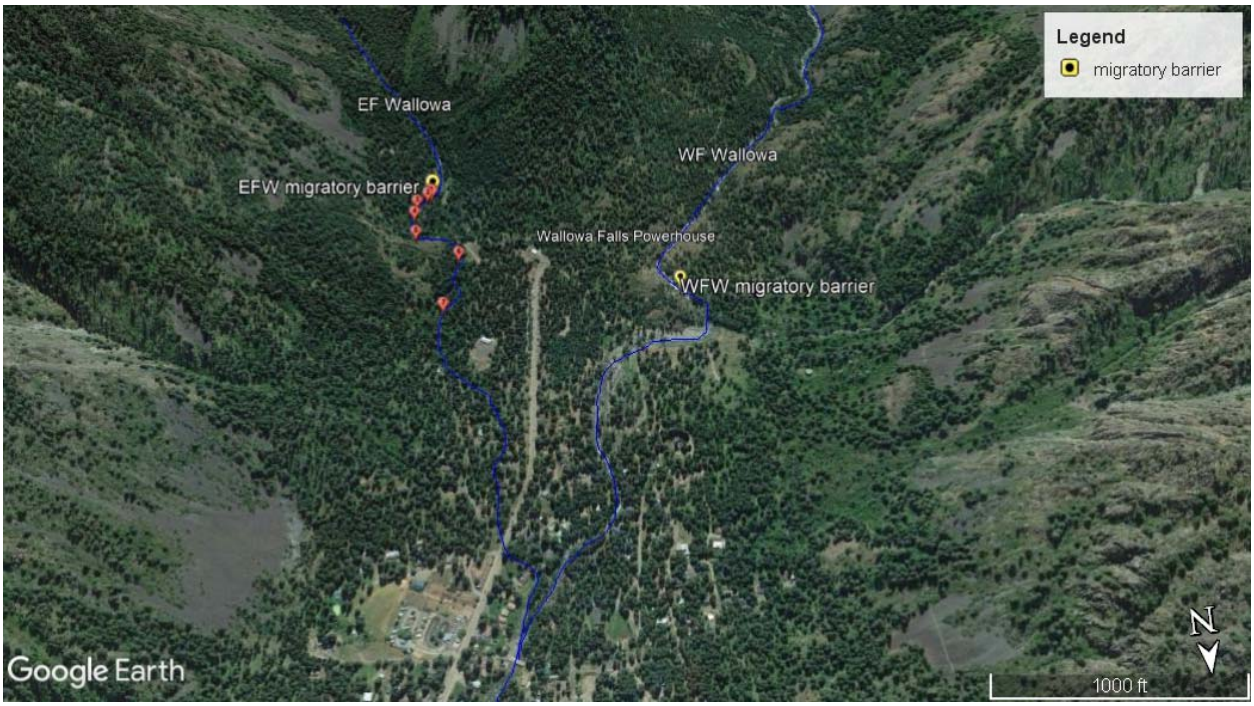

Figure 2. GPS marked locations (red dots, n=7) of bull trout redds within the East Fork Wallowa River

All seven bull trout redds were in the upper portion of available habitat below the barrier, with the uppermost redd ~ 20 meters below the impassible falls. Redds in 2019 visually persisted for an average of 36 days, with the longest time a redd remained visible being 51 days, and the shortest 17 days. The fish observed in close proximity of the newly identified redd during the October 24 survey was labeled as a probable brook trout (*Salvelinus fontinalis*). This observation was purely visual and as such cannot not be empirically verified. No brook trout were definitively observed during any 2019 East Wallowa River redd surveys.

Due to construction of the permanent tailrace barrier at the outlet of the Wallowa Falls tailrace channel, the generating unit at the Wallowa Falls powerhouse was turned off from May 29 – September 11, 2019. No water being diverted from the East Fork Wallowa into the flow line and into the generating unit meant that natural flows in the East Fork were higher than normal at the start of the bull trout spawn season in 2019.

It was decided that that the unit would be turned back on in early September after construction activities had finished. Prior to the generating unit coming online on September 11, a biologist was stationed near the three bull trout redds that had been previously constructed so as to ensure that water remained flowing over the top of these redds as flows receded within the East Fork. The unit was turned on and stepped up. All prescribed ramp rates were followed during unit start-up. During this time, the biologist on-site near previously constructed redds was in direct communication with hydro control operators as they ramped the unit up.

This same process was repeated on September 26. The unit had tripped on September 19 due to a malfunctioning sensor. The sensor was replaced and the unit resumed generation on September

26. As noted in the procedure above, a biologist was on-site monitoring water levels over previously dug bull trout redds as the unit was ramped up on the 26th and water receded in the East Fork.

At any time during these two unit ramp up activities, if it became apparent that a previously constructed redd had the potential of desiccation, the biologist was to immediately contact hydro control and terminate the ramp up. All identified redds remained comfortably watered up during all unit start-up procedures in 2019.

Flows during the survey period 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 three seasons of these surveys (average time of 29 days, 2017-2019), in 2020 it is anticipated bull trout redd surveys will occur on a bi-weekly basis during the months of October and September.

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

2019 Bull Trout Redd Photo Documentation

Redd #1

Redd #2

Redd #3

Redd #4

Redd #5

Redd #6

Redd #7