

**VIA ELECTRONIC FILING**

January 22, 2021

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
Mail Code: DHAC, PJ-12  
888 First Street, N.E.  
Washington, D.C. 20426

**RE: Priest Rapids Hydroelectric Project No.2114-267  
License Compliance Filing – Article 401(a)(10) and (25) – 2020 Bull Trout Monitoring and  
Evaluation Plan Annual Report**

Dear Ms. Bose,

Please find enclosed the 2020 Bull Trout Monitoring and Evaluation Annual Report consistent with the Requirements of Article 401(a)(10) and Article 401(a)(25) of the Priest Rapids Hydroelectric Project License, Washington Department of Ecology's (WDOE's) 401 Water Quality Certification Condition 6.2(5)(b), and U.S. Fish and Wildlife Service's (USFWS) Incidental Take Statement Term and Condition 2.

On June 4, 2009, the Federal Energy Regulatory Commission (FERC) issued an Order modifying and approving Public Utility District No. 2 of Grant County, Washington's (Grant PUD's) Bull Trout Monitoring and Evaluation Plan (BTMEP). Under this Order, Grant PUD is required to file annually with FERC by February 1, beginning 2010 and concluding 2014, an Annual Bull Trout Monitoring and Evaluation Report. On September 19, 2009, Grant PUD filed its Bull Trout Hydrologic and Water Quality Study Plan requesting that due to the similarities of Bull Trout Hydrologic and Water Quality Study Plan and the BTMEP that FERC consider Grant PUD combining the objectives of the Bull Trout Hydrologic Water Quality Study Plan with the approved Bull Trout Monitoring Plan. On February 17, 2010, FERC issued an Order modifying and approving Grant PUD's Bull Trout Hydrologic and Water Quality Study Plan. Under this Order, Grant PUD is required to include the water quality monitoring results with the Bull Trout Monitoring and Evaluation Annual Report. On April 10, 2014, Grant PUD submitted its updated BTMEP and on October 23, 2014, FERC issued an Order modifying and approving Grant PUD's updated BTMEP. Under this Order, Grant PUD is required to file annually with FERC by February 1, beginning 2015 and concluding 2019, an Annual Bull Trout Monitoring and Evaluation Report. On April 12, 2019 Grant PUD submitted its updated BTMEP and on August 13, 2019, FERC issued an Order modifying and

approving Grant PUD's updated BTMEP. Under this Order, Grant PUD is required to file an annual BTMEP report with FERC by February 1, beginning 2020 and concluding 2024.

This report includes monitoring results from the previous year including the number of bull trout observed or incidentally taken. On December 15, 2020, Grant PUD distributed this draft annual report for review and comment to the Priest Rapids Fish Forum including the WDOE, U.S. Fish & Wildlife Service (USFWS), Washington Department of Fish & Wildlife (WDFW), the Wanapum Indians, Colville Confederated Tribes, Yakama Nation, the Columbia River Inter-Tribal Fish Commission, Bureau of Indian Affairs, and the Confederated Tribes of the Umatilla Indian Reservation. No comments were received after a 30 day comment and review period. On January 21, 2021, WDOE issued a letter of approval.

FERC staff with any questions should contact Tom Dresser at 509-754-5088, ext. 2312.

Respectfully,

*Ross Hendrick*

Ross Hendrick  
Senior Manager – Environmental Affairs

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**2020 Bull Trout Monitoring and Evaluation Report for the Priest  
Rapids Project**

By  
Public Utility District No. 2 of Grant County, Washington  
Priest Rapids Hydroelectric Project  
FERC Project Number 2114

**January 2021**

## **Executive Summary**

The Public Utility District No. 2 of Grant County, Washington (Grant PUD) owns and operates Wanapum and Priest Rapids dams on the Columbia River, known collectively as the Priest Rapids Hydroelectric Project (Project), operated under the terms and conditions of the Federal Energy Regulatory Commission (FERC) Hydroelectric Project License No. 2114. The following report is in accordance with Grant PUD's requirements contained in the Bull Trout Monitoring and Evaluation Plan (BTMEP) and the Bull Trout Hydrologic and Water Quality Study Plan (BTWQP). Consistent with previous years, the reporting requirements for these plans have been combined into one report.

The goal of the BTMEP and BTWQP is to, on a yearly basis, monitor and evaluate bull trout (*Salvelinus confluentus*) presence in the Project and collect hydrologic and water quality data related to Project operations and acclimation activities. This information and these data are collected in order to evaluate the potential Project-related impacts on bull trout and to specify the basis for identifying measures Grant PUD will implement to address any Project-related impacts to bull trout.

The following summarizes results from 2020 efforts, followed by details in the main body of the document.

### ***Bull Trout Observations***

In 2020, one bull trout was observed passing the Priest Rapids Dam fish ladder count stations and two bull trout were observed passing the Wanapum fish ladder count stations between April 15 and November 15. No PIT-tagged bull trout were detected in 2020 at full duplex PIT tag detectors located in Priest Rapids Dam fish ladders. No other bull trout were observed during any other phase of juvenile bypass activities, Northern Pikeminnow predator control programs, turbine maintenance activities, fishway maintenance activities, White Sturgeon Program activities, Hanford Reach Fall Chinook Protection Program, hatchery activities, during experimental winter fish ladder maintenance counting period, or any other activities in the Project. During screw trap operations in 2020, a total of five bull trout were collected in the White River and three bull trout were collected in Nason Creek.

During the 2019 – 2020 winter fish ladder maintenance period (November 15, 2019 – April 1, 2020), the Priest Rapids Fish Forum (PRFF), which includes the U.S. Fish and Wildlife Service (USFWS) and Grant PUD, agreed to experimentally collect video fish counts at both Priest Rapids and Wanapum dams, of each watered fish ladder during the winter maintenance period. The purpose of the experiment was to evaluate if adult or sub-adult bull trout migrated through or were present at Priest Rapids or Wanapum dams during the winter maintenance period. Following review of the winter video fish counts at each dam, no bull trout were counted passing the fish ladders at either dam.

### ***Hydrologic and Water Quality Monitoring***

Grant PUD, in coordination with the PRFF and USFWS agreed to monitor and report daily averages of Project elevation (feet), discharge (thousand cubic feet per second (kcfs)), temperature (°Celsius) and total dissolved gas (TDG; percent saturation (%SAT)). Project operations/water quality daily averages are reported in Appendix A of this report.

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## **1.0 Introduction**

The Public Utility District No. 2 of Grant County, Washington (Grant PUD) owns and operates two hydroelectric dams on the Columbia River; Wanapum and Priest Rapids, known collectively as the Priest Rapids Hydroelectric Project (Project), operated under the terms and conditions of the Federal Energy Regulatory Commission (FERC) Hydroelectric Project License No. P-2114.

Grant PUD operates the Project through the coordinated operation of a seven-dam system and other Columbia Basin entities with current operational agreements with the fishery agencies and other operators to provide protection and enhancement for a range of fisheries and other resources within and downstream of the project. These agreements include the Hanford Reach Fall Chinook Protection Program Agreement and the Priest Rapids Project Salmon and Steelhead Settlement Agreement. The Project is also subject to the provisions of the FERC license and related laws and regulations, as well as to the requirements (incorporated by reference in the license) of the Biological Opinion for the Priest Rapids Project issued by the National Marine Fisheries Service (NMFS) for its effects on anadromous salmon, the Clean Water Act Section 401 Water Quality Certification (WQC) issued by the Washington Department of Ecology (WDOE), and the Biological Opinion for the Project issued by the United States Fish and Wildlife Service (USFWS; 2007) regarding the effects of the Project on bull trout (*Salvelinus confluentus*).

A 401 WQC was issued by the WDOE on April 3, 2007, and amended March 6, 2008, for the operation of the Project. A new license for the Project was issued by FERC on April 17, 2008 (FERC 2008). Under FERC License Article 401(a)(10) and the 401 WQC (Section 6.2 (5)(b)), Grant PUD was required, in consultation with the Priest Rapids Fish Forum (PRFF), to develop and submit for approval a Bull Trout Monitoring and Evaluation Plan (BTMEP) within one year of issuance of the license. The BTMEP was implemented upon FERC approval on June 4, 2009. In accordance with the BTMEP, Grant PUD monitored for bull trout during all Project related activities where bull trout could potentially be seen or encountered in 2019. In addition, in accordance with FERC License Article 401(a) (25) and Reasonable and Prudent Measure 2 of the USFWS Bull Trout Biological Opinion for the Project (USFWS 2007), Grant PUD, in consultation with the Priest Rapids Fish Forum (PRFF), developed the Bull Trout Hydrologic and Water Quality Study Plan (BTWQP). The BTWQP was implemented upon FERC approval on February 17, 2010. The goal of the BTMEP and BTWQP is to, on a yearly basis, monitor and evaluate bull trout presence in the Project and collect hydrologic and water quality data related to Project operations. This information and these data are collected in order to evaluate the potential Project-related impacts on bull trout and to specify the basis for identifying measures Grant PUD will implement to address any Project-related impacts to bull trout.

The following sections present a summary of the results from Grant PUD's 2020 monitoring efforts under the BTMEP and BTWQP (note that FERC approved the combination of both reporting requirements into a single report with approval of the BTWQP on February 17, 2010).

## **2.0 Bull Trout Observations at the Priest Rapids Project**

Monitoring for bull trout at the Priest Rapids Project occurs annually through video fish count system monitoring at each dam, juvenile fish bypass activities, fish collected as a result of fishway and turbine maintenance, gatewell dipping, Hanford Reach Fall Chinook Protection Program implementation, Off-Ladder Adult Fish Trap (OLAFT) operations, and Northern

Pikeminnow predator control programs. Semi-annual programs like the resident fish monitoring and White Sturgeon Program may also provide an opportunity to collect information on incidentally collected bull trout during years those programs are implemented.

The primary means Grant PUD uses to monitor bull trout at the Project is through video fish count systems at fish ladders. Grant PUD monitors fish passage 24 hours a day using videotape imagery of passage in each ladder at Priest Rapids and Wanapum Dams between April 15 and November 15 of every year. Staff records and reports passage of Chinook salmon (*Oncorhynchus tshawytscha*), Coho salmon (*Oncorhynchus kisutch*), Sockeye salmon (*Oncorhynchus nerka*), steelhead (*Oncorhynchus mykiss*), American Shad (*Alosa sapidissima*), White Sturgeon (*Acipenser transmontanus*), Pacific Lamprey (*Entosphenus tridentatus*) and bull trout.

During the 2019 – 2020 winter fish ladder maintenance period (November 15, 2019 – April 1, 2020), the PRFF, which includes the USFWS and Grant PUD, agreed to experimentally collect video fish counts at both Priest Rapids and Wanapum dams, of each watered fish ladder during the winter maintenance period. The purpose of the experiment was to evaluate if adult or sub-adult bull trout migrated through or were present at Priest Rapids or Wanapum dams during the winter maintenance period. Following review of the winter video fish counts at each dam, no bull trout were counted passing the fish ladders at either dam.

One bull trout was counted passing through the Priest Rapids count stations in 2020 during typical fish operations (April 15 and November 15). At Wanapum count stations a total of two bull trout were documented passing through the ladders between May and July 2020 (Table 1)

**Table 1 Bull trout observations at Priest Rapids and Wanapum Dam Fish Count Station in 2020.**

<u>Date</u>	<u>Time</u>	<u>Location</u>	<u>Size</u>
6/03/2020	17:33:16	Wanapum Left Bank	18 inches
6/20/2020	1:30:58	Wanapum Left Bank	22 inches
7/13/2020	N/A	Priest Rapids Left Bank	N/A

**Table 2 Annual number of bull trout Passing Priest Rapids and Wanapum Dam’s Fish Count Stations (2007 through 2020).**

Year	Priest Rapids Dam		Wanapum Dam	
	Left Bank	Right Bank	Left Bank	Right Bank
2007	0	1	1	0
2008	2	3	0	0
2009	5	1	3	0
2010	5	2	5	2
2011	5	3	9	3
2012	4	1	2	1
2013	9	1	10	1
2014	1	2	Unknown*	Unknown*
2015	1	3	6	0
2016	3	0	6	0

Year	Priest Rapids Dam		Wanapum Dam	
	Left Bank	Right Bank	Left Bank	Right Bank
2017	0	0	1	2
2018	1	0	2	0
2019	0	0	2	0
2020	1		2	

**Note:\* The fish count station at Wanapum Dam was inoperable.**

No other bull trout were observed during any phase of juvenile salmonid bypass activities, gatewell dipping, fishway and turbine maintenance activities, OLAFT operation, Northern Pikeminnow predator control activities, White Sturgeon Program activities, Hanford Reach Fall Chinook Protection Program, hatchery activities, or any other activities in the Project in 2020.

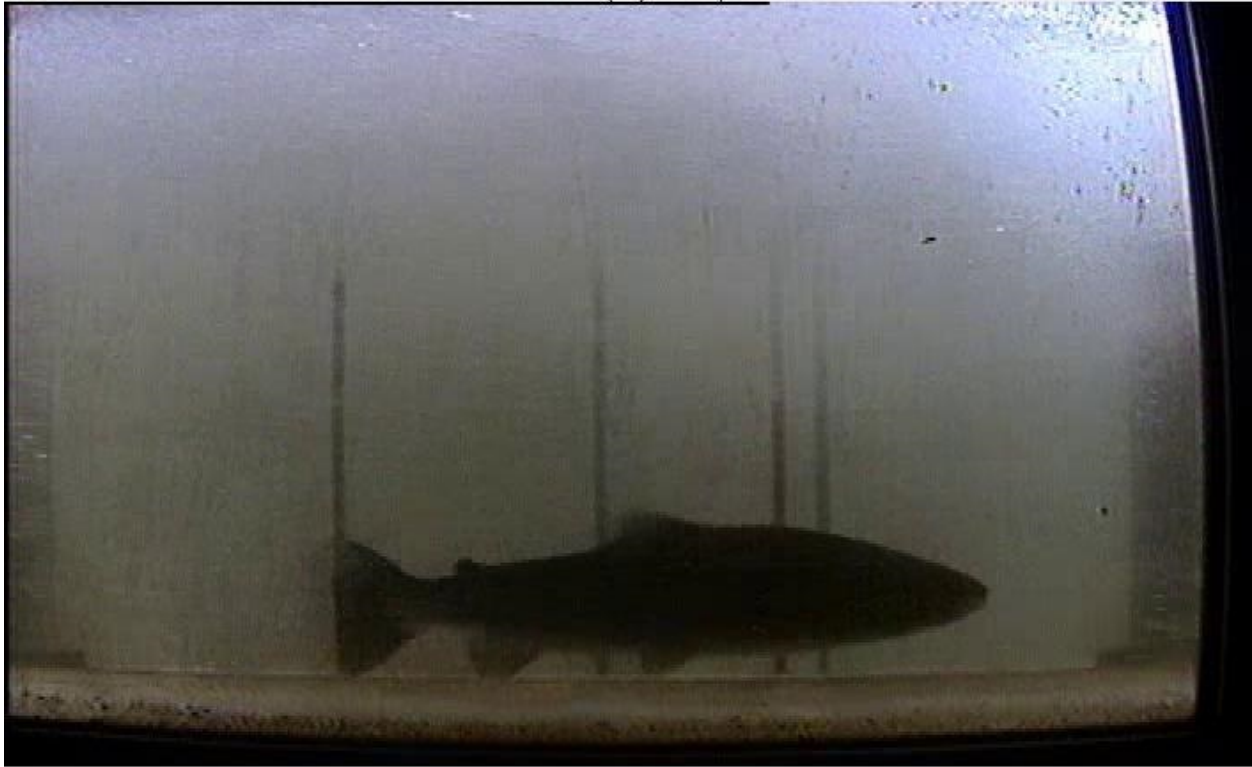
Figure 1 and Figure 2 provide photographs, location, and date of each bull trout observed passing the Wanapum Dam’s fish count stations. A photograph of the bull trout which was counted on July 13, 2020 is not available due to equipment failure.

Daily fish passage through Priest Rapids and Wanapum dams can be viewed at the following link: <http://www.grantpud.org/environment/fish-wildlife/fish-counts>



**Figure 1** A bull trout with an estimated length of 18 inches passing Wanapum left bank count station on June 3, 2020.





**Figure 2** A bull trout with an estimated length of 22 inches passing Wanapum left bank count station on June 20, 2020.

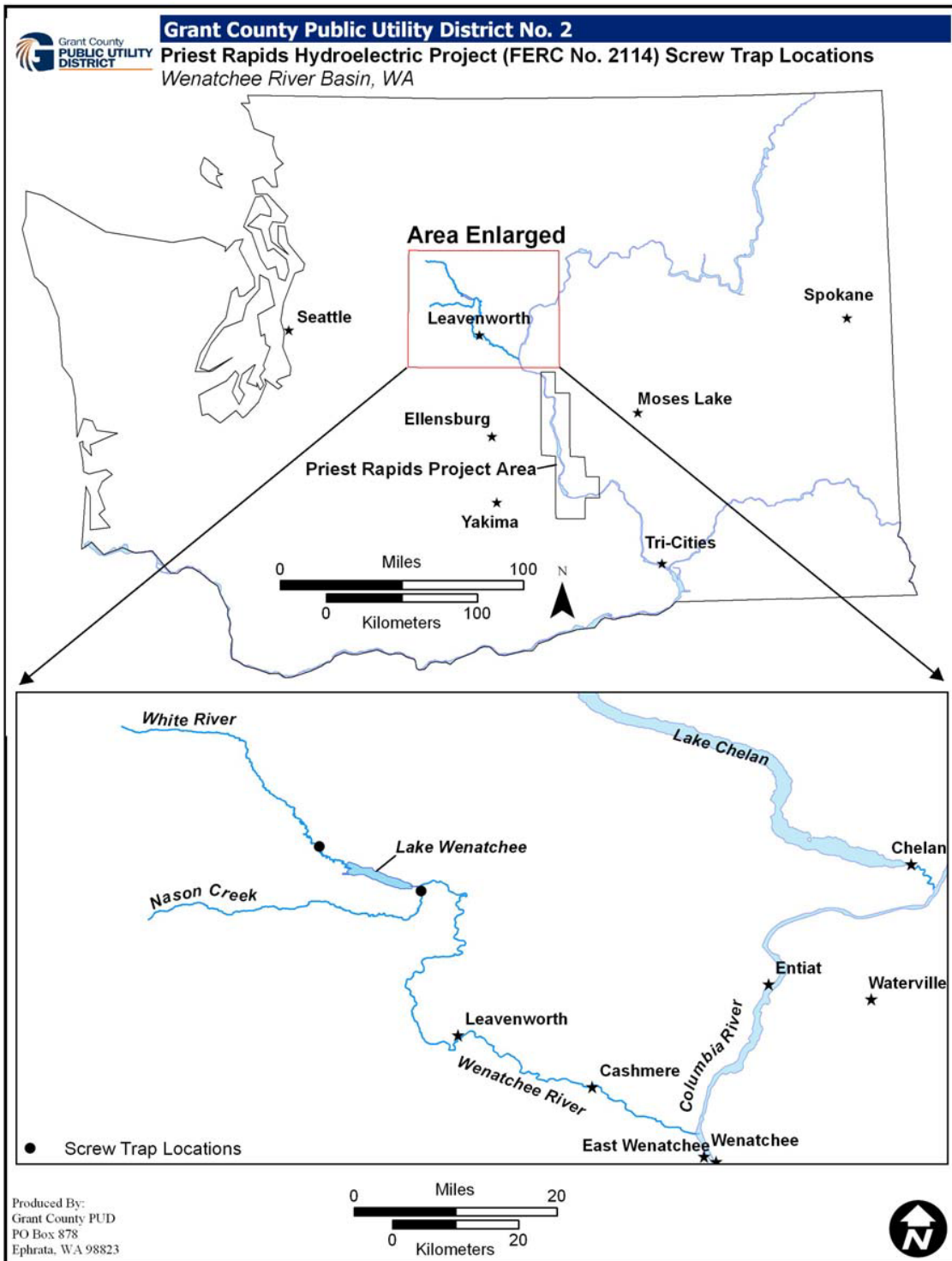
### **3.0 Bull Trout Observations and Handling on Nason Creek and White River**

Bull trout observations are documented in White River and Nason Creek as part of Grant PUD's spring Chinook hatchery supplementation programs (3). Rotary screw traps are operated primarily for spring Chinook salmon; however, incidental collections of bull trout are also documented and included in this report.

During rotary screw trap operations in 2020, three bull trout were collected from Nason Creek, while five were collected from the White River (Table 3). Rotary screw trap operations normally occur over a longer timeframe; however, due to Covid-19 restrictions, the programs were abbreviated during 2020.

**Table 3 Bull trout data from Nason Creek and White River screw taps.**

<b>Nason Creek</b>	<b>Date</b>	<b>Species</b>	<b>Fork Length (mm)</b>	<b>Stage</b>
	7/19/2020	Bull Trout	209	SA
	7/20/2020	Bull Trout	181	SA
	7/23/2020	Bull Trout	183	SA
<b>White River</b>	<b>Date</b>	<b>Species</b>	<b>Fork Length (mm)</b>	<b>Stage</b>
Trap A	8/16/2020	Bull Trout	61	J
Trap A	8/17/2020	Bull Trout	59	J
Trap A	8/17/2020	Bull Trout	58	J
Trap A	8/18/2020	Bull Trout	59	J
Trap A	8/18/2020	Bull Trout	64	J
<b>Note: An "A" is used denote adult life stage. "SA" is used to denote the sub-adult life stage, consistent with previous Grant PUD reports for fish between 127 and 330 mm. A "J" is used to denote juvenile life stage.</b>				



**Figure 3** Screw trap locations on the White River and Nason Creek, Washington.

#### 4.0 Hydrologic and Water Quality Monitoring

Per the 10-year Bull Trout Monitoring and Evaluation Plan (2019), Grant PUD monitors changes in Project elevation, discharge, temperature and total dissolved gas and report daily average values. Appendix A contains a listing of daily averages as recorded throughout the Project.

#### 5.0 Summary

In 2020, bull trout monitoring occurred throughout all Grant PUD programs in accordance with the BTMEP, BTWQP, and Bull Trout Biological Opinion for the Project (USFWS 2007). Based on the number of bull trout encountered, Grant PUD did not exceed the total annual “take” limits based on the Biological Opinion for the Project (USFWS 2007). Table 4 below provides a summary of bull trout “take” in 2020 as defined by the Biological Opinion (USFWS 2007).

**Table 4 Summary of 2019 reporting period take on bull trout.**

Project Element	Type of Take	Lethal Take		Non-lethal Take	
		Adult	Juvenile/Sub-Adult	Adult	Juvenile/Sub-Adult
Turbine Operations	Harm or Harass	0	0	0	0
Juvenile Fish Bypass	Harm or Harass	0	0	0	0
Spill Operations	Harm or Harass	0	0	0	0
Adult Fishways	Harass	0	0	3	0
Hydrograph Variation	Harm or Harass	0	0	0	0
Predator Control	Harm or Harass	0	0	0	0
Nason Creek Smolt Trap	Harm or Harass	0	0	0	3
White River Smolt Trap	Harm or Harass	0	0	0	5
	<b>TOTAL</b>	0	0	3	8

## **List of Literature**

Federal Energy Regulatory Commission, Order Issuing New License for Public Utility District No. 2 of Grant County, Docket Number P-2114-116 (April 17, 2008).

Keeler, C. 2019. Summary of 2019 Annual Fish-Spill Season and Total Dissolved Gas Monitoring. Prepared for Public Utility District No. 2 of Grant County, Washington. October 2018.

National Marine Fisheries Service (NMFS). 2008. Endangered Species Act – Section 7 Consultation Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Consultation for the New License for the Priest Rapids Hydroelectric Project, FERC Project No. 2114. Portland, Oregon.

United States Department of Interior Fish and Wildlife Service (USFWS). 2007. USFWS Biological Opinion on the Effects of the Priest Rapids Hydroelectric Project Relicensing on Bull Trout (FERC No. 2114). Spokane, Washington. USFWS Reference: 13260- 2006 -P-0008, 13 260-2001-F-0062.

Public Utility District No. 2 of Grant County, WA. 2019. Priest Rapids Project Bull Trout Monitoring and Evaluation Plan 10-Year Status Report. FERC Article 401(a)(10)(25).

**Appendix A**  
**Project Operations/Water Quality Daily Average Data.**

**Table A-1 Wanapum Daily Averages.**

Date	WAN Forebay			WAN Tailrace			
	Elevation (ft)	TDG (%SAT)	Temp (°C)	Elevation (ft)	Discharge (kcfs)	TDG (%SAT)	Temp (°C)
04/15/20	566.5	104.4	7.9	488.23	81.1	106.5	7.9
04/16/20	566.5	105.5	8.2	488.23	93.9	105.0	7.8
04/17/20	567.71	107.7	8.2	489.22	103.5	107.2	8.0
04/18/20	569.15	108.7	8.6	490.25	92.3	108.0	8.2
04/19/20	570.57	107.8	8.5	489.92	103.4	109.2	8.3
04/20/20	569.11	108.7	8.6	490.42	113.5	110.5	8.3
04/21/20	567.28	107.5	8.4	490.77	97.7	110.0	8.5
04/22/20	566.48	107.0	8.7	489.8	105.5	109.8	8.5
04/23/20	567.37	107.2	8.3	489.64	115.0	110.1	8.4
04/24/20	569.12	107.2	8.8	490.66	114.3	109.4	8.4
04/25/20	568.24	108.2	8.6	491.15	99.7	110.4	8.4
04/26/20	567.35	108.1	8.8	489.97	95.4	111.0	8.6
04/27/20	566.99	108.2	8.9	488.94	113.6	112.8	8.8
04/28/20	570.42	107.6	9.0	489.94	148.2	109.6	8.9
04/29/20	570.16	109.5	9.1	492.39	149.0	110.5	8.9
04/30/20	568.98	108.3	9.1	492.28	129.4	110.5	9.1
05/01/20	569.11	107.0	9.2	490.94	148.1	109.0	9.0
05/02/20	569.38	108.6	9.3	492.35	136.8	110.2	9.1
05/03/20	569.75	106.8	9.1	491.95	131.1	109.6	9.1
05/04/20	570.01	106.6	9.2	491.44	152.4	109.1	9.0
05/05/20	570.72	108.2	9.3	492.27	178.3	110.3	8.9
05/06/20	571.22	107.0	8.9	493.93	166.7	110.7	8.9
05/07/20	570.72	108.1	9.5	493.4	165.6	109.6	9.2
05/08/20	571.03	110.4	9.6	493.18	165.7	111.8	9.3
05/09/20	571.04	111.7	9.8	493.27	188.2	114.3	9.6
05/10/20	571.2	111.9	9.9	494.05	189.3	116.0	9.8
05/11/20	571.11	112.9	10.0	494.19	198.2	117.0	10.0
05/12/20	571.13	115.4	10.3	494.58	193.7	116.7	10.2
05/13/20	571.23	114.8	10.3	494.54	203.8	117.0	10.2
05/14/20	571.19	113.6	10.5	495.04	209.7	116.7	10.3
05/15/20	571.21	114.1	10.9	495.31	214.0	118.2	10.6
05/16/20	571.18	115.7	10.9	495.54	210.2	118.5	10.7
05/17/20	571.28	116.9	10.8	495.21	209.6	118.1	10.6
05/18/20	571.23	118.0	10.9	495.3	208.5	119.3	10.5
05/19/20	571.29	115.7	10.8	495.14	217.8	121.6	10.6
05/20/20	571.24	113.3	10.8	495.43	227.7	119.6	10.8
05/21/20	570.5	111.7	11.1	495.64	188.8	116.4	11.0

Date	WAN Forebay			WAN Tailrace			
	Elevation (ft)	TDG (%SAT)	Temp (°C)	Elevation (ft)	Discharge (kcfs)	TDG (%SAT)	Temp (°C)
05/22/20	570.73	110.4	11.1	494.17	194.7	113.5	11.0
05/23/20	571.11	112.7	11.5	494.76	198.0	115.1	11.1
05/24/20	571.04	114.5	11.6	495	212.3	117.1	11.3
05/25/20	571.2	114.9	11.6	495.39	205.1	119.1	11.4
05/26/20	571.2	115.1	11.7	495.04	194.1	119.6	11.6
05/27/20	571.18	115.7	12.3	494.58	216.7	117.7	11.7
05/28/20	571.22	118.1	12.4	495.6	224.1	118.9	11.9
05/29/20	571.21	120.8	12.7	495.87	229.6	120.6	12.1
05/30/20	571.21	120.2	12.5	496.12	238.9	122.0	12.3
05/31/20	571.16	114.4	12.4	496.59	221.9	123.5	12.3
06/01/20	570.82	116.4	12.5	495.6	221.0	119.9	12.3
06/02/20	571.17	117.9	12.4	495.69	246.8	121.7	12.2
06/03/20	571.21	120.3	12.9	496.66	250.5	122.8	12.4
06/04/20	571.18	121.0	12.8	496.88	259.6	124.4	12.6
06/05/20	571.24	123.4	12.7	497.2	254.5	124.4	12.5
06/06/20	571.17	120.8	12.6	497.07	251.9	123.8	12.4
06/07/20	571.2	117.6	12.4	497.03	255.9	124.2	12.4
06/08/20	571.11	115.3	12.3	497.21	212.7	119.9	12.2
06/09/20	570.72	118.9	12.7	495.36	220.7	119.7	12.4
06/10/20	571.13	120.4	12.9	495.81	219.4	121.1	12.6
06/11/20	571.17	120.8	13.2	495.59	217.3	119.3	12.9
06/12/20	571.18	119.6	13.1	495.66	210.7	118.7	12.9
06/13/20	571.16	116.3	12.9	495.39	193.3	119.5	12.8
06/14/20	571.17	114.0	12.9	494.61	198.0	117.5	12.8
06/15/20	571.18	115.9	13.1	494.88	194.9	117.4	12.9
06/16/20	571.18	116.2	13.5	494.75	179.3	116.1	13.2
06/17/20	571.14	115.9	13.6	494.16	197.4	119.3	13.3
06/18/20	571.18	116.7	13.7	494.63	204.4	118.2	13.5
06/19/20	571.18	119.3	14.1	495.04	210.8	119.3	13.6
06/20/20	571.14	119.1	14.1	495.36	192.4	120.0	13.8
06/21/20	571.18	117.1	14.3	494.53	201.3	119.7	14.0
06/22/20	571.19	115.6	14.7	494.93	195.3	117.4	14.3
06/23/20	571.16	118.4	15.1	494.75	203.1	118.7	14.5
06/24/20	571.22	118.2	15.1	495.11	210.4	118.4	14.9
06/25/20	571.18	117.7	15.6	495.4	216.5	120.2	15.1
06/26/20	571.14	118.2	15.4	495.59	240.4	123.0	15.2
06/27/20	571.19	118.2	15.4	496.48	232.2	123.8	15.3
06/28/20	571.03	118.3	15.2	496.06	236.0	127.0	15.1



Date	WAN Forebay			WAN Tailrace			
	Elevation (ft)	TDG (%SAT)	Temp (°C)	Elevation (ft)	Discharge (kcfs)	TDG (%SAT)	Temp (°C)
06/29/20	570.82	120.9	15.1	496.36	247.2	126.8	14.9
06/30/20	571.03	119.2	14.8	496.79	242.6	124.3	14.8
07/01/20	570.81	116.9	14.8	496.44	212.9	121.1	14.8
07/02/20	570.88	117.9	14.6	495.28	231.3	122.0	14.5
07/03/20	571.13	120.0	14.8	496.17	214.9	121.1	14.5
07/04/20	571.22	119.3	15.1	495.42	202.6	119.5	14.7
07/05/20	571.18	119.8	15.4	494.98	191.5	118.2	15.1
07/06/20	571.16	118.5	15.6	494.63	193.3	118.5	15.4
07/07/20	571.12	113.7	15.5	494.58	165.5	115.2	15.5
07/08/20	570.6	113.6	16.0	493.37	170.8	114.6	15.6
07/09/20	571.08	114.3	16.1	493.7	175.7	115.5	15.9
07/10/20	571.18	114.2	16.3	494.02	172.9	115.0	15.9
07/11/20	571.23	115.7	16.4	493.84	167.5	115.6	16.0
07/12/20	571.13	113.0	16.4	493.69	157.3	114.0	16.2
07/13/20	571.11	111.8	16.7	493.05	165.8	112.9	16.3
07/14/20	571.09	114.2	16.8	493.54	170.0	114.1	16.4
07/15/20	571.12	114.0	17.1	493.8	172.8	114.5	16.7
07/16/20	571.15	114.9	17.2	493.99	178.7	115.1	16.9
07/17/20	571.1	113.4	17.1	494.21	151.2	114.1	17.0
07/18/20	570.28	113.5	18.2	492.8	140.7	113.5	17.2
07/19/20	569.95	114.7	17.8	492.28	145.5	114.3	17.3
07/20/20	570.64	115.1	18.8	492.51	151.2	114.4	17.4
07/21/20	571.16	114.9	18.3	492.85	153.4	114.8	17.7
07/22/20	570.93	114.0	18.4	492.99	153.8	114.1	18.0
07/23/20	571.19	110.3	18.3	493.1	156.7	112.6	18.1
07/24/20	570.99	109.5	18.0	493.24	130.1	111.8	17.9
07/25/20	570.55	109.7	18.5	491.83	139.1	111.1	17.7
07/26/20	569.87	110.9	18.6	492.2	131.6	112.3	17.9
07/27/20	569.98	112.4	18.8	491.83	141.4	113.0	18.0
07/28/20	570.67	112.6	18.9	492.43	146.2	113.2	18.2
07/29/20	570.88	112.9	19.3	492.64	141.7	112.9	18.3
07/30/20	570.8	115.2	19.4	492.44	147.5	113.8	18.4
07/31/20	570.75	115.4	19.2	492.73	150.2	114.7	18.5
08/01/20	571.22	111.7	18.6	492.88	139.6	112.2	18.3
08/02/20	570.79	113.4	18.5	492.39	122.1	113.2	18.3
08/03/20	570.01	111.7	18.7	491.25	123.7	112.3	18.3
08/04/20	570.49	113.8	19.2	491.33	142.9	113.1	18.3
08/05/20	570.57	114.8	19.0	492.46	134.4	114.0	18.5

Date	WAN Forebay			WAN Tailrace			
	Elevation (ft)	TDG (%SAT)	Temp (°C)	Elevation (ft)	Discharge (kcfs)	TDG (%SAT)	Temp (°C)
08/06/20	570.32	110.6	18.5	492.01	123.7	111.9	18.4
08/07/20	569.85	108.5	18.5	491.27	143.7	110.3	18.3
08/08/20	569.64	108.8	18.6	492.28	117.3	111.4	18.4
08/09/20	569.68	108.0	19.0	490.93	132.6	110.4	18.3
08/10/20	570.06	109.5	18.8	491.84	131.2	111.6	18.4
08/11/20	568.31	108.3	18.6	491.49	120.0	111.2	18.3
08/12/20	567.3	107.4	18.4	490.53	90.6	110.9	18.2
08/13/20	567.73	106.9	18.7	488.91	114.9	110.1	18.2
08/14/20	569.44	107.7	18.5	490.59	134.6	110.6	18.2
08/15/20	570.35	110.3	19.4	491.9	130.5	111.7	18.4
08/16/20	569.71	111.5	19.2	491.57	120.6	112.7	18.6
08/17/20	570.17	111.3	19.1	491.14	137.1	112.7	18.7
08/18/20	570.4	111.7	19.4	492.18	125.3	114.5	18.7
08/19/20	570.59	111.0	19.2	491.6	140.7	111.8	18.8
08/20/20	571.19	110.9	19.2	492.67	130.6	111.7	18.9
08/21/20	570.9	110.8	19.3	491.99	143.2	111.4	19.1
08/22/20	571.02	108.4	19.6	492.78	150.5	108.5	19.2
08/23/20	570.65	108.9	19.8	493.05	125.9	108.5	19.3
08/24/20	568.89	108.7	19.7	491.71	93.7	108.9	19.3
08/25/20	567.97	108.8	19.7	489.73	99.4	108.7	19.3
08/26/20	567.69	108.1	20.1	490.22	117.2	107.4	19.3
08/27/20	568.17	105.8	19.6	491.17	122.4	106.0	19.3
08/28/20	569.87	106.4	19.7	491.65	132.1	106.8	19.4
08/29/20	569.67	105.3	19.6	492.15	102.9	106.3	19.5
08/30/20	570.38	103.6	19.5	490.6	106.9	104.0	19.2
08/31/20	569.45	102.0	19.4	490.73	71.6	104.2	19.2
09/01/20	569.29	102.6	19.4	488.48	94.4	104.6	19.2
09/02/20	570.93	102.2	19.3	490.06	78.6	104.2	19.2
09/03/20	569.33	101.9	19.5	488.76	72.9	103.6	19.3
09/04/20	569.07	106.7	20.2	488.41	78.3	105.2	19.5
09/05/20	569.29	106.1	19.9	488.99	79.3	105.6	19.6
09/06/20	569.87	105.2	19.8	489.45	80.8	104.4	19.6
09/07/20	570.15	103.3	19.7	489.58	79.3	101.8	19.6
09/08/20	570.57	101.7	19.7	489.6	82.1	101.1	19.5
09/09/20	569.52	103.7	20.0	489.39	87.4	101.7	19.5
09/10/20	569.81	104.4	20.0	489.39	93.8	102.4	19.4
09/11/20	570.01	104.2	19.8	489.79	95.7	103.5	19.3
09/12/20	570.41	104.8	19.5	490.13	96.4	103.9	19.2

Date	WAN Forebay			WAN Tailrace			
	Elevation (ft)	TDG (%SAT)	Temp (°C)	Elevation (ft)	Discharge (kcfs)	TDG (%SAT)	Temp (°C)
09/13/20	569.23	103.7	19.3	489.86	78.4	102.9	19.1
09/14/20	567.81	103.5	19.1	488.73	81.8	103.0	18.9
09/15/20	565.99	102.5	19.0	488.73	66.8	101.7	18.8
09/16/20	566.25	103.5	18.9	487.91	87.4	102.4	18.7
09/17/20	568	103.9	18.9	489.35	95.0	102.7	18.6
09/18/20	567.51	104.1	18.7	489.77	85.3	103.2	18.6
09/19/20	565.48	101.6	18.6	488.98	48.6	101.4	18.5
09/20/20	565	100.6	18.6	486.89	53.1	99.4	18.4
09/21/20	566.03	103.5	18.9	486.86	69.1	101.9	18.4
09/22/20	565.71	104.7	18.9	488.62	60.9	102.7	18.5
09/23/20	566.76	103.5	18.7	488.93	76.9	102.6	18.5
09/24/20	566.69	101.1	18.6	489.09	55.0	100.4	18.5
09/25/20	566.18	99.8	18.5	487.57	53.7	100.6	18.4
09/26/20	566.39	98.1	18.4	487.54	44.5	97.6	18.2
09/27/20	568.46	99.7	18.4	486.9	71.5	98.3	18.1
09/28/20	569.98	99.9	18.4	488.9	89.2	99.3	18.0
09/29/20	570.1	100.8	18.6	489.75	90.1	100.1	18.1
09/30/20	570.11	101.1	18.8	489.84	92.2	100.0	18.2
10/01/20	570.4	101.3	18.7	489.45	95.3	100.7	18.3
10/02/20	570.89	102.4	18.7	490.4	106.7	101.9	18.2
10/03/20	571.04	102.4	18.4	491.06	97.1	102.2	18.1
10/04/20	569.34	101.4	18.2	490.03	77.9	101.5	18.0
10/05/20	567.73	100.7	18.2	488.78	77.9	101.3	18.0
10/06/20	566.76	102.0	18.6	489.38	81.4	102.3	18.2
10/07/20	567.51	103.5	19.0	489.17	74.6	102.7	18.3
10/08/20	565.52	100.9	18.5	488.24	74.4	102.6	18.3
10/09/20	564.54	99.9	18.4	487.99	61.4	102.1	18.2
10/10/20	563.58	99.8	18.2	487.97	49.1	102.0	18.1
10/11/20	564.07	99.2	18.0	487.78	62.3	100.4	17.8
10/12/20	564.42	98.2	17.7	489.04	54.9	101.3	17.6
10/13/20	564.98	98.9	17.5	488.4	68.1	99.3	17.4
10/14/20	565.6	97.5	17.3	488.57	62.3	97.7	17.2
10/15/20	567.32	96.9	17.0	488.64	62.6	99.8	16.8
10/16/20	567.06	97.8	16.8	488.98	70.4	100.6	16.7
10/17/20	569.55	97.4	16.6	487.68	64.8	98.7	16.4
10/18/20	568.93	97.4	16.3	487.26	56.7	99.4	16.2
10/19/20	568.43	97.2	16.0	486.92	50.3	101.7	15.9
10/20/20	568	97.6	15.6	486.09	61.4	98.9	15.4

Date	WAN Forebay			WAN Tailrace			
	Elevation (ft)	TDG (%SAT)	Temp (°C)	Elevation (ft)	Discharge (kcfs)	TDG (%SAT)	Temp (°C)
10/21/20	567.97	97.7	15.3	487.12	65.1	101.8	15.2
10/22/20	568.27	97.2	15.2	486.9	66.3	99.1	15.0
10/23/20	568.37	97.6	15.1	486.99	93.3	103.4	14.9
10/24/20	570.07	96.7	14.6	488.78	102.0	104.0	14.5
10/25/20	569.72	95.9	14.0	489.12	75.3	97.2	14.0
10/26/20	566.47	95.9	13.9	488.23	83.9	100.2	13.7
10/27/20	568.26	96.9	13.6	487.81	116.0	109.2	13.4
10/28/20	570.02	97.3	13.4	489.71	97.2	100.0	13.3
10/29/20	569.17	97.3	13.5	489.39	67.1	98.6	13.3
10/30/20	569.37	98.2	13.5	487.25	75.6	105.8	13.4
10/31/20	569.63	98.3	13.4	487.37	99.3	103.9	13.2
11/01/20	569.98	97.1	13.1	489.25	104.9	106.4	13.0
11/02/20	569.82	97.7	13.1	489.81	99.9	101.9	12.9
11/03/20	568.28	97.9	13.0	489.21	96.5	101.0	12.9
11/04/20	568.5	97.9	13.1	489.17	87.3	98.1	13.0
11/05/20	568.3	98.8	13.2	488.69	90.3	100.3	13.1
11/06/20	568.52	98.6	13.3	488.65	100.5	99.5	13.1
11/07/20	569.18	98.3	13.4	489.41	105.7	100.0	13.2
11/08/20	569.31	96.9	13.0	489.66	123.0	98.8	12.9
11/09/20	569.9	96.1	12.8	490.59	109.9	99.0	12.6
11/10/20	568.14	97.0	12.5	490.24	111.9	101.4	12.4
11/11/20	569.55	97.2	12.6	489.57	129.0	100.2	12.4
11/12/20	569.42	96.6	12.4	491.01	121.9	97.2	12.3
11/13/20	569.11	100.2	12.0	490.94	116.6	102.6	11.9
11/14/20	569.38	100.6	11.6	490.37	107.2	101.4	11.5
11/15/20	569.35	101.1	11.5	489.73	86.2	100.9	11.4

**Table A-2 Priest Rapids Daily Averages.**

Date	PRD Forebay			PRD Tailrace			
	Elevation (ft)	TDG (%SAT)	Temp (°C)	Elevation (ft)	Discharge (kcfs)	TDG (%SAT)	Temp (°C)
04/15/20	484.06	105.2	7.9	405.11	67.2	103.9	8.1
04/16/20	484.06	105.9	8.3	405.11	85.9	103.6	8.3
04/17/20	484.35	107.3	8.3	406.98	94.9	104.7	8.3
04/18/20	485.74	107.8	8.4	407.85	88.8	105.1	8.4
04/19/20	486.29	107.0	8.6	407.25	99.8	104.4	8.6
04/20/20	486.51	108.3	8.4	408.24	110.0	106.7	8.7
04/21/20	486.28	108.8	8.6	408.6	93.6	109.4	8.9

Date	PRD Forebay			PRD Tailrace			
	Elevation (ft)	TDG (%SAT)	Temp (°C)	Elevation (ft)	Discharge (kcfs)	TDG (%SAT)	Temp (°C)
04/22/20	486.09	107.9	8.5	406.83	97.3	107.7	8.8
04/23/20	484.32	108.2	8.5	407.3	109.5	108.5	8.9
04/24/20	485.95	108.4	8.5	408.23	110.7	109.2	8.8
04/25/20	487.12	109.4	8.5	408.27	99.8	109.5	8.8
04/26/20	486.08	109.2	8.5	407.43	90.4	109.1	8.7
04/27/20	484.17	109.7	8.8	406.68	106.0	108.9	9.1
04/28/20	484.78	110.2	8.9	408.01	141.5	109.9	9.2
04/29/20	485.81	110.4	8.9	410.99	144.4	110.3	9.1
04/30/20	485.18	109.2	9.1	411.35	123.3	109.1	9.3
05/01/20	484.29	108.5	9.1	409.71	134.2	109.2	9.4
05/02/20	485.74	108.9	9.0	410.44	134.9	110.5	9.3
05/03/20	486.2	108.2	9.1	410.32	123.0	109.8	9.4
05/04/20	485.81	108.6	9.1	409.26	143.0	109.0	9.3
05/05/20	484.77	109.7	9.0	411.17	166.5	110.7	9.3
05/06/20	486.87	108.7	8.9	412.56	168.3	111.4	9.2
05/07/20	486.82	108.9	8.9	412.62	153.7	110.2	9.2
05/08/20	485.92	110.4	9.3	411.76	160.0	111.4	9.5
05/09/20	486.15	113.2	9.5	412.2	178.7	112.8	9.7
05/10/20	486.15	116.1	9.7	413.44	189.5	115.5	10.0
05/11/20	486.69	116.0	9.9	414.07	190.6	116.3	10.1
05/12/20	487.02	115.5	10.1	413.97	185.1	116.3	10.2
05/13/20	487.24	116.2	10.3	413.62	199.7	117.4	10.4
05/14/20	487.47	116.9	10.4	414.5	205.0	117.8	10.5
05/15/20	487.68	117.5	10.6	414.84	212.9	118.1	10.7
05/16/20	487.61	118.1	10.8	415.28	203.7	118.1	10.9
05/17/20	487.65	119.3	10.7	414.88	209.2	119.9	10.8
05/18/20	487.56	117.2	10.6	415.08	205.4	118.6	10.7
05/19/20	487.39	119.2	10.7	414.87	215.6	119.5	10.8
05/20/20	487.62	117.1	10.8	415.43	230.2	120.2	10.9
05/21/20	486.93	116.3	11.0	416.11	183.1	117.1	11.1
05/22/20	486.97	112.1	11.1	413.55	190.4	116.2	11.1
05/23/20	487.64	113.8	11.2	413.7	198.8	117.0	11.3
05/24/20	487.66	115.9	11.4	414.29	207.8	117.8	11.5
05/25/20	487.57	117.6	11.5	414.98	200.6	117.7	11.6
05/26/20	487.61	118.1	11.6	414.62	190.1	117.9	11.8
05/27/20	487.66	118.2	11.9	413.93	213.6	119.5	12.0
05/28/20	487.7	118.7	11.9	415.28	222.9	120.3	12.1
05/29/20	487.66	119.0	12.2	415.86	227.8	121.1	12.3

Date	PRD Forebay			PRD Tailrace			
	Elevation (ft)	TDG (%SAT)	Temp (°C)	Elevation (ft)	Discharge (kcfs)	TDG (%SAT)	Temp (°C)
05/30/20	487.66	121.5	12.4	416.09	246.5	123.0	12.5
05/31/20	487.59	119.6	12.5	417.07	221.5	120.9	12.5
06/01/20	487.66	118.8	12.5	415.73	223.7	120.6	12.6
06/02/20	487.65	119.2	12.4	415.52	251.7	121.6	12.5
06/03/20	487.65	121.8	12.5	417.23	255.3	123.0	12.6
06/04/20	487.63	120.4	12.6	417.59	262.3	122.6	12.8
06/05/20	487.64	124.1	12.6	417.79	260.4	124.3	12.7
06/06/20	487.7	121.9	12.5	417.91	259.9	123.4	12.6
06/07/20	487.72	119.8	12.5	417.64	261.3	121.8	12.6
06/08/20	487.54	119.6	12.3	417.79	214.2	119.8	12.4
06/09/20	487.57	116.8	12.4	415.39	220.4	119.4	12.5
06/10/20	487.65	122.0	12.7	415.63	218.7	121.2	12.7
06/11/20	487.64	119.1	12.9	415.58	217.5	121.1	13.0
06/12/20	487.68	117.9	13.1	415.48	216.2	120.7	13.2
06/13/20	487.58	116.6	12.9	415.1	196.7	119.8	13.0
06/14/20	487.61	116.3	12.9	413.53	198.9	119.6	13.0
06/15/20	487.66	115.8	13.0	413.74	193.0	117.1	13.0
06/16/20	487.66	114.9	13.1	414.04	179.1	116.8	13.2
06/17/20	487.64	113.7	13.4	413.03	196.5	116.6	13.5
06/18/20	487.57	118.4	13.6	413.79	199.8	117.6	13.8
06/19/20	487.62	118.6	13.8	414.51	209.1	118.7	13.9
06/20/20	487.59	117.7	13.9	415.05	190.7	118.4	14.0
06/21/20	487.59	119.2	14.1	413.87	203.6	120.2	14.2
06/22/20	487.63	115.4	14.4	414.49	193.8	117.4	14.4
06/23/20	487.59	117.8	14.6	414.08	202.0	119.6	14.8
06/24/20	487.69	N/A	N/A	414.52	214.1	120.3	15.1
06/25/20	487.66	N/A	N/A	414.84	217.3	119.5	15.3
06/26/20	487.64	N/A	N/A	415.33	245.0	121.7	15.5
06/27/20	487.67	N/A	N/A	416.85	239.6	121.3	15.6
06/28/20	487.52	N/A	N/A	416.32	241.9	122.1	15.2
06/29/20	487.42	121.9	15.2	416.45	254.4	122.8	15.2
06/30/20	487.63	121.9	15.2	417.49	245.8	121.5	15.1
07/01/20	487.62	118.4	14.9	417.06	216.1	119.9	14.9
07/02/20	487.61	121.4	14.8	415.27	235.1	121.3	14.9
07/03/20	487.68	120.1	14.6	416.51	214.3	120.1	14.7
07/04/20	487.69	119.3	14.7	415.2	202.0	118.6	14.8
07/05/20	487.71	116.5	15.1	414.61	188.6	117.3	15.2
07/06/20	487.65	117.5	15.5	413.74	196.3	118.6	15.5

Date	PRD Forebay			PRD Tailrace			
	Elevation (ft)	TDG (%SAT)	Temp (°C)	Elevation (ft)	Discharge (kcfs)	TDG (%SAT)	Temp (°C)
07/07/20	487.58	113.1	15.6	414.02	161.5	114.9	15.6
07/08/20	487.34	113.0	15.7	412.06	162.3	113.3	15.7
07/09/20	487.54	115.0	15.9	412.13	172.9	115.3	16.0
07/10/20	487.61	113.0	16.1	412.92	165.5	113.7	16.2
07/11/20	487.63	115.3	16.3	412.47	163.9	115.5	16.3
07/12/20	487.62	113.0	16.3	412.3	154.3	113.6	16.3
07/13/20	487.4	111.6	16.5	411.66	156.7	112.5	16.4
07/14/20	487.34	113.1	16.6	411.92	165.2	114.0	16.7
07/15/20	487.3	113.2	16.8	412.46	167.4	115.6	17.0
07/16/20	487.62	112.9	17.0	412.42	175.1	115.5	17.2
07/17/20	487.59	112.4	17.2	412.88	150.4	113.5	17.3
07/18/20	486.84	111.0	17.4	411.38	134.7	112.4	17.4
07/19/20	486.85	113.1	17.6	410.15	139.8	113.7	17.7
07/20/20	486.78	113.7	17.7	410.62	144.3	114.3	17.9
07/21/20	487.2	114.6	18.0	410.88	145.4	114.9	18.0
07/22/20	487.09	112.3	18.2	410.99	150.1	114.2	18.3
07/23/20	487.34	110.5	18.2	411.26	155.3	113.0	18.3
07/24/20	487.36	108.5	18.2	411.61	126.9	111.4	18.3
07/25/20	487.02	108.0	18.0	409.59	134.8	110.6	18.1
07/26/20	486.73	110.0	18.1	410.2	125.8	112.3	18.2
07/27/20	486.78	111.5	18.3	409.48	136.5	113.5	18.4
07/28/20	487.04	111.7	18.5	410.37	141.0	113.4	18.6
07/29/20	487.06	110.0	18.6	410.65	135.3	112.7	18.7
07/30/20	487.1	111.3	18.8	410.22	140.8	113.5	18.8
07/31/20	487.1	112.4	18.9	410.68	144.3	114.3	19.0
08/01/20	487.52	110.5	18.7	410.79	140.5	113.1	18.9
08/02/20	487.18	109.5	18.6	410.48	118.4	112.1	18.7
08/03/20	486.55	109.3	18.6	408.9	115.9	112.0	18.7
08/04/20	486.74	109.9	18.6	408.63	139.0	112.4	18.8
08/05/20	486.92	111.6	18.7	410.51	130.1	113.6	18.8
08/06/20	486.81	109.3	18.7	409.87	119.6	112.2	18.9
08/07/20	486.6	106.7	18.4	408.96	138.4	110.4	18.5
08/08/20	486.42	106.9	18.5	410.48	110.9	111.0	18.6
08/09/20	486.56	106.8	18.5	408.26	129.3	110.5	18.6
08/10/20	486.73	109.2	18.5	409.68	131.6	111.5	18.7
08/11/20	485.74	108.1	18.7	410.08	115.8	110.9	18.7
08/12/20	484.85	N/A	N/A	408.83	85.2	110.4	18.5
08/13/20	485.1	N/A	N/A	405.95	106.1	110.5	18.2

Date	PRD Forebay			PRD Tailrace			
	Elevation (ft)	TDG (%SAT)	Temp (°C)	Elevation (ft)	Discharge (kcfs)	TDG (%SAT)	Temp (°C)
08/14/20	486.12	N/A	N/A	407.78	129.8	110.8	18.4
08/15/20	486.61	N/A	N/A	409.71	126.7	111.8	18.7
08/16/20	486.25	N/A	N/A	409.58	114.9	113.0	18.9
08/17/20	486.55	N/A	N/A	408.48	128.8	112.7	19.1
08/18/20	487.04	N/A	N/A	409.72	122.4	113.4	19.2
08/19/20	487.3	N/A	N/A	409.04	139.4	114.8	19.2
08/20/20	487.48	N/A	N/A	410.43	130.5	111.3	19.2
08/21/20	486.7	N/A	N/A	410.13	138.6	111.0	19.3
08/22/20	487.42	N/A	N/A	410.87	145.5	108.5	19.3
08/23/20	487.25	N/A	N/A	411.58	128.4	107.8	19.5
08/24/20	486.4	N/A	N/A	410.4	87.6	107.4	19.6
08/25/20	485.97	N/A	N/A	406.92	96.3	106.5	19.5
08/26/20	486.23	N/A	N/A	407.65	111.4	106.3	19.4
08/27/20	486.47	N/A	N/A	408.85	115.2	105.7	19.5
08/28/20	487.06	N/A	N/A	409.22	128.5	105.0	19.5
08/29/20	486.99	N/A	N/A	410.37	97.9	105.3	19.6
08/30/20	486.81	N/A	N/A	407.82	108.5	102.5	19.1
08/31/20	486.43	N/A	N/A	408.76	68.2	102.4	19.2
09/01/20	485.68	N/A	N/A	404.9	86.6	102.7	19.4
09/02/20	486.55	N/A	N/A	406.61	80.4	103.0	19.5
09/03/20	485.51	N/A	N/A	406.13	69.8	102.2	19.4
09/04/20	485.46	N/A	N/A	405.06	74.1	102.9	19.6
09/05/20	486.04	N/A	N/A	405.45	72.0	103.4	19.7
09/06/20	486.85	N/A	N/A	405.19	78.8	103.6	19.9
09/07/20	486.94	N/A	N/A	405.98	75.8	102.1	19.6
09/08/20	487.16	N/A	N/A	405.73	82.1	100.8	19.3
09/09/20	486.45	103.1	19.5	406.38	83.5	101.4	19.3
09/10/20	486.1	103.4	19.5	406.42	89.5	102.4	19.6
09/11/20	486.23	103.9	19.6	407.07	92.5	102.9	19.6
09/12/20	486.49	104.7	19.4	407.2	97.7	103.5	19.5
09/13/20	485.79	104.3	19.1	407.78	76.7	103.4	19.2
09/14/20	485.49	103.6	19.0	405.8	80.7	102.7	19.0
09/15/20	485.06	102.6	18.9	406.29	63.3	102.0	18.9
09/16/20	485.09	103.1	18.8	404.37	78.8	102.5	18.9
09/17/20	486.01	103.5	18.7	405.82	92.3	103.2	18.8
09/18/20	485.85	103.8	18.6	407.17	84.6	103.3	18.7
09/19/20	485.07	102.2	18.6	406.46	47.6	102.5	18.6
09/20/20	485.03	102.1	18.4	402.59	50.2	102.1	18.5



Date	PRD Forebay			PRD Tailrace			
	Elevation (ft)	TDG (%SAT)	Temp (°C)	Elevation (ft)	Discharge (kcfs)	TDG (%SAT)	Temp (°C)
09/21/20	484.58	102.5	18.5	402.79	60.7	102.4	18.6
09/22/20	486.23	102.2	18.4	404.04	60.2	102.5	18.6
09/23/20	487.2	103.7	18.6	404.03	78.4	103.2	18.6
09/24/20	486.31	100.9	18.3	405.88	55.0	102.3	18.4
09/25/20	485.63	101.1	18.2	403.38	52.0	102.0	18.3
09/26/20	485.61	99.0	18.1	403.02	42.1	100.7	18.1
09/27/20	485.25	99.1	18.0	401.86	68.4	100.1	18.0
09/28/20	486.47	100.1	18.1	404.57	81.5	100.3	18.2
09/29/20	486.53	101.1	18.1	406.15	95.9	102.7	18.2
09/30/20	486.41	100.9	18.1	407.54	84.2	101.0	18.2
10/01/20	485.54	101.0	18.3	406.52	89.3	101.2	18.3
10/02/20	487.23	101.4	18.3	406.93	103.8	103.1	18.4
10/03/20	487.4	102.3	18.3	408.12	103.4	102.8	18.4
10/04/20	485.95	102.4	18.1	408.32	71.0	102.7	18.2
10/05/20	485.72	101.3	17.9	405.13	74.7	101.6	18.1
10/06/20	486.73	101.7	18.0	405.51	84.9	102.0	18.1
10/07/20	485.86	103.0	18.3	406.47	75.3	103.3	18.3
10/08/20	484.86	102.8	18.4	405.61	69.6	103.4	18.5
10/09/20	484.46	101.2	18.2	404.99	56.8	102.8	18.4
10/10/20	485.69	99.8	17.9	403.55	45.8	102.1	18.0
10/11/20	486.3	98.5	17.6	402.3	60.7	100.6	17.6
10/12/20	487.13	98.3	17.2	403.95	53.3	100.3	17.3
10/13/20	486.93	98.9	17.0	403.1	69.8	100.3	17.1
10/14/20	486.11	97.5	16.6	404.93	56.4	99.3	16.6
10/15/20	486.82	95.9	16.5	403.42	66.1	98.7	16.5
10/16/20	487.25	98.5	16.6	404.53	72.5	100.1	16.7
10/17/20	484.51	99.1	16.4	405.17	66.5	100.5	16.5
10/18/20	484.14	101.8	16.2	404.73	53.8	102.0	16.4
10/19/20	484.24	98.8	15.9	403.32	53.2	99.6	16.1
10/20/20	483.65	97.6	15.7	403.26	56.6	99.6	15.8
10/21/20	484.36	99.5	15.1	403.6	66.2	100.5	15.3
10/22/20	483.47	98.2	14.7	404.64	63.5	98.5	14.8
10/23/20	483.38	101.1	14.6	404.38	86.4	102.3	14.7
10/24/20	484.76	100.0	14.5	406.08	106.7	104.1	14.5
10/25/20	484.27	103.1	13.9	407.51	82.8	105.6	14.1
10/26/20	484.47	105.5	13.6	406.35	77.3	104.5	13.7
10/27/20	482.94	100.0	13.4	405.72	112.4	103.7	13.5
10/28/20	484.71	109.3	13.2	407.91	99.3	111.4	13.4

Date	PRD Forebay			PRD Tailrace			
	Elevation (ft)	TDG (%SAT)	Temp (°C)	Elevation (ft)	Discharge (kcfs)	TDG (%SAT)	Temp (°C)
10/29/20	484.79	104.2	13.1	407.34	70.9	103.5	13.3
10/30/20	483.63	101.5	13.1	405.17	70.2	101.9	13.2
10/31/20	483.63	100.3	13.0	404.93	98.8	102.8	13.2
11/01/20	484.81	105.0	13.0	406.96	103.8	108.1	13.2
11/02/20	485.56	108.5	12.8	407.69	105.9	110.8	13.1
11/03/20	483.94	103.2	12.7	407.74	95.1	104.1	12.9
11/04/20	484.3	101.1	12.7	407.16	85.0	102.5	12.9
11/05/20	483.97	99.8	12.9	406.45	88.7	102.3	13.1
11/06/20	483.75	100.3	12.9	406.73	94.6	101.3	13.1
11/07/20	484.51	99.8	12.7	407.04	108.3	102.5	12.9
11/08/20	484.07	98.8	12.7	408.16	118.7	102.2	12.8
11/09/20	484.6	98.3	12.5	408.59	113.7	102.8	12.6
11/10/20	484.98	99.1	12.3	408.58	108.3	100.6	12.5
11/11/20	483.41	102.3	12.1	408.02	128.3	106.2	12.3
11/12/20	484.71	99.6	12.1	409.2	121.7	103.6	12.4
11/13/20	485.07	99.3	11.9	408.98	117.9	103.9	12.2
11/14/20	484.64	99.3	11.4	408.61	105.6	103.0	11.6
11/15/20	484.09	101.3	11.3	408.04	93.9	102.0	11.5

**Appendix B**  
**Washington Department of Ecology Approval Letter**



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY  
1250 West Alder Street • Union Gap, Washington 98903-0009 • (509) 575-2490

January 21, 2021

Mr. Tom Dresser  
Fish, Wildlife, Water Quality Manager  
Grant County PUD  
PO Box 878  
Ephrata, WA 98823

RE: Request for Ecology Review and Comment – *Draft 2020 Bull Trout Monitoring and Evaluation Report for the Priest Rapids Project*.  
Priest Rapids Hydroelectric Project, FERC No. 2114

Dear Mr. Dresser:

The Department of Ecology (Ecology) has reviewed the draft *2020 Bull Trout Monitoring and Evaluation Report for the Priest Rapids Project* sent via email to Ecology and the Priest Rapids Fish Forum group on December 15, 2020. The Report was developed in accordance with the *Bull Trout Monitoring and Evaluation Plan* and the *Bull Trout Hydrologic and Water Quality Study Plan*. The requirements are found in Appendix C, “Biological Objectives and Implementation Measures”, of the 401 Certification.

Ecology has no comment on the draft *2020 Bull Trout Monitoring and Evaluation Report for the Priest Rapids Project*.

Please contact me at (509) 575-2808 or [breean.zimmerman@ecy.wa.gov](mailto:breean.zimmerman@ecy.wa.gov) if you have any questions.

Sincerely,

Breean Zimmerman  
Central Region Hydropower Projects Manager  
Water Quality Program

Cc: Debbie Firestone, Grant County PUD