

VIA ELECTRONIC FILING

January 30, 2015

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) – 2014 Bull Trout Monitoring and
Evaluation Plan Annual Report**

Dear Ms. Bose,

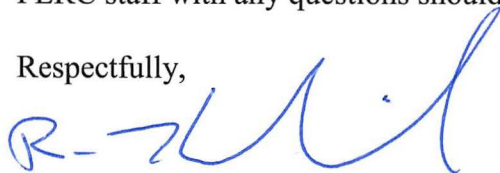
Please find enclosed the 2014 Bull Trout Monitoring and Evaluation Annual Report consistent with the Requirements of Article 401(a)(10) and Article 401(a)(25) of the Priest Rapids Hydroelectric Project License, Washington Department of Ecology's (WDOE's) 401 Water Quality Certification Condition 6.2(5)(b), 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.

This report includes monitoring results from the previous year including the number of bull trout observed or incidentally taken. On December 12, 2014, 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), 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.

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

Respectfully,



Ross Hendrick
License Compliance Manager

Enclosures: 2014 Bull Trout Monitoring and Evaluation Report

**2014 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 2015

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 is a report on Grant PUD's bull trout monitoring and evaluation program, in accordance with the Bull Trout Monitoring and Evaluation Plan (BTMEP) and the Bull Trout Hydrologic and Water Quality Study Plan (BTWQP); note that the reporting requirements for these two 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 2014 efforts, followed by details in the main body of the document.

Wanapum Dam Incident Response

On February 27, 2014, a horizontal fracture was discovered in the spillway monolith No. 4 at Wanapum Dam. The fracture opened a crack on the upstream face of the structure approximately 2 inches high by 65 feet long on the spillway monolith. Grant PUD immediately initiated its Emergency Action Plan (EAP; level B) and began to draw the Wanapum Reservoir down in a steady controlled state.

Initial calls were made to National Oceanic Atmospheric Administration (NOAA) Fisheries and U.S. Fish Wildlife Service (USFWS) on February, 28, 2014 informing them of potentially developing fish passage issues at Wanapum Dam and concerns related to the developing situation at Wanapum monolith spillway 4.

On March 2, 2014, Grant PUD fisheries staff conducted fish removal and salvage activities within the Wanapum right bank ladder in anticipation of the ladder becoming inoperable. The Wanapum left bank ladder was previously dewatered for routine annual maintenance.

As of March 4, 2014, the Wanapum Reservoir had been lowered to a safe operating elevation range between 545 feet and 541 feet. As a result of the drawdown, the fish ladder exits at Wanapum Dam were dewatered, preventing upstream migrating fish from passing Wanapum Dam. Both fish ladders at Priest Rapids Dam are operational and were not impacted as a result of the Wanapum Reservoir drawdown.

To address fish passage at Wanapum Dam as a result of the Wanapum spillway fracture discovered on monolith 4, Grant PUD developed an Interim Fish Passage Operations Plan (IFPOP), which was intended to provide upstream passage for adult salmonids, steelhead, bull trout and Pacific lamprey through or around the Project. Development of the IFPOP occurred in consultation with the NOAA Fisheries, USFWS and Priest Rapids Coordinating Committee (PRCC). The PRCC is made up of representatives from National Marine Fisheries Service (NMFS), USFWS, Washington Department of Fish and Wildlife (WDFW), Yakama Nation (YN), the Confederated Tribes of the Colville Reservation (CCT), Confederated Tribes of the Umatilla Reservations (CTUIR) and Grant PUD.

Grant PUD submitted the IFPOP to the FERC on March 21, 2014. FERC issued an order approving the IFPOP on March 26, 2014, and required Grant PUD to file monthly reports that document its consultation with the PRCC and resource agencies and actions taken. In addition, Grant PUD was required to include changes to the plan, meeting minutes, copies of agency correspondence, and any other documentation of consultation.

Fishway Exit Passage Systems (WFEPS) were installed at Wanapum Dam on April 15 (on left-bank) and April 26 (right-bank) and were operated throughout the fish passage season. April 15, also marked the date that Grant PUD began to trap migrating spring chinook at Priest Rapids Dam and transported them to a select release point above Wanapum Dam. Trap and transport efforts were conducted until modifications to the fish ladders on Wanapum Dam were evaluated under working conditions and found to be suitable for passage.

Grant PUD filed Interim Operation Status Updates on May 1, June 6, September 12, and November 21, 2014. Status updates provided can be reviewed at [Grant PUD IFPOP Status Reports](#).

Bull Trout Observations

Three bull trout were observed passing the Priest Rapids Dam fish ladder count stations between April 15 and November 15; while no observations were made at the Wanapum fish ladder count station because draw down operations prevented annual fish count observations (see Section 2.0 for more detail). While a total of three bull trout were observed ascending the fish ladders at Priest Rapidsdam, no PIT-tagged bull trout were detected in 2014 at full duplex PIT tag detectors at Priest Rapids Dam. No bull trout were observed during any phase of the Wanapum Dam incident response, juvenile bypass activities, gatewell dipping, turbine maintenance activities, fishway maintenance activities, White Sturgeon Program activities, Hanford Reach Fall Chinook Protection Program, hatchery activities, or any other activities in the Project. During screw trap operations in 2014, 13 bull trout were collected in the White River and four bull trout were collected in Nason Creek.

Hydrologic and Water Quality Monitoring

Grant PUD, in coordination with the Priest Rapids Fish Forum (PRFF) 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.

Demobilization Activities

In preparation for a partial refill of the Wanapum Reservoir, demobilization activities begun at the right-bank Wanapum Fish Exit Passage System (WFEPS) on November 17, 2014 and consisted of shutting down two of the four of 90 horsepower pumps (to keep flow through fishway) and then removing the spiral chute and all supporting structures related to the spiral chute. After the work was completed, the right bank fishway flow was restored to provide adult fish passage. On November 18, 2014, Grant PUD began the removal of the entire WFEPS from the left bank Wanapum fishway and once all infrastructure was removed, the left bank ladder remained dewatered for annual operation and maintenance activities.

The Wanapum refill was initiated on November 25, 2014 and a Wanapum Reservoir Elevation of 561.8 feet was achieved on December 1, 2014. While repairs continue, Grant PUD anticipates operating the Wanapum Reservoir within a 4 feet operating range (558 feet – 562 feet). At the time of this report, Grant PUD believes that a normal reservoir operation level of 571.5 feet will be achieved prior to juvenile salmonid outmigration (April 2015).

In regards to adult fish passage at Wanapum Dam, per Grant PUD's requirements under the USFWS BiOp for bull trout (2007) at least one fish ladder needs to be operational year-round. Currently the Wanapum right-bank Fish Ladder is fully operational and providing fish passage. The Wanapum left-bank Fish ladder is currently dewatered for typically annual O&M.

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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, the Hourly Coordination 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 2014. 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 2014 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).

1.1 Wanapum Incident Response

On February 27, 2014, a horizontal fracture was discovered in the spillway monolith No. 4 at Wanapum Dam. The fracture opened a crack on the upstream face of the structure approximately 2 inches high by 65 feet long on the spillway monolith. Grant PUD immediately initiated its

Emergency Action Plan (EAP; level B) and began to draw the Wanapum Reservoir down in a steady controlled state.

Initial calls were made to National Oceanic Atmospheric Administration (NOAA) Fisheries and USFWS on February, 28, 2014 informing them of potentially developing fish passage issues at Wanapum Dam and concerns related to the developing situation at Wanapum monolith spillway 4.

On March 2, 2014, Grant PUD fisheries staff conducted fish removal and salvage activities within the Wanapum right bank ladder in anticipation of the ladder becoming inoperable. The Wanapum left bank ladder was previously dewatered for routine annual maintenance.

As of March 4, 2014, the Wanapum Reservoir had been lowered to a safe operating elevation range between 545 feet and 541 feet. As a result of the drawdown, the fish ladder exits at Wanapum Dam were dewatered, preventing upstream migrating fish from passing Wanapum Dam. Both fish ladders at Priest Rapids Dam are operational and were not impacted as a result of the Wanapum Reservoir drawdown.

To address fish passage at Wanapum Dam as a result of the Wanapum spillway fracture discovered on monolith 4, Grant PUD developed an Interim Fish Passage Operations Plan (IFPOP), which was intended to provide upstream passage for adult salmonids, steelhead, bull trout and Pacific lamprey through or around the Project. Development of the IFPOP occurred in consultation with the NOAA Fisheries, USFWS and Priest Rapids Coordinating Committee (PRCC). The PRCC is made up of representatives from National Marine Fisheries Service (NMFS), USFWS, Washington Department of Fish and Wildlife (WDFW), Yakama Nation (YN), the Confederated Tribes of the Colville Reservation (CCT), Confederated Tribes of the Umatilla Reservations (CTUIR) and Grant PUD.

Grant PUD submitted the IFPOP to the FERC on March 21, 2014. FERC issued an order approving the IFPOP on March 26, 2014, and required Grant PUD to file monthly reports that document its consultation with the PRCC and resource agencies and actions taken. In addition, Grant PUD was required to include changes to the plan, meeting minutes, copies of agency correspondence, and any other documentation of consultation. Status updates can be reviewed at [Grant PUD IFPOP Status Reports](#)

Fishway Exit Passage Systems (WFEPS) were installed at Wanapum Dam on April 15 (on left-bank) and April 26 (right-bank) and were operated throughout the fish passage season. April 15, also marked the date that Grant PUD began to trap migrating spring chinook at Priest Rapids Dam and haul them to a select release point above Wanapum Dam. Trap and haul efforts were conducted until modifications to the fish ladders on Wanapum Dam were evaluated under working conditions and found to be suitable for passage. Grant PUD filed its Interim Operation Status Updates on May 1, June 6, September 12 and November 21, 2014.

In addition to modifications being made to the fish ladders at Wanapum Dam, Grant PUD supported a trap and transport effort of adult salmonids at the Priest Rapids Off-Ladder Adult Fish Trap (OLAFT). Fish were diverted into trucks at the Priest Rapids OLAFT and transported above Wanapum Dam. Trap and haul efforts were conducted until modifications to the fish ladders on Wanapum Dam were evaluated under working conditions and found to be suitable for passage. There were no bull trout encountered during the trap and transport period or during any of the fish ladder modifications at Wanapum Dam.

In preparation for a partial refill of the Wanapum Reservoir, demobilization activities begun at the right-bank Wanapum Fish Exit Passage System (WFEPS) on November 17, 2014 and consisted of shutting down two of the four of 90 horsepower pumps (to keep flow through fishway) and then removing the spiral chute and all supporting structures related to the spiral chute. After the work was completed, the right bank fishway flow was restored to provide adult fish passage. On November 18, 2014, Grant PUD began the removal of the entire WFEPS from the LB Wanapum fishway and once all infrastructure was removed, the left bank ladder remained dewatered for annual operation and maintenance activities.

The Wanapum refill was initiated on November 25, 2014 and a Wanapum Reservoir Elevation of 561.82 feet was achieved on December 1, 2014. While repairs continue, Grant PUD anticipates operating the Wanapum Reservoir within a 4 feet operating range (558 feet – 562 feet). At the time of this report, Grant PUD believes that a normal reservoir operation level of 571.5 feet will be achieved prior to juvenile salmonid outmigration (April 2015).

In regards to adult fish passage at Wanapum Dam, per Grant PUD's requirements under the USFWS BiOp for bull trout (2007) at least one fish ladder needs to be operational year-round. Currently the Wanapum right-bank Fish Ladder is fully operational and providing fish passage. The Wanapum left-bank Fish ladder is currently dewatered for typically annual O&M.

2.0 Bull Trout Observations

In 2014, three bull trout were observed passing the Priest Rapids Dam fish ladder count station between April 15 and November 15. There were no observations recorded at Wanapum Dam because the fish viewing window was inoperable during the draw down period (see Section 1.1). Table 1 displays the information related to observations made at the Priest Rapids Dam count stations in 2014. Table 2 shows the number of bull trout that use the right-bank and left-bank fish ladders at both Priest Rapids and Wanapum dams from 2007 through 2014. Figures 1 through 3 provide photographs, location and date of each bull trout observed passing the Priest Rapids Dam fish count station. No PIT-tagged bull trout were detected at the Priest Rapids Dam fish count stations in 2014.

No bull trout were observed during any phase of the Wanapum Dam incident response, juvenile bypass activities, gatewell dipping, turbine maintenance activities, fishway maintenance activities, Hanford Reach Fall Chinook Protection Program, hatchery activities, or any other activities in the Project.

Table 1 Bull trout observations at Priest Rapids Dam Fish Count Station in 2014.

Date	Time	Ladder	Number	Estimated Total Length
6/13/2014	10:48	Left	1	26
6/17/2014	7:41	Right	1	23
6/21/2014	12:20	Right	1	25

Table 2 Number of bull trout Passing Priest Rapids and Wanapum Dam's Fish Count Station's from 2007 through 2014.

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*

Note:* The fish count station at Wanapum Dam was inoperable during the draw down (see Section 1.1 for more detail).



Figure 1 A bull trout with an estimated length of 26 inches passing Priest Rapids left bank count station on June 17, 2014 at 10:48.

B11123026003 1:PR Blue Right Jun 17, 2014 7:41:42 AM PDT

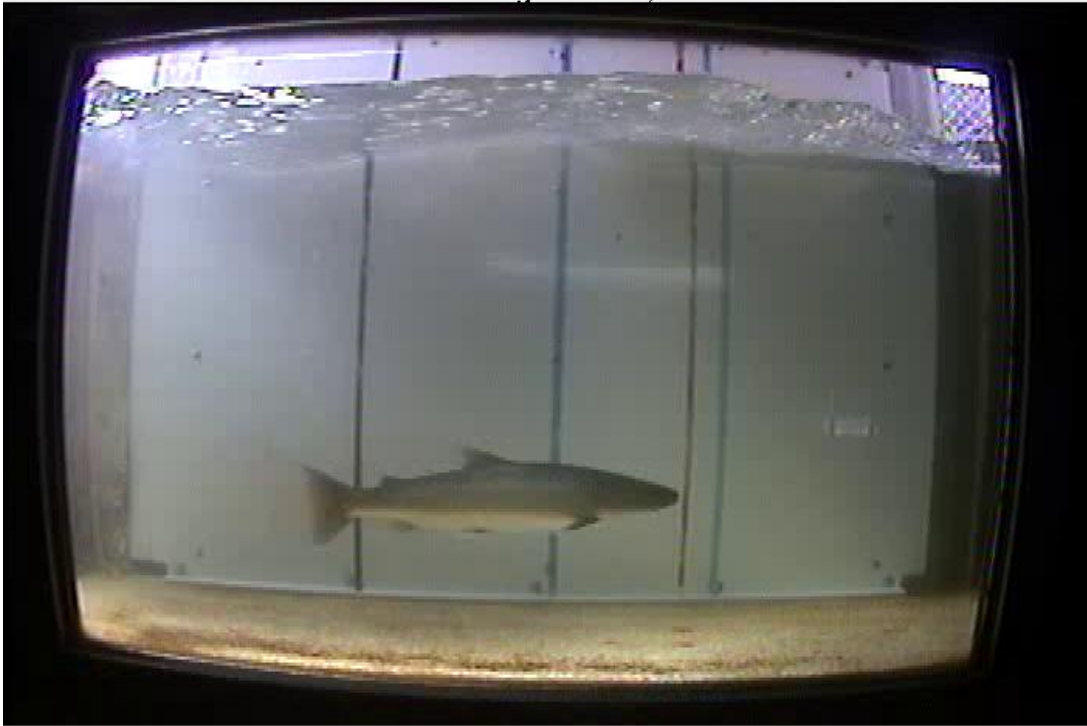


Figure 2 A bull trout with an estimated length of 23 inches passing Priest Rapids right bank count station on June 13, 2014 at 07:41.

B11123026003 1:PR Blue Right Jun 21, 2014 12:20:34 PM PDT



Figure 3 A bull trout with an estimated length of 25 inches passing Priest Rapids right bank count station on June 21, 2014 at 12:20.

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

Grant PUD monitors the White River and Nason Creek, through the YN operation of screw traps, as part of Grant PUD’s spring Chinook hatchery supplementation program. A map showing the location of the screw traps is provided in Figure 4 below. The YN operates screw traps for spring Chinook salmon and additionally records bull trout observations on the White River and Nason Creek. During screw trap operations in 2014, The YN identified four bull trout collected from Nason Creek and 13 collected from the White River (see Table 3 for more details). A length and life stage was assigned to each fish captured.

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

Nason Creek	Date	Species	Fork Length (mm)	Stage*
	3/17/2014	Bull Trout	140	SA
	4/9/2014	Bull Trout	145	SA
	5/27/2014	Bull Trout	169	SA
	7/1/2014	Bull Trout	147	SA
White River	Date	Species	Fork Length (mm)	Stage*
	4/24/2014	Bull Trout	29	J
	5/20/2014	Bull Trout	27	J
	5/21/2014	Bull Trout	30	J
	5/21/2014	Bull Trout	28	J
	5/22/2014	Bull Trout	27	J
	5/27/2014	Bull Trout	27	J
	5/27/2014	Bull Trout	29	J
	5/31/2014	Bull Trout	31	J
	6/1/2014	Bull Trout	32	J
	6/8/2014	Bull Trout	31	J
	7/29/2014	Bull Trout	47	J
	8/7/2014	Bull Trout	51	J
	10/5/2014	Bull Trout	229	SA
<p>Note: *Actual data provided to Grant PUD included varying references to life stages. A “J” is used in this table to indicate juvenile life stages. “SA” is used to denote the sub-adult life stage, consistent with previous Grant PUD reports for fish between 127 and 330 mm.</p>				

Grant PUD also conducted short-term spring Chinook acclimation activities at one location in the White River Basin between March and May 2014. Fish were acclimated in tanks on the bank at Grant PUD’s Bridge Site located at river mile 2. Water was pumped from the White River to the acclimation tanks via a “pump-basket” set-up with water being returned via outflow pipes. No bull trout were observed during the setup, operation, or demobilization of the acclimation site.

In 2014, Grant PUD contracted with the WDFW and the YN to collaboratively conduct an electrofishing study that focused on collecting and tagging juvenile spring Chinook on Nason Creek. WDFW and YN staff also captured 18 bull trout and PIT-tagged 16 of them. All bull trout

were released in close proximity to their collection site unharmed. Table 4 includes a list of all bull trout captured and PIT-tagged on Nason Creek during the electrofishing study.

Table 4 Bull trout captured and PIT tagged on Nason Creek.

Date	Stream	Capture Type	Species	Stage*	Length (mm)	Pit Tag
9/24/2014	Nason	Remote: Electofish	BLC	SA	205	3DD.003B9EC8EC
9/24/2014	Nason	Remote: Electofish	BLC	SA	218	3DD.003B9EC930
9/24/2014	Nason	Remote: Electofish	BLC	SA	177	3DD.003B9EC932
9/25/2014	Nason	Remote: Electofish	BLC	J	120	3DD.003B9EC5F7
9/25/2014	Nason	Remote: Electofish	BLC	SA	176	3DD.003B9EC5D3
9/30/2014	Nason	Remote: Electofish	BLC	SA	233	3DD.003B9EC991
10/1/2014	Nason	Remote: Electofish	BLC	SA	215	3DD.003B9EC75E
10/8/2014	Nason	Remote: Electofish	BLC	SA	168	3DD.003B9EC3F7
10/9/2014	Nason	Remote: Electofish	BLC	SA	128	3DD.003B9ECDE7
10/17/2014	Nason	Remote: Electofish	BLC	SA	212	3DD.003B9EC367
10/21/2014	Nason	Remote: Electofish	BLC	SA	143	3DD.003B9EC547
10/21/2014	Nason	Remote: Electofish	BLC	SA	187	3DD.003B9EC510
10/21/2014	Nason	Remote: Electofish	BLC	SA	163	3DD.003B9EC554
10/21/2014	Nason	Remote: Electofish	BLC	SA	175	3DD.003B9EC53D
10/21/2014	Nason	Remote: Electofish	BLC	SA	190	3DD.003B9EC515
10/22/2014	Nason	Remote: Electofish	BLC	SA	170	3DD.003B9EC4FF
Note: *Actual data provided to Grant PUD included varying references to life stages. A “J” is used in this table to indicate juvenile life stages. “SA” is used to denote the sub-adult life stage, consistent with previous Grant PUD reports for fish between 127 and 330 mm.						

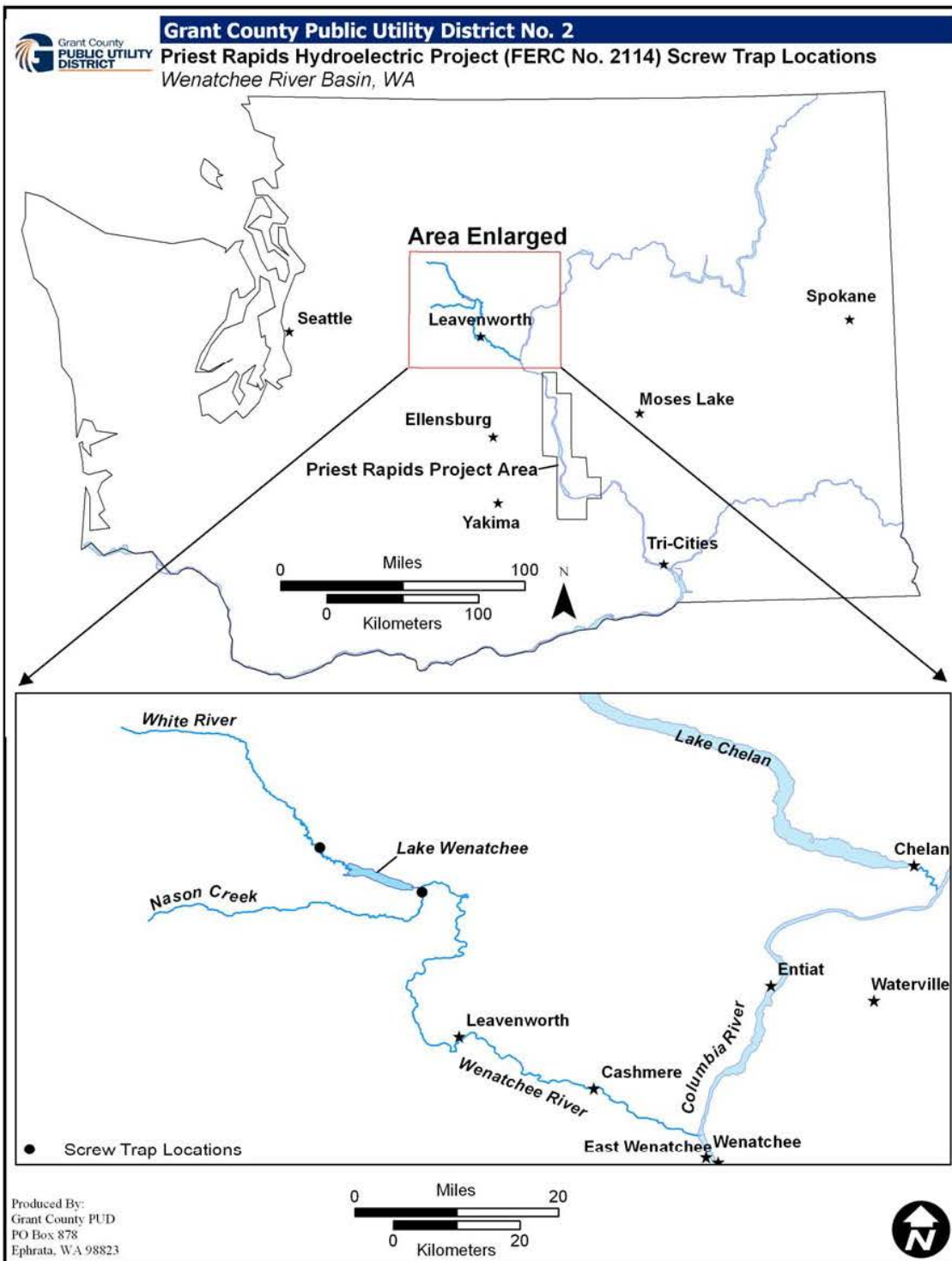


Figure 4 Screw Trap Locations on the White River and Nason Creek.

4.0 Hydrologic and Water Quality Monitoring

In the 2014 5-year Bull Trout Monitoring and Evaluation Plan, Grant PUD, in coordination with USFWS, agreed to monitor 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 2014, 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), and no lethal take was documented as a result of Grant PUD’s 2014 operations. Table 5 below provides a summary of bull trout “take” in 2014 as defined by the Biological Opinion (USFWS 2007).

Table 5 Summary table of 2014 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
White River Supplementation Program	Harass	0	0	0	17*
Nason Creek Electrofishing	Harass	0	0	0	18
	TOTAL	0	0	3	35

Note: *This number includes bull trout collection from the Nason Creek screw trap (4 of the 17 fish).

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. 2014. Summary of 2014 Annual Fish-Spill Season and Total Dissolved Gas Monitoring. Prepared for Public Utility District No. 2 of Grant County, Washington. October, 2014.
- LeMoine, J. 2014. Priest Rapids Project Bull Trout Monitoring and Evaluation Plan FERC Article 401 (a) (10) (25). Prepared for Public Utility District No. 2 of Grant County, Washington. March 2014
- 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.

Appendix A
Project Operations/Water Quality Daily Average Data.

Table A-1 Wanapum Daily Averages

Date	Wanapum Forebay			Wanapum Tailrace			
	Elevation (ft)	Temp (°C)	TDG (%SAT)	Elevation (ft)	Discharge (kcfs)	Temp (°C)	TDG (% SAT)
4/16/2014	543.51	6.4	110.0	492.59	148.3	6.5	112.6
4/17/2014	543.66	6.4	110.5	493.05	153.8	6.4	113.8
4/18/2014	543.42	6.4	110.1	492.98	159.4	6.4	113.0
4/19/2014	542.53	6.5	111.5	493.08	159.4	6.5	112.7
4/20/2014	542.66	6.6	108.4	492.58	152.2	6.6	109.8
4/21/2014	543.02	6.7	110.0	493.17	156.8	6.7	110.6
4/22/2014	543.06	6.9	109.8	492.82	155.6	6.9	112.7
4/23/2014	542.87	7.1	109.9	493.18	163.3	7.1	115.3
4/24/2014	543.03	7.2	113.8	492.77	156.0	7.3	116.9
4/25/2014	543.52	7.5	114.0	492.92	156.0	7.5	114.9
4/26/2014	543.47	7.7	114.0	493.50	168.4	7.8	117.8
4/27/2014	543.08	8.0	112.1	493.00	159.4	8.0	115.9
4/28/2014	543.24	8.1	111.0	493.40	168.8	8.1	116.5
4/29/2014	543.33	8.4	110.8	493.02	166.0	8.4	116.4
4/30/2014	543.55	8.6	112.0	493.16	164.6	8.7	116.5
5/1/2014	543.44	9.0	112.1	493.71	173.5	9.0	116.7
5/2/2014	543.45	9.3	112.1	492.81	158.2	9.3	115.5
5/3/2014	543.46	9.5	112.7	493.94	181.4	9.5	117.2
5/4/2014	543.56	9.6	112.8	494.15	179.5	9.6	117.2
5/5/2014	543.65	9.7	110.7	494.52	185.8	9.7	117.0
5/6/2014	542.87	9.8	113.6	493.61	174.7	9.8	117.4
5/7/2014	543.28	10.0	114.2	493.25	166.0	10.0	117.0
5/8/2014	544.24	9.8	114.3	494.62	185.8	10.0	117.9
5/9/2014	543.81	9.7	114.7	493.64	162.5	9.8	115.5
5/10/2014	544.16	9.9	113.2	493.37	168.1	9.9	115.8
5/11/2014	544.17	10.1	113.0	494.18	177.5	10.1	114.6
5/12/2014	543.81	10.2	112.9	493.77	174.1	10.3	116.4
5/13/2014	543.50	10.4	113.8	493.90	174.2	10.5	118.1
5/14/2014	544.08	10.6	114.9	493.79	177.7	10.7	116.7
5/15/2014	544.53	10.7	114.2	494.68	187.6	10.8	116.7
5/16/2014	544.58	10.9	114.4	494.77	190.0	11.0	117.7
5/17/2014	544.29	10.9	114.6	495.47	199.8	11.0	118.6
5/18/2014	543.84	10.9	115.6	494.53	196.1	11.0	118.2
5/19/2014	543.09	11.0	113.0	494.59	187.0	11.1	117.7
5/20/2014	543.19	11.1	114.3	494.65	196.2	11.2	119.6
5/21/2014	544.03	11.4	114.0	494.71	189.5	11.4	118.9
5/22/2014	544.05	11.6	116.4	494.77	198.7	11.6	120.1

Date	Wanapum Forebay			Wanapum Tailrace			
	Elevation (ft)	Temp (°C)	TDG (%SAT)	Elevation (ft)	Discharge (kcfs)	Temp (°C)	TDG (% SAT)
5/23/2014	544.08	11.7	115.4	494.83	199.2	11.8	120.6
5/24/2014	544.11	11.8	114.3	494.89	203.7	11.9	121.1
5/25/2014	544.14	11.9	115.4	494.95	199.5	12.0	120.2
5/26/2014	544.17	11.8	115.3	495.01	214.4	11.9	122.0
5/27/2014	544.20	11.9	114.5	495.07	200.3	12.0	120.2
5/28/2014	544.22	11.9	114.4	495.13	183.6	12.0	118.2
5/29/2014	544.25	11.9	116.4	495.19	202.9	11.8	120.0
5/30/2014	544.28	12.3	121.0	495.25	178.8	12.1	120.9
5/31/2014	544.31	12.6	119.7	495.31	188.7	12.4	121.8
6/1/2014	544.34	12.8	120.6	495.38	212.3	12.6	125.6
6/2/2014	544.37	13.0	121.3	495.44	194.9	12.8	124.0
6/3/2014	544.39	13.4	118.9	495.50	195.2	13.2	121.7
6/4/2014	544.42	13.5	116.4	495.56	196.4	13.3	120.3
6/5/2014	544.45	13.6	115.4	495.62	198.1	13.4	119.5
6/6/2014	544.48	13.7	115.5	495.68	192.9	13.5	118.7
6/7/2014	544.51	13.9	114.4	495.74	170.5	13.7	114.5
6/8/2014	544.54	13.9	113.7	495.80	172.6	13.8	115.5
6/9/2014	544.57	14.1	112.7	495.86	179.2	13.9	115.9
6/10/2014	544.59	14.0	112.2	495.92	168.3	13.8	113.9
6/11/2014	544.62	13.9	113.3	495.98	161.0	13.8	113.2
6/12/2014	544.65	14.2	114.8	496.04	140.5	14.0	114.1
6/13/2014	544.68	14.1	109.9	496.10	143.6	13.9	110.6
6/14/2014	544.71	14.0	108.8	496.16	124.7	13.8	108.9
6/15/2014	544.74	14.0	110.5	496.22	119.1	13.9	110.1
6/16/2014	544.76	13.8	109.1	496.28	132.1	13.6	109.0
6/17/2014	544.79	13.6	110.9	496.34	153.6	13.4	110.6
6/18/2014	544.82	13.9	112.0	496.40	155.0	13.7	111.9
6/19/2014	544.85	14.0	113.8	496.46	188.8	13.8	117.1
6/20/2014	544.88	14.2	113.7	496.52	180.3	14.1	117.6
6/21/2014	544.91	14.6	113.9	496.58	194.4	14.4	117.6
6/22/2014	544.94	14.8	115.4	496.64	191.4	14.5	119.0
6/23/2014	544.96	15.2	115.6	496.70	196.4	15.0	119.2
6/24/2014	544.99	15.3	114.3	496.76	188.1	15.2	117.9
6/25/2014	545.02	15.4	116.2	496.82	188.9	15.2	118.7
6/26/2014	545.05	15.2	115.2	496.88	191.7	15.1	117.9
6/27/2014	545.08	15.3	113.9	496.94	189.3	15.1	117.3
6/28/2014	545.11	15.5	113.6	497.00	186.2	15.4	117.5
6/29/2014	545.13	15.4	112.2	497.06	200.7	15.3	117.6
6/30/2014	545.16	15.6	112.9	497.12	183.1	15.4	114.6

Date	Wanapum Forebay			Wanapum Tailrace			
	Elevation (ft)	Temp (°C)	TDG (%SAT)	Elevation (ft)	Discharge (kcfs)	Temp (°C)	TDG (% SAT)
7/1/2014	545.19	15.9	114.8	497.18	201.1	15.7	119.0
7/2/2014	545.22	16.0	117.4	497.24	193.1	15.8	120.7
7/3/2014	545.25	16.0	115.2	497.30	194.2	15.8	120.0
7/4/2014	545.28	15.9	115.1	497.36	177.7	15.7	117.5
7/5/2014	545.31	16.0	113.6	497.42	151.9	15.8	113.2
7/6/2014	545.33	16.4	113.1	497.48	171.6	16.3	115.1
7/7/2014	545.36	16.8	112.9	497.54	179.1	16.7	115.3
7/8/2014	545.39	17.2	114.2	497.60	154.3	16.9	113.6
7/9/2014	545.42	17.4	113.0	497.66	149.7	17.1	112.8
7/10/2014	545.45	17.2	112.4	497.72	159.1	17.0	112.7
7/11/2014	545.48	17.4	113.2	497.78	154.4	17.1	112.7
7/12/2014	545.50	17.3	113.1	497.84	161.2	17.1	113.3
7/13/2014	545.53	17.2	113.5	497.90	143.1	17.1	112.9
7/14/2014	545.56	17.6	113.2	497.96	138.9	17.2	112.6
7/15/2014	545.59	17.7	114.1	498.02	158.4	17.3	113.5
7/16/2014	545.62	17.9	114.5	498.08	156.5	17.5	114.2
7/17/2014	545.65	18.0	111.7	498.14	142.6	17.8	111.7
7/18/2014	545.68	17.9	109.8	498.20	140.6	17.8	109.8
7/19/2014	545.70	17.9	109.7	498.26	137.2	17.7	109.7
7/20/2014	545.73	18.0	110.3	498.32	130.7	17.8	109.7
7/21/2014	545.76	17.8	108.6	498.38	140.9	17.6	108.3
7/22/2014	545.79	17.9	109.8	498.44	130.2	17.7	109.0
7/23/2014	545.82	17.7	110.7	498.50	144.2	17.6	110.1
7/24/2014	545.85	17.5	109.8	498.56	149.6	17.4	110.3
7/25/2014	545.87	17.5	110.4	498.62	167.4	17.3	110.8
7/26/2014	545.90	17.6	112.4	498.68	151.1	17.4	111.2
7/27/2014	545.93	18.1	111.9	498.74	140.4	17.8	110.5
7/28/2014	545.96	18.5	112.6	498.80	143.8	18.3	111.7
7/29/2014	545.99	19.2	112.1	498.86	146.2	18.8	110.8
7/30/2014	546.02	19.5	111.7	498.92	130.5	19.1	N/A
7/31/2014	546.05	19.4	111.6	498.98	136.5	19.2	N/A
8/1/2014	546.07	19.4	111.9	499.04	137.7	19.3	N/A
8/2/2014	546.10	19.6	111.7	499.10	123.6	19.4	N/A
8/3/2014	546.13	19.9	111.0	499.16	116.0	19.5	N/A
8/4/2014	546.16	20.0	111.2	499.22	117.1	19.6	N/A
8/5/2014	546.19	19.9	109.7	499.28	122.3	19.7	N/A
8/6/2014	546.22	19.8	107.7	499.34	132.0	19.7	N/A
8/7/2014	546.24	19.9	108.4	499.40	135.0	19.7	N/A
8/8/2014	546.27	19.7	107.1	499.46	126.4	19.6	109.2

Date	Wanapum Forebay			Wanapum Tailrace			
	Elevation (ft)	Temp (°C)	TDG (%SAT)	Elevation (ft)	Discharge (kcfs)	Temp (°C)	TDG (% SAT)
8/9/2014	546.30	19.9	108.5	499.52	126.2	19.6	109.2
8/10/2014	546.33	19.9	110.0	499.58	122.8	19.6	110.8
8/11/2014	546.36	19.9	110.3	499.64	127.1	19.7	110.5
8/12/2014	546.39	20.0	110.4	499.70	119.6	19.9	110.3
8/13/2014	546.42	20.1	108.4	499.76	117.7	20.0	109.4
8/14/2014	546.44	20.2	107.6	499.82	115.7	20.1	109.3
8/15/2014	546.47	20.2	108.1	499.88	109.9	20.0	109.0
8/16/2014	546.50	20.1	107.0	499.94	96.3	19.9	108.5
8/17/2014	546.53	20.5	107.9	500.00	94.3	20.0	109.3
8/18/2014	546.56	20.2	110.1	500.06	118.1	20.1	111.1
8/19/2014	546.59	20.3	109.2	500.12	125.3	20.2	110.5
8/20/2014	546.61	20.2	108.1	500.18	114.2	20.1	109.7
8/21/2014	546.64	20.4	108.2	500.24	108.0	20.3	113.6
8/22/2014	546.67	20.3	106.9	500.30	108.3	20.2	113.2
8/23/2014	546.70	20.3	106.9	500.36	106.7	20.1	112.8
8/24/2014	546.73	20.2	107.1	500.42	92.4	20.1	114.1
8/25/2014	546.76	20.4	108.2	500.48	100.4	20.2	113.7
8/26/2014	546.79	20.3	108.5	500.54	119.4	20.1	113.6
8/27/2014	546.81	20.2	104.7	500.60	121.3	20.1	110.3
8/28/2014	546.84	20.1	102.8	500.66	115.3	20.1	106.4
8/29/2014	546.87	20.1	103.1	500.72	99.6	20.0	103.9
8/30/2014	546.90	19.8	102.8	500.78	96.2	19.7	103.5
8/31/2014	546.93	19.4	101.5	500.84	91.1	19.4	102.3
9/1/2014	546.96	19.4	102.1	500.90	75.0	19.2	102.4
9/2/2014	546.98	19.3	102.5	500.96	87.5	19.3	103.5
9/3/2014	547.01	19.3	101.3	501.02	81.3	19.2	102.1
9/4/2014	547.04	19.6	103.2	501.08	78.7	19.4	103.6
9/5/2014	547.07	19.7	105.0	501.14	71.8	19.5	106.3
9/6/2014	547.10	19.8	104.1	501.20	78.7	19.6	104.3
9/7/2014	547.13			501.26			
9/8/2014	547.16	19.5	104.0	501.32	61.1	N/A	N/A
9/9/2014	547.18	19.4	103.6	501.38	55.7	N/A	N/A
9/10/2014	547.21	19.5	104.9	501.44	73.0	19.4	105.7
9/11/2014	547.24	19.2	103.2	501.50	62.3	19.1	104.9
9/12/2014	547.27	19.1	104.1	501.56	63.6	18.9	105.8
9/13/2014	547.30	19.1	104.4	501.62	59.3	18.8	105.8
9/14/2014	547.33	19.0	104.2	501.68	47.2	18.8	105.7
9/15/2014	547.35	19.0	105.6	501.74	65.0	18.7	106.9
9/16/2014	547.38	19.0	108.4	501.80	77.1	18.8	109.6

Date	Wanapum Forebay			Wanapum Tailrace			
	Elevation (ft)	Temp (°C)	TDG (%SAT)	Elevation (ft)	Discharge (kcfs)	Temp (°C)	TDG (% SAT)
9/17/2014	547.41	18.9	107.8	501.86	72.0	18.8	108.6
9/18/2014	547.44	18.8	103.1	501.92	52.9	18.7	105.8
9/19/2014	547.47	18.8	100.8	501.98	59.8	18.7	103.0
9/20/2014	547.50	19.2	102.9	502.04	70.3	19.0	103.9
9/21/2014	547.53	19.5	106.4	502.10	67.9	19.3	107.3
9/22/2014	547.55	19.5	105.6	502.16	72.6	19.3	106.6
9/23/2014	547.58	19.4	104.3	502.22	72.6	19.3	105.5
9/24/2014	547.61	19.3	103.5	502.28	68.5	19.2	104.7
9/25/2014	547.64	19.0	102.4	502.34	71.4	19.0	103.9
9/26/2014	547.67	19.0	102.6	502.40	68.7	18.9	103.4
9/27/2014	547.70	19.0	102.4	502.46	71.0	18.9	103.7
9/28/2014	547.72	19.1	102.8	502.52	66.5	19.0	103.5
9/29/2014	547.75	18.9	102.2	502.58	70.0	18.8	103.3
9/30/2014	547.78	18.3	100.3	502.64	55.7	18.3	101.1
10/1/2014	547.81	18.1	100.5	502.70	59.2	18.0	101.1
10/2/2014	547.84	18.3	101.7	502.76	74.2	18.1	101.5
10/3/2014	547.87	18.3	104.5	502.82	78.1	18.2	105.1
10/4/2014	547.90	18.3	103.7	502.88	60.5	18.1	104.0
10/5/2014	547.92	18.3	103.4	502.94	72.4	18.1	102.9
10/6/2014	547.95	18.3	103.3	503.00	79.7	18.1	103.7
10/7/2014	547.98	18.3	105.6	503.06	85.4	18.2	105.5
10/8/2014	548.01	18.4	103.6	503.12	74.0	18.3	103.9
10/9/2014	548.04	18.4	102.8	503.18	74.4	18.3	102.5
10/10/2014	548.07	18.3	102.1	503.24	72.5	18.2	102.3
10/11/2014	548.09	18.0	101.4	503.30	54.3	N/A	N/A
10/12/2014	548.12	17.6	99.7	503.36	58.2	N/A	N/A
10/13/2014	548.15	17.7	102.8	503.42	77.9	17.8	103.2
10/14/2014	548.18	17.7	106.9	503.48	74.7	17.7	106.5
10/15/2014	548.21	17.5	103.7	503.54	77.9	17.5	104.9
10/16/2014	548.24	17.3	101.1	503.60	76.2	17.3	101.3
10/17/2014	548.27	17.1	100.7	503.66	66.9	17.1	101.1
10/18/2014	548.29	17.1	101.0	503.72	59.5	17.1	101.3
10/19/2014	548.32	17.1	101.4	503.78	50.1	17.0	102.0
10/20/2014	548.35	16.9	102.4	503.84	75.5	16.9	103.3
10/21/2014	548.38	16.7	104.3	503.90	73.9	16.7	104.8
10/22/2014	548.41	16.6	105.4	503.96	57.1	16.6	105.6
10/23/2014	548.44	16.4	100.4	504.02	70.5	16.4	101.2
10/24/2014	548.46	16.2	101.3	504.08	73.2	16.1	101.4
10/25/2014	548.49	16.0	103.8	504.14	70.3	15.9	103.9

Date	Wanapum Forebay			Wanapum Tailrace			
	Elevation (ft)	Temp (°C)	TDG (%SAT)	Elevation (ft)	Discharge (kcfs)	Temp (°C)	TDG (% SAT)
10/26/2014	548.52	15.8	102.3	504.20	56.8	15.8	102.5
10/27/2014	548.55	15.4	98.8	504.26	78.1	15.3	99.4
10/28/2014	548.58	15.2	102.8	504.32	91.5	15.2	102.7
10/29/2014	548.61	15.1	102.6	504.38	75.4	15.0	102.5
10/30/2014	548.64	15.2	100.3	504.44	95.0	15.2	100.5
10/31/2014	548.66	15.0	101.4	504.50	87.0	15.0	101.0
11/1/2014	548.69	14.8	99.0	504.56	81.1	14.8	99.6
11/2/2014	548.72	14.3	97.8	504.62	54.6	14.3	98.9
11/3/2014	548.75	14.3	97.4	504.68	73.1	14.3	98.4
11/4/2014	548.78	14.4	100.7	504.74	92.0	14.4	101.1
11/5/2014	548.81	14.4	101.0	504.80	84.3	14.4	101.3
11/6/2014	548.83	14.6	100.0	504.86	94.5	14.6	100.3
11/7/2014	548.86	14.3	97.6	504.92	91.0	14.3	98.0
11/8/2014	548.89	14.2	97.6	504.98	92.4	14.2	98.0
11/9/2014	548.92	14.1	98.9	505.05	89.7	14.1	99.2
11/10/2014	548.95	14.0	97.4	505.11	89.3	14.0	97.9
11/11/2014	548.98	13.4	96.1	505.17	89.2	13.5	96.6
11/12/2014	549.01	12.8	96.1	505.23	96.9	12.8	99.0
11/13/2014	549.03	12.4	96.8	505.29	122.0	12.4	101.8
11/14/2014	549.06	12.4	96.5	505.35	114.2	12.3	99.4
11/15/2014	549.09	12.0	95.1	505.41	104.5	12.0	96.8

Table A-2 Priest Rapids Daily Averages

Date	Priest Rapids Forebay			Priest Rapids Tailrace			
	Elevation (ft)	Temp (°C)	TDG (%SAT)	Elevation (ft)	Discharge (kcfs)	Temp (°C)	TDG (% SAT)
4/16/2014	486.42	6.7	109.6	412.07	158.6	6.9	111.9
4/17/2014	486.89	6.5	112.8	412.74	166.8	6.8	113.6
4/18/2014	485.63	6.5	112.5	412.94	177.1	6.7	113.4
4/19/2014	484.80	6.5	111.6	412.41	170.2	6.8	112.9
4/20/2014	484.35	6.6	110.7	411.90	160.8	6.9	112.1
4/21/2014	485.42	6.8	110.5	412.26	167.6	7.0	111.5
4/22/2014	485.50	6.9	110.7	411.93	165.8	7.2	113.0
4/23/2014	485.62	7.1	113.5	412.44	175.5	7.3	114.7
4/24/2014	485.48	7.2	114.7	411.89	167.5	7.4	115.4
4/25/2014	485.55	7.4	115.4	411.49	159.7	7.5	115.5
4/26/2014	486.38	7.6	115.0	412.54	179.9	7.7	116.3
4/27/2014	486.09	7.9	115.3	412.10	169.0	8.0	115.9
4/28/2014	485.94	8.1	114.5	413.04	184.0	8.2	115.6
4/29/2014	485.22	8.3	115.6	412.48	171.8	8.4	115.3
4/30/2014	485.73	8.6	116.3	412.32	175.0	8.7	116.6
5/1/2014	485.72	8.9	117.6	413.15	188.0	9.0	117.9
5/2/2014	485.05	9.3	116.2	412.61	173.6	9.4	116.2
5/3/2014	485.41	9.6	115.0	413.34	189.9	9.7	116.9
5/4/2014	486.17	9.6	115.0	413.42	190.8	9.7	117.0
5/5/2014	486.41	9.7	115.7	414.20	204.0	9.8	117.4
5/6/2014	484.79	9.7	115.4	413.78	189.6	9.9	115.9
5/7/2014	485.81	10.0	115.5	412.46	171.3	10.1	115.0
5/8/2014	486.89	10.1	117.1	413.69	197.5	10.2	118.3
5/9/2014	486.10	9.9	116.0	413.00	177.8	10.0	116.2
5/10/2014	485.82	9.8	113.4	412.56	173.9	10.0	114.4
5/11/2014	486.41	10.0	113.2	413.60	190.2	10.2	116.1
5/12/2014	486.11	10.3	114.8	413.39	183.3	10.5	114.7
5/13/2014	485.78	10.5	117.9	413.61	186.2	10.7	116.5
5/14/2014	485.59	10.7	117.4	413.18	182.6	10.9	117.0
5/15/2014	486.86	10.9	116.3	413.99	199.6	11.1	117.8
5/16/2014	487.19	11.1	116.1	413.53	198.1	11.2	119.0
5/17/2014	487.33	11.1	115.7	415.06	221.8	11.3	119.3
5/18/2014	486.93	11.1	116.8	414.59	214.6	11.2	119.7
5/19/2014	485.92	11.1	115.2	414.50	205.6	11.2	117.8
5/20/2014	485.51	11.2	117.9	415.16	216.7	11.4	119.0
5/21/2014	485.44	11.4	117.1	414.22	201.7	11.6	118.9
5/22/2014	486.37	11.7	118.3	414.96	214.8	11.8	119.1
5/23/2014	486.49	11.9	118.7	415.02	213.5	12.0	119.6

Date	Priest Rapids Forebay			Priest Rapids Tailrace			
	Elevation (ft)	Temp (°C)	TDG (%SAT)	Elevation (ft)	Discharge (kcfs)	Temp (°C)	TDG (% SAT)
5/24/2014	486.28	11.9	119.5	415.80	224.3	12.0	119.7
5/25/2014	486.42	12.0	118.3	414.81	212.2	12.2	119.3
5/26/2014	486.65	12.0	120.5	415.65	218.8	12.2	120.1
5/27/2014	486.10	12.0	118.5	415.32	220.7	12.2	119.7
5/28/2014	485.37	11.9	116.3	414.25	199.9	12.0	117.4
5/29/2014	485.11	12.0	117.0	415.68	224.7	12.1	118.7
5/30/2014	484.14	12.3	121.3	414.67	200.0	12.3	119.4
5/31/2014	485.39	12.7	119.8	413.39	192.6	12.8	119.5
6/1/2014	486.93	12.9	122.4	416.19	237.0	13.0	121.4
6/2/2014	485.14	13.2	125.6	416.31	228.2	13.2	122.8
6/3/2014	485.01	13.5	119.3	414.15	205.2	13.6	119.6
6/4/2014	485.32	13.7	118.4	415.12	214.6	13.8	119.3
6/5/2014	485.62	13.8	117.6	414.84	213.2	13.9	118.8
6/6/2014	484.66	13.8	119.0	415.25	212.0	13.9	118.9
6/7/2014	484.84	13.9	114.5	413.38	182.3	14.0	114.4
6/8/2014	485.44	14.2	113.8	413.26	182.8	14.2	114.2
6/9/2014	485.41	14.3	113.5	413.65	193.5	14.4	115.8
6/10/2014	484.97	14.3	112.6	413.33	181.6	14.3	113.5
6/11/2014	484.87	14.3	111.4	412.68	171.7	14.3	111.5
6/12/2014	484.58	14.3	113.5	411.75	157.9	14.4	113.5
6/13/2014	483.82	14.3	110.7	410.64	142.1	14.3	111.2
6/14/2014	484.42	14.1	107.1	410.38	138.3	14.1	109.2
6/15/2014	484.47	14.2	107.7	409.09	123.0	14.2	109.8
6/16/2014	485.26	14.0	107.3	409.81	135.7	14.0	109.7
6/17/2014	485.60	13.8	107.6	412.07	165.6	13.8	109.7
6/18/2014	484.89	14.0	109.8	412.37	167.5	13.9	110.9
6/19/2014	486.94	14.2	114.2	414.10	203.4	14.3	116.4
6/20/2014	486.49	14.4	115.3	413.55	190.9	14.4	117.0
6/21/2014	487.31	14.5	115.2	414.45	208.5	14.6	117.3
6/22/2014	487.26	14.9	118.2	414.34	204.9	14.9	118.5
6/23/2014	487.26	15.2	118.2	414.96	213.7	15.2	118.9
6/24/2014	486.59	15.6	116.0	414.34	204.3	15.6	117.5
6/25/2014	486.94	15.6	116.9	413.98	198.0	15.6	117.4
6/26/2014	487.55	15.5	117.8	414.41	205.9	15.6	118.3
6/27/2014	487.40	15.4	115.4	414.32	203.7	15.4	116.9
6/28/2014	487.61	15.7	115.6	413.68	196.7	15.6	117.3
6/29/2014	487.33	15.7	114.9	415.24	223.1	15.8	118.2
6/30/2014	486.98	15.7	114.3	414.08	197.1	15.7	115.7
7/1/2014	486.77	16.0	116.2	415.05	215.6	16.1	118.3

Date	Priest Rapids Forebay			Priest Rapids Tailrace			
	Elevation (ft)	Temp (°C)	TDG (%SAT)	Elevation (ft)	Discharge (kcfs)	Temp (°C)	TDG (% SAT)
7/2/2014	487.17	16.1	119.7	414.73	208.8	16.2	119.0
7/3/2014	487.42	16.2	116.5	414.53	208.0	16.2	117.9
7/4/2014	487.33	16.1	116.2	413.42	192.9	16.1	117.4
7/5/2014	487.54	16.3	112.4	411.54	159.2	16.3	113.8
7/6/2014	487.43	16.5	113.6	413.35	186.1	16.5	116.2
7/7/2014	466.81	17.0	113.3	413.55	185.3	17.0	115.7
7/8/2014	487.14	17.4	113.3	412.13	166.2	17.3	114.4
7/9/2014	487.11	17.6	111.2	411.51	157.2	17.5	113.4
7/10/2014	487.46	17.5	110.3	412.25	170.0	17.5	112.8
7/11/2014	487.38	17.5	111.2	412.00	164.3	17.5	113.3
7/12/2014	487.28	17.7	111.8	412.62	176.4	17.7	114.0
7/13/2014	486.45	17.6	111.3	411.52	155.9	17.6	113.5
7/14/2014	486.67	17.7	110.9	410.16	140.6	17.7	113.1
7/15/2014	487.74	17.9	111.7	412.11	168.8	17.9	114.2
7/16/2014	487.35	18.0	111.6	412.33	170.9	18.0	114.3
7/17/2014	487.12	18.1	110.1	411.06	151.4	18.1	113.0
7/18/2014	486.80	18.2	106.6	411.01	150.3	18.1	110.4
7/19/2014	486.83	18.3	106.5	410.52	144.2	18.2	110.5
7/20/2014	487.16	18.2	107.9	409.88	135.9	18.2	111.4
7/21/2014	486.62	18.0	106.1	411.07	152.9	18.0	110.2
7/22/2014	486.80	18.1	107.1	409.62	132.5	18.0	111.1
7/23/2014	487.44	18.0	108.5	411.07	152.9	18.0	111.9
7/24/2014	487.71	17.7	107.6	410.97	153.8	17.7	111.5
7/25/2014	487.80	17.6	109.3	412.79	180.5	17.6	113.4
7/26/2014	487.29	17.8	109.8	411.82	162.5	17.8	112.6
7/27/2014	486.62	18.1	110.2	411.38	154.8	18.0	112.9
7/28/2014	486.31	18.5	110.2	411.09	152.2	18.4	112.9
7/29/2014	486.22	18.9	109.6	410.74	146.3	18.9	112.8
7/30/2014	486.70	19.4	108.9	410.26	140.8	19.3	112.5
7/31/2014	487.23	19.5	109.1	410.29	141.1	19.5	112.4
8/1/2014	486.95	19.7	110.0	410.82	148.0	19.6	113.1
8/2/2014	486.74	19.8	110.3	409.46	128.4	19.7	113.0
8/3/2014	486.77	19.8	109.6	408.87	121.4	19.7	113.1
8/4/2014	486.57	20.1	109.6	408.55	118.3	19.9	112.8
8/5/2014	487.27	20.1	108.4	409.19	127.2	20.0	112.5
8/6/2014	486.28	20.0	106.2	410.24	141.3	20.0	110.8
8/7/2014	486.34	19.9	106.6	410.14	137.1	19.9	110.8
8/8/2014	487.23	20.0	106.6	409.26	129.6	19.9	110.7
8/9/2014	486.87	19.8	106.0	409.97	131.5	19.8	109.4

Date	Priest Rapids Forebay			Priest Rapids Tailrace			
	Elevation (ft)	Temp (°C)	TDG (%SAT)	Elevation (ft)	Discharge (kcfs)	Temp (°C)	TDG (% SAT)
8/10/2014	486.86	20.1	109.0	409.55	126.7	19.9	111.6
8/11/2014	485.81	20.0	109.8	410.06	126.6	19.9	112.2
8/12/2014	485.54	20.0	109.4	408.75	112.9	20.0	112.0
8/13/2014	485.42	20.1	107.7	409.61	121.2	20.1	110.7
8/14/2014	484.90	20.2	107.5	408.80	116.3	20.2	110.6
8/15/2014	484.91	20.3	107.9	408.17	113.4	20.2	110.9
8/16/2014	485.74	20.5	107.4	406.33	91.8	20.2	111.5
8/17/2014	486.80	20.3	106.8	406.72	98.3	20.2	112.4
8/18/2014	485.87	20.5	108.3	408.20	116.6	20.4	112.3
8/19/2014	485.54	20.5	109.2	409.88	137.3	20.4	112.5
8/20/2014	484.48	20.4	106.8	408.65	114.0	20.3	110.0
8/21/2014	485.04	20.3	106.2	408.02	110.6	20.2	110.8
8/22/2014	484.90	20.5	110.2	407.98	111.4	20.3	112.1
8/23/2014	484.55	20.5	110.7	408.19	111.0	20.4	111.8
8/24/2014	485.25	20.5	111.5	406.14	91.2	20.4	113.2
8/25/2014	485.25	20.5	111.4	406.97	97.5	20.3	113.0
8/26/2014	485.44	20.5	111.8	409.30	128.8	20.4	113.4
8/27/2014	484.48	20.4	111.3	409.08	125.9	20.4	112.7
8/28/2014	484.10	20.5	106.8	408.71	115.4	20.4	109.3
8/29/2014	486.24	20.2	103.4	407.98	99.6	20.2	104.5
8/30/2014	486.09	20.1	101.2	407.99	99.8	20.0	102.8
8/31/2014	486.51	19.8	100.4	407.29	95.5	19.6	102.2
9/1/2014	486.78	19.4	99.8	405.82	75.5	19.3	102.0
9/2/2014	486.31	19.4	101.2	407.23	94.4	19.2	102.9
9/3/2014	485.14	19.3	100.4	405.98	79.6	19.2	102.3
9/4/2014	485.67	19.3	99.7	406.02	80.9	19.2	101.9
9/5/2014	484.61	19.5	100.9	404.86	71.0	19.5	102.5
9/6/2014	485.11	19.6	104.6	404.22	75.7	19.6	105.5
9/7/2014	485.54			402.99			
9/8/2014	486.96	19.9	102.8	403.73	57.8	19.8	105.1
9/9/2014	487.43	19.6	100.7	403.62	56.9	19.5	103.4
9/10/2014	487.44	19.3	100.4	404.77	71.9	19.2	103.1
9/11/2014	487.10	19.2	100.3	404.30	62.1	19.1	102.5
9/12/2014	485.53	19.2	102.9	405.76	76.8	19.0	104.1
9/13/2014	484.53	18.9	103.1	404.37	62.8	18.8	104.0
9/14/2014	484.05	18.9	103.2	402.89	48.3	18.9	104.4
9/15/2014	484.68	19.0	103.7	404.82	59.1	18.9	104.6
9/16/2014	485.56	18.9	105.1	405.93	79.1	18.9	105.5
9/17/2014	484.95	19.0	108.0	405.80	77.2	18.9	107.6

Date	Priest Rapids Forebay			Priest Rapids Tailrace			
	Elevation (ft)	Temp (°C)	TDG (%SAT)	Elevation (ft)	Discharge (kcfs)	Temp (°C)	TDG (% SAT)
9/18/2014	483.62	19.0	106.5	404.09	59.0	18.9	107.1
9/19/2014	484.24	18.8	102.1	402.41	45.9	18.8	103.6
9/20/2014	486.52	18.9	101.6	404.83	70.8	18.9	103.0
9/21/2014	486.56	19.1	102.5	405.04	69.7	19.1	103.4
9/22/2014	486.05	19.4	105.4	405.92	77.9	19.3	105.1
9/23/2014	485.09	19.5	105.7	405.76	77.6	19.4	105.7
9/24/2014	484.16	19.3	103.4	404.88	71.1	19.3	104.2
9/25/2014	484.02	19.2	103.1	405.40	73.3	19.1	103.3
9/26/2014	484.95	19.0	102.3	404.50	65.9	18.9	102.6
9/27/2014	485.49	19.0	102.3	405.19	72.3	18.8	102.7
9/28/2014	485.16	19.0	103.3	404.32	63.9	18.9	103.6
9/29/2014	485.79	19.1	103.0	405.50	72.7	19.0	103.9
9/30/2014	484.11	18.8	100.9	403.71	56.6	18.6	101.9
10/1/2014	485.11	18.1	99.1	403.29	53.7	18.0	100.6
10/2/2014	485.92	17.8	99.3	405.33	73.8	17.7	100.1
10/3/2014	485.80	18.0	101.0	406.28	82.2	17.8	101.0
10/4/2014	485.55	18.1	104.3	403.68	57.8	18.0	103.8
10/5/2014	486.35	18.2	104.8	405.30	71.5	18.1	105.0
10/6/2014	485.74	18.3	103.6	406.72	86.6	18.2	104.3
10/7/2014	485.04	18.3	103.5	406.86	89.2	18.3	104.1
10/8/2014	484.93	18.4	103.9	405.21	72.6	18.2	104.2
10/9/2014	484.53	18.3	103.2	406.16	80.2	18.1	103.5
10/10/2014	484.85	18.3	102.4	404.33	63.4	18.2	102.8
10/11/2014	485.51	18.2	101.5	404.25	61.2	18.1	102.3
10/12/2014	485.39	17.8	100.2	402.72	49.0	17.6	101.1
10/13/2014	486.23	17.6	101.5	406.38	84.1	17.4	101.9
10/14/2014	485.68	17.6	102.3	405.61	76.3	17.3	102.0
10/15/2014	484.28	17.5	103.5	405.49	77.0	17.3	103.2
10/16/2014	485.10	17.3	102.5	406.11	82.6	17.0	102.4
10/17/2014	482.73	17.2	101.9	404.71	64.1	17.0	101.4
10/18/2014	484.87	17.1	100.5	403.92	57.4	16.9	100.8
10/19/2014	485.79	17.0	101.0	403.00	50.6	16.8	101.5
10/20/2014	485.86	17.0	101.8	404.87	72.2	16.8	101.9
10/21/2014	484.54	16.8	101.2	406.44	82.8	16.6	101.5
10/22/2014	483.80	16.6	103.0	404.16	58.1	16.4	102.6
10/23/2014	483.93	16.4	103.3	405.22	73.3	16.2	104.5
10/24/2014	484.75	16.2	100.2	403.87	57.6	16.0	100.8
10/25/2014	485.71	16.0	101.3	406.15	82.5	15.8	101.6
10/26/2014	483.76	15.7	101.2	404.05	59.3	15.4	101.3

Date	Priest Rapids Forebay			Priest Rapids Tailrace			
	Elevation (ft)	Temp (°C)	TDG (%SAT)	Elevation (ft)	Discharge (kcfs)	Temp (°C)	TDG (% SAT)
10/27/2014	484.07	15.3	99.6	405.13	71.5	15.1	99.9
10/28/2014	485.36	15.2	99.6	406.77	90.5	15.0	100.2
10/29/2014	484.06	15.2	101.0	406.09	78.8	15.0	100.6
10/30/2014	485.63	15.0	102.8	407.16	96.8	14.8	103.1
10/31/2014	484.79	15.1	100.6	407.01	91.0	14.9	101.0
11/1/2014	485.79	14.8	100.8	406.14	84.2	14.7	101.2
11/2/2014	483.07	14.4	98.1	404.13	59.8	14.2	98.8
11/3/2014	483.07	14.2	97.9	404.44	64.0	14.0	98.4
11/4/2014	485.54	14.2	98.5	407.23	94.7	14.1	99.1
11/5/2014	486.05	14.4	99.5	406.71	89.4	14.2	99.7
11/6/2014	485.25	14.4	102.2	406.94	91.3	14.2	102.4
11/7/2014	484.75	14.5	98.7	407.59	98.2	14.3	99.3
11/8/2014	484.89	14.2	98.4	407.07	91.3	14.1	98.8
11/9/2014	484.89	14.1	99.3	407.28	95.3	13.9	99.6
11/10/2014	484.41	13.9	97.8	406.83	90.5	13.7	98.2
11/11/2014	484.90	13.6	96.5	406.82	88.7	13.3	97.1
11/12/2014	484.88	12.8	96.2	406.93	93.1	12.6	96.8
11/13/2014	486.15	12.2	100.0	409.22	124.7	11.9	104.7
11/14/2014	486.30	12.1	100.8	409.36	123.0	11.8	102.7
11/15/2014	485.05	16.7	101.8	408.16	105.7	11.7	101.1