

VIA ELECTRONIC FILING

January 31, 2014

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.2114-164
License Compliance Filing – Article 401(a)(10) and (25) – 2013 Bull Trout Monitoring and
Evaluation Annual Report**

Dear Ms. Bose,

Please find enclosed the 2013 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.

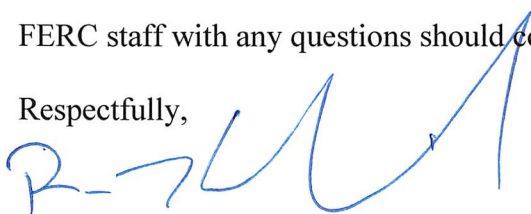
On June 4, 2009, the Federal Energy Regulatory Commission (FERC) issued an Order modifying and approving Public Utility District No.2 of Grant County, Washington's (Grant PUD's) Bull Trout Monitoring and Evaluation Plan. Under this Order, Grant PUD is required to file annually with FERC by February 1, 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 Bull Trout Monitoring Evaluation Plan 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.

This report includes monitoring results from the previous year including the number of bull trout observed or incidentally taken. Grant PUD distributed this annual report to the Priest Rapids Fish Forum on December 12, 2013 for review and comment. After a 30 day comment and review period, comments were received from the U.S. Fish and Wildlife Service; these comments are addressed in this final report and attached to the report as Appendix A, and a comment/comment response summary table (showing the agency comment and Grant PUD's response) is attached to the report as Appendix B.

Bose (BTMEP)
January 31, 2014
Page 2 of 2

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

Respectfully,



Ross Hendrick
License Compliance Manager

Enclosures: 2013 Bull Trout Monitoring and Evaluation Report

**2013 Bull Trout Monitoring and Evaluation Report for the Priest
Rapids Project**

By

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

January 2014

Executive Summary

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 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 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 presents a summary of the results from 2013; refer to the main document for additional detail.

Bull Trout Observations

In 2013 ten bull trout were observed passing the Priest Rapids Dam fish ladder count station between April 15 and November 15 and 11 were observed passing at Wanapum Dam during the same time period for a total of 21 observations. While a total of 21 bull trout were observed ascending the fish ladders at Priest Rapids and Wanapum dams, no PIT-tagged bull trout were detected in 2013 at full duplex PIT tag detectors at Priest Rapids Dam. No bull trout were observed in juvenile bypass activities, gatewell dipping, turbine maintenance activities, fishway maintenance activities, White Sturgeon Program activities, pike minnow collection activities, Hanford Reach Fall Chinook Protection Program, hatchery activities, or any other activities in the Project. During screw trap operations in 2013, 27 bull trout were collected in the White River and 2 bull trout were collected in Nason Creek. Of the 27 bull trout collected in the White River five measured greater than 60mm in fork length and four were PIT-tagged. Of the two bull trout in Nason Creek one measured over 60mm and was PIT-tagged.

Hydrologic and Water Quality Monitoring

Grant PUD statistically compared daily hydrologic and water quality data for the three year average, 2001-2003, with daily water quality data from 2013, which included the parameters of total dissolved gas (TDG), water temperature, water surface elevation and total discharge or outflow. In accordance with BTWQP, hydrologic and water quality data from 2001-2003 is used as the environmental "baseline" for which future years data would be compared.

In 2013, the three-year averages of the 2001-2003 hydrologic and water quality data were compared to 2013 daily average data using a non-parametric Mann-Whitney Rank Sum Test, $\alpha = 0.05$. Parameters tested were TDG, water temperature, water surface elevation and total discharge or outflow. At Priest Rapids Dam, there were significant differences in the water quality parameters between the three year averaged data and the 2013 data for TDG and discharge, however there were no significant difference for elevation and temperature. At Wanapum Dam, there were significant differences for TDG, discharge, and elevation, but no significant difference for temperature.

The primary reason for these differences can likely be attributed to higher than average flows throughout the mid-Columbia River in 2013, which lead to high water surface elevations, discharge, and TDG values within the Project area (when compared to the 2001-2003 average). For example, mean daily discharges during the 2013 fish-spill season were slightly higher than the 2002–2012 average (about 12 percent higher on average) over the entire fish-spill season (April 1 through August 31) (Keeler 2013). During the summer fish-spill season (June 15 through August 31), 2013 mean daily discharge values were six percent higher than the 2002-2012 average.

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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 State 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 (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 2013. 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 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 and acclimation activities. This information and 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 presents a summary of the results from Grant PUD's 2013 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

In 2013 ten bull trout were observed passing the Priest Rapids Dam fish ladder count station between April 15 and November 15 and 11 were observed passing Wanapum Dam during the same time period for a total of 21 observations. Table 1 displays the information related to bull trout observations made at Priest Rapids and Wanapum dam count stations in 2013. Table 2 shows the number of bull trout that use the westbank and eastbank fish ladders at both Priest

Rapids and Wanapum dams from 2007 through 2013. Figures 1 through 21 provide photographs, location and date of each bull trout observed passing Priest Rapids and Wanapum fish count stations. No PIT-tagged bull trout were detected at Priest Rapids Dam fish count stations in 2013. Grant PUD operated its fishways in accordance with the Priest Rapids Salmon and Steelhead Agreement and Grant PUD’s annual Fishway Operation Plan.

No bull trout were observed in juvenile bypass activities, pike minnow removal 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 Observation at the Priest Rapids Project Count Stations in 2013.

Priest Rapids Dam	Date	Time	Ladder	Number	Estimated Total Length (in)
	5/25/2013	17:58	Left	1	26
	5/31/2013	16:18	Left	1	22
	6/7/2013	12:29	Left	1	29
	6/8/2013	14:57	Left	1	26
	6/15/2013	15:33	Left	1	21
	6/15/2013	18:29	Right	1	22
	6/20/2013	14:52	Left	1	24
	6/28/2013	10:25	Left	1	21
	6/30/2013	6:17	Left	1	24
	7/29/2013	5:24	Left	1	19
Wanapum Dam	Date	Time	Ladder	Number	Estimated Total Length (in)
	4/19/2013	19:03	Left	1	27
	6/1/2013	14:12	Left	1	27
	6/4/2013	7:20	Left	1	27
	6/10/2013	8:24 / 11:29	Left	2	22 / 25
	6/13/2013	7:28	Left	1	17
	6/15/2013	6:48	Left	1	30
	6/15/2013	14:59	Right	1	15
	6/17/2013	7:49 / 14:12	Left	2	31 / 30
	6/20/2013	10:26	Left	1	21

Table 2 Number of Bull Trout Passing Priest Rapids and Wanapum dams from 2007 through 2013.

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



Figure 1 A bull trout with an estimated total length of 27 inches passing Wanapum left bank count station on April 19, 2013.

B11123026003 2:PR Green Left May 25, 2013 5:58:59 PM PDT



Figure 2 A bull trout with an estimated total length of 25 inches passing Priest Rapids left bank count station on May 25, 2013.

B11123026003 2:PR Green Left May 31, 2013 4:18:41 PM PDT



Figure 3 A bull trout with an estimated total length of 22 inches passing the Priest Rapids left bank count station on May 31, 2013.

B11132027002 1:Wan Green (left) Jun 1, 2013 2:12:52 PM PDT

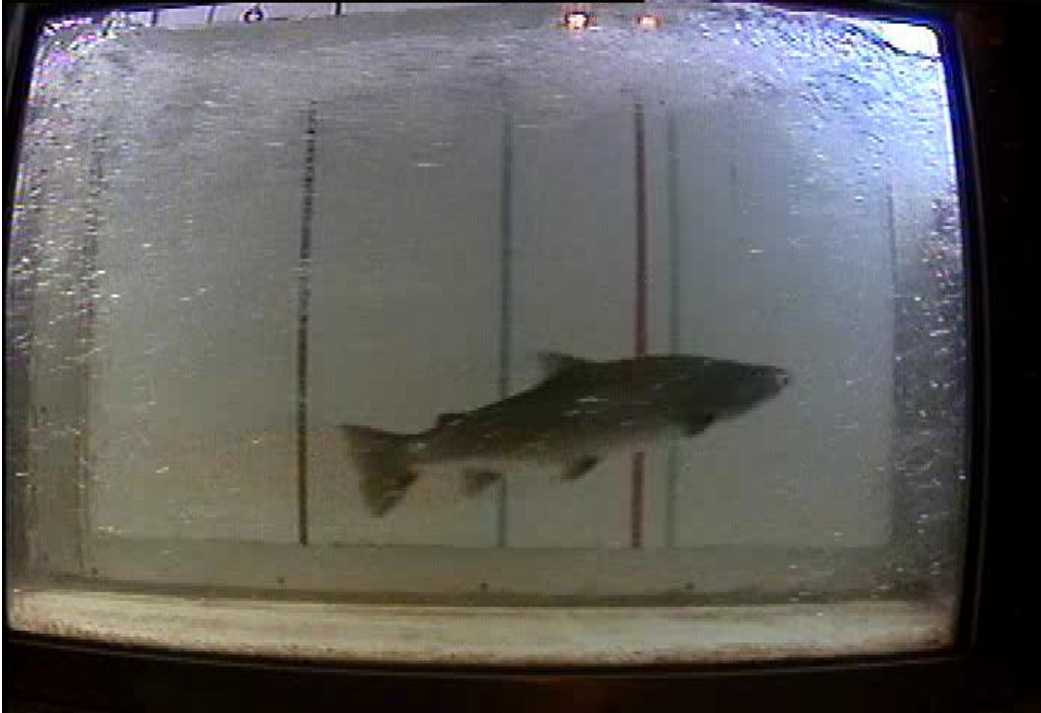


Figure 4 A bull trout with an estimated total length of 27 inches passing Wanapum left bank count station on June 1, 2013.

B11132027002 1:Wan Green (left) Jun 4, 2013 7:20:18 AM PDT



Figure 5 A bull trout with an estimated total length of 27 inches passing Wanapum left bank count station on June 4, 2013.

B11123026003 2:PR Green Left Jun 7, 2013 12:29:11 PM PDT



Figure 6 A bull trout with an estimated total length of 29 inches passing the Priest Rapids left bank count station on June 7, 2013.

B11123026003 2:PR Green Left Jun 8, 2013 2:57:14 PM PDT



Figure 7 A bull trout with an estimated total length of 26 inches passing the Priest Rapids left bank count station on June 8, 2013.

B11132027002 1:Wan Green (left) Jun 10, 2013 8:24:10 AM PDT



Figure 8 A bull trout with an estimated total length of 22 inches passing the Wanapum left bank count station on June 10, 2013.

B11132027002 1:Wan Green (left) Jun 10, 2013 11:29:32 AM PDT

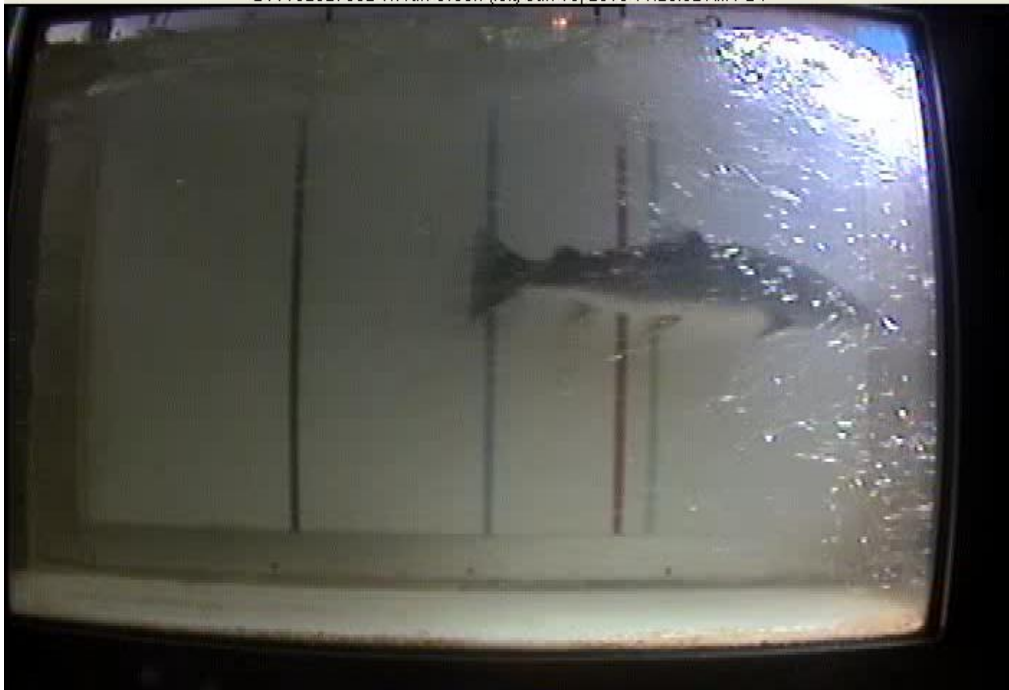


Figure 9 A bull trout with an estimated total length 25 inches passing the Wanapum left bank count station on June 10, 2013.

B11132027002 1:Wan Green (left) Jun 13, 2013 7:28:05 AM PDT

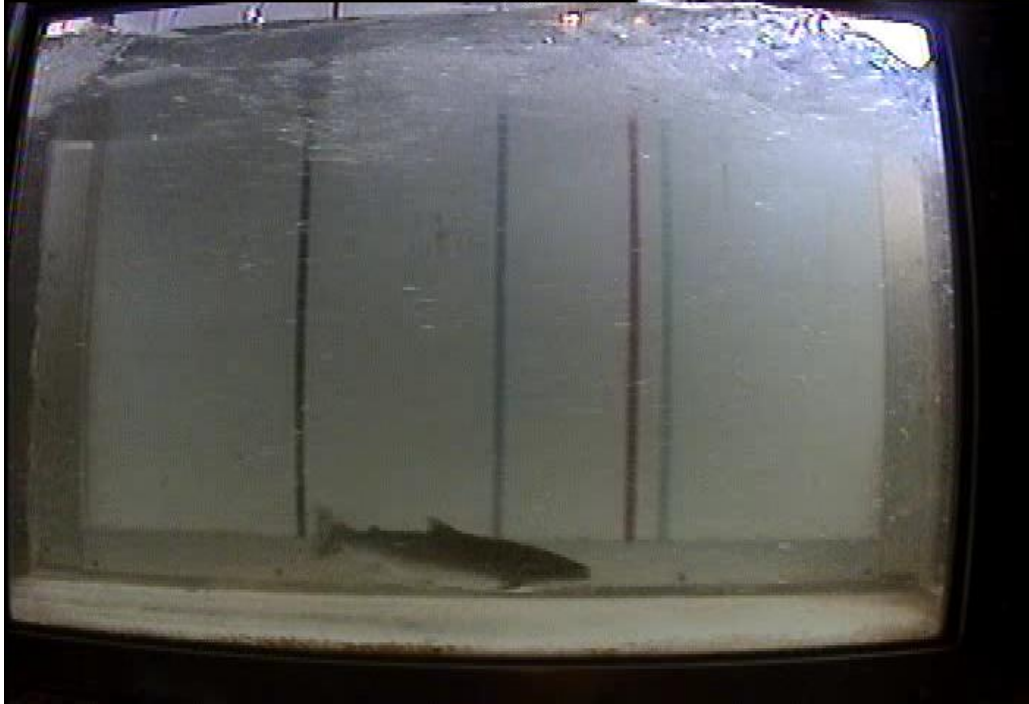


Figure 10 A bull trout with an estimated total length of 17 inches passing the Wanapum left bank count station on June 13, 2013.

B11132027002 1:Wan Green (left) Jun 15, 2013 6:48:27 AM PDT



Figure 11 A bull trout with an estimated total length of 30 inches passing the Wanapum left bank count station on June 15, 2013.



Figure 12 A bull trout with an estimated total length of 15 inches passing the Wanapum right bank count station on June 15, 2013.



Figure 13 A bull trout with an estimated total length of 21 inches passing the Priest rapids left bank count station on June 15, 2013.

B11123026003 1:PR Blue Right Jun 15, 2013 6:29:13 PM PDT

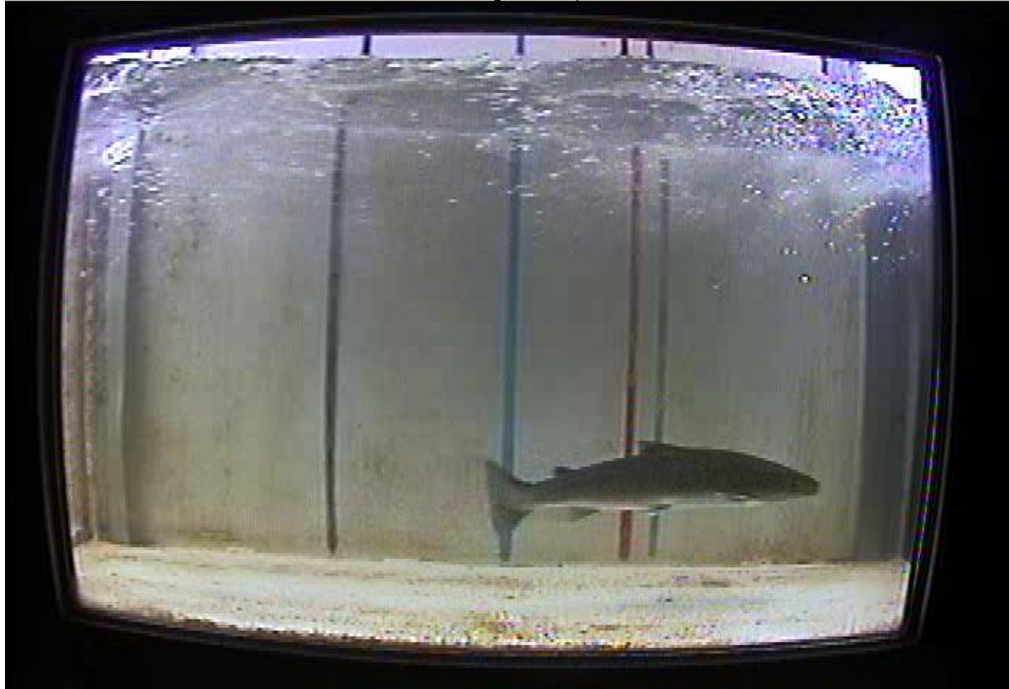


Figure 14 A bull trout with an estimated total length of 22 inches passing the Priest Rapids right bank count station on June 15, 2013.

B11132027002 1:Wan Green (left) Jun 17, 2013 7:49:42 AM PDT



Figure 15 A bull trout with an estimated total length of 31 inches passing the Wanapum left bank count station on June 17, 2013.



Figure 16 A bull trout with an estimated total length of 30 inches passing the Wanapum left bank count station on June 17, 2013.



Figure 17 A bull trout with an estimated total length of 20 inches passing the Wanapum right bank count station on June 20, 2013.

B11123026003 2:PR Green Left Jun 20, 2013 2:52:49 AM PDT



Figure 18 A bull trout with an estimated total length of 24 inches passing the Priest Rapids left bank count station on June 20, 2013.

B11123026003 2:PR Green Left Jun 28, 2013 10:25:05 AM PDT



Figure 19 A bull trout with an estimated total length of 21 inches passing the Priest Rapids left bank count station on June 28, 2013.



Figure 20 A bull trout with an estimated total length of 24 inches passing the Priest Rapids left bank count station on June 30, 2013.



Figure 21 A bull trout with an estimated total length of 19 inches passing the Priest Rapids left bank count station on July 29, 2013.

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

Grant PUD monitors screw traps on the White River and Nason Creek through the Yakama Nation as part of Grant PUD’s spring Chinook hatchery supplementation program. A map showing the location of the screw traps is provided in Figure 22. The Yakama Nation 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 2013, 27 bull trout were collected in the White River and two bull trout were collected in Nason Creek. Of the 27 bull trout collected in the White River five measured greater than 70mm in fork length and four were PIT-tagged. Of the two bull trout in Nason Creek one measured over 70mm in fork length and was PIT-tagged. Data for the individual fish tagged on the White River and Nason Creek is provided in Table 3.

Through on-going discussions related to the effects of sampling and tagging bull trout incidentally through regional hatcher monitoring programs Grant PUD and the USFWS have agreed to postpone future tagging and DNA sampling activities during screw trap operation on the White River and Nason Creek. This will help minimize the potential direct and indirect effects associated with the handling and tagging of bull trout. If a future need for DNA sampling and tagging presents itself, both Grant PUD and the USFWS will reassess if tagging and sampling is warranted (see appendix A).

In 2013, Grant PUD conducted fish collection activities periodically during the construction of the Nason Creek Acclimation Facility (NCAF) in accordance with the applicable terms and conditions of the various permits and authorizations for the project, including the USFWS Bull Trout Biological Opinion for the NCAF construction project (NCAF BiOp; USFWS 2012). In-water work was conducted from July 1 through September 15 of 2013. Fish collection and recovery efforts were conducted with an electrofishing backpack shocker by Blue Leaf Environmental staff and Grant PUD staff conducting fish collection with dip nets and beach seines. All fish were identified, counted and released in a safe location on site. No bull trout were encountered in any phase of the fish collection efforts. A project completion report, which will include details on the methods, timing, and number of fish observed and/or recovered and released for this project will be provided to USFWS Permitting staff, in accordance with the NCAF BiOp, upon completion of the NCAF (anticipated in the spring of 2014).

Grant PUD also conducted short-term spring Chinook acclimation activities at one location in the White River Basin between March and May, 2013. Fish were acclimated in tanks on the bank at Grant PUD’s Bridge Site (river mile (RM) 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 (see Section 4.2 for description of water quality monitoring activities during the White River acclimation activities).

Table 3 PIT tag codes and data for Nason Creek and White River screw trap

Location	Date Tagged	Fork Length (mm)	Weight (g)	PIT-tag code
White River	8/4/2013	119	14.1	3D9.1C2DAC6601
White River	9/26/2013	213	97	3D9.1C2D7D1BC1
White River	10/31/2013	150	29	3D9.1C2D7D39CB
White River	11/2/2013	216	87.9	3D9.1C2D7D5EEA

Nason Creek	11/14/2013	268	192.8	384.3B239AC9B2
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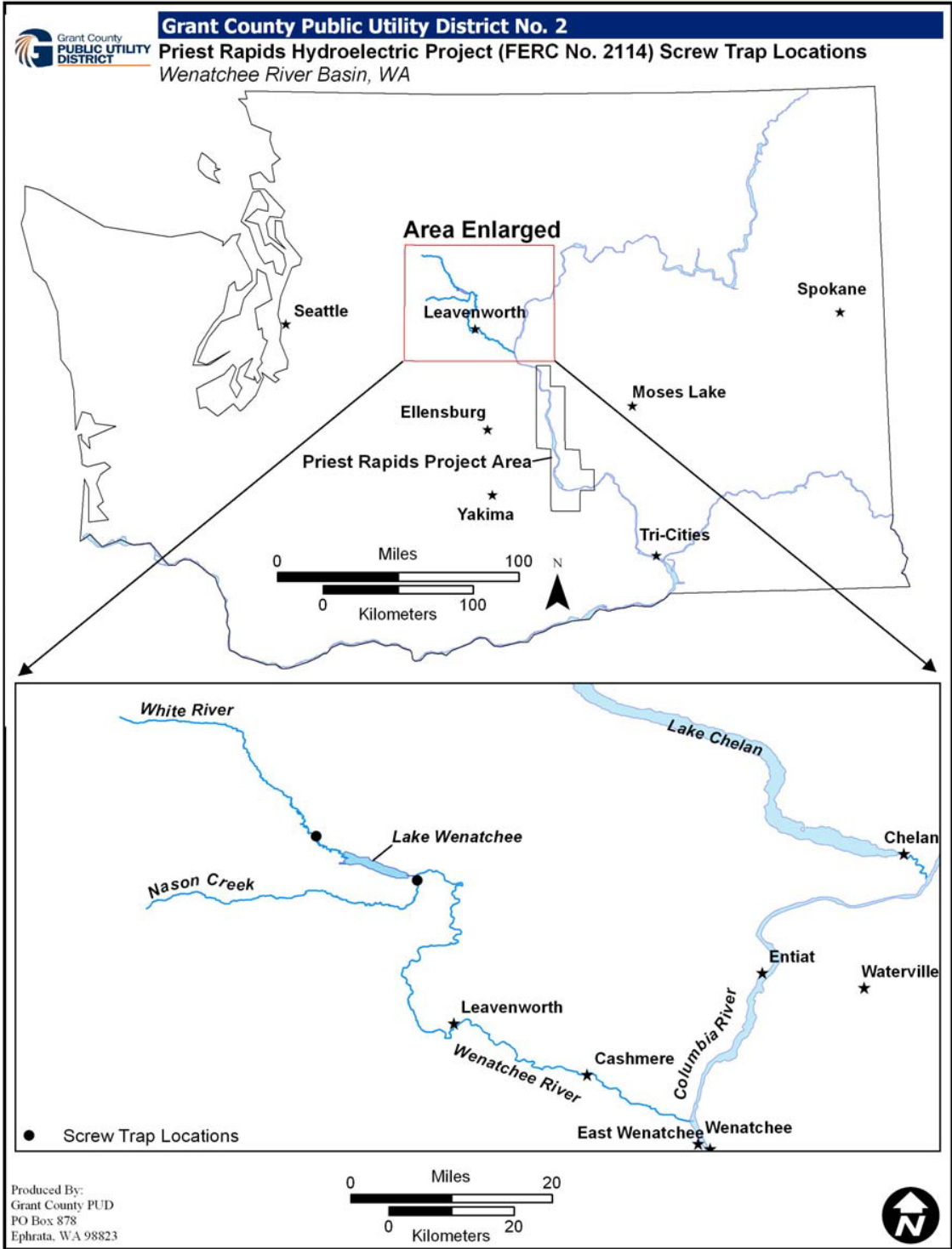


Figure 22 Screw Trap Location on White River and Nason Creek.

4.0 Hydrologic and Water Quality Monitoring

The following section presents a summary of the 2013 bull trout hydrologic and water quality evaluation.

4.1 Water Quality Evaluation

Grant PUD statistically compared daily hydrologic and water quality data for the three year average, 2001-2003, with daily hydrologic water quality data from 2013. In accordance with the BTWQP, the hydrologic and water quality data from 2001-2003 is used as the environmental “baseline” for which future years (e.g. 2013) data would be compared. This comparison is being made due to available bull trout data collected from 2001-2003 (BioAnalysts 2002, 2003 and 2004), which demonstrated through a bull trout telemetry study that the Project, although rarely frequented by bull trout, appeared to have no measurable impact on movement or on any life stage of bull trout. Although specific hydrologic and water quality data from the Project area were not collected or analyzed as part of the BioAnalysts studies, this data from 2001-2003 were selected as the environmental “baseline” based on the assumption that hydrologic and water quality data from 2001-2003 were suitable for bull trout, based on the results of the BioAnalysts studies (2002, 2003, and 2004). Thus, in accordance with the BTWQP, if hydrologic and/or water quality data collected in a given year (e.g. 2013) were significantly different from the 2001-2003 data, additional evaluations could be assessed (if feasible) as to potential Project related impacts upon bull trout and subsequent mitigation measures. The water quality parameters under evaluation were total dissolved gas (TDG), temperature, water level elevation and total discharge or outflow. The water quality data was taken from Priest Rapids and Wanapum dam fixed site monitoring stations, in accordance with Grant PUD’s fixed-site water quality monitoring program (Hendrick 2009). The hydrologic and water quality parameters were obtained from the Enterprise Data Server (EDS) at Grant PUD and the Columbia River DART (Data Access in Real Time) website <http://www.cbr.washington.edu/dart>. In accordance with the BTWQP, hydrologic and water quality data from May 1 through October 31 was evaluated.

In 2013, the three-year averages of the 2001-2003 hydrologic and water quality data were compared to 2013 daily average data. SigmaStat 3.5 was used to conduct the statistical analyses. Data normality tests were conducted on each set of data in order to determine the appropriate statistical analysis. A non-parametric Mann-Whitney Rank Sum Test, $\alpha = 0.05$, was used to determine if there were significant differences in the hydrologic and/or water quality parameters of the 2001-2003 three year averaged data and the 2013 data. At Priest Rapids Dam, there were significant differences in the water quality parameters between the three year averaged data and the 2013 data for TDG and discharge, but there were no significant difference for elevation and temperature (Table 4). At Wanapum Dam, there were significant differences for TDG, discharge, and elevation, but there were no significant difference for temperature (Table 5). Water quality values such as median, average, minimum and maximum daily values for 2001 through 2003 and 2013 are presented in Table 6 and Table 7. Daily averaged water quality data from the Wanapum and Priest Rapids dam for TDG, temperature, elevation and discharge for 2001-2003, the 3 year average for those years and 2013 are presented in Figure 23 through Figure 30. Additional detail and discussion on each of the parameters that were statistically different from the 2001-2003 data are presented in the sections below.

Table 4 Results of Mann-Whitney Rank Sum Test between three year average water quality data (2001-2003) and 2013 water quality data at Priest Rapids Forebay.

Priest Rapids Forebay				
Parameter	Total Dissolved Gas (% Saturation)	Temperature	Water Level Elevation	Discharge
Statistical Comparison	Significantly Different	No Significant Difference	No Significant Difference	Significantly Different
2001-2003	108.25	17.64	486.67	102.82
2013	110.63	16.82	486.75	138.97
P-value	P=0.006	P=0.286	P=0.068	P<0.001

Table 5 Results of Mann-Whitney Rank Sum Test between three year average water quality data (2001-2003) and 2013 water quality data at Wanapum Forebay.

Wanapum Forebay				
Parameter	Total Dissolved Gas (%Saturation)	Temperature	Water Level Elevation	Discharge
Statistical Comparison	Significantly Different	No Significant Difference	Significantly Different	Significantly Different
2001-2003	107.9	17.25	569.65	103.58
2013	110.55	16.88	570.43	139.45
P-value	P=0.026	P=0.076	P<0.001	P<0.001

Table 6 Water Quality Data Values for Priest Rapids Dam Forebay 2001-2003, 3 year average and 2013.

Water Quality Data Values (mean daily average) at Priest Rapids Dam Forebay, 3yr-Ave (2001-2003) vs. 2013					
TDG (% Sat)	2001	2002	2003	3yr-Ave	2013
Median	107.595	114.215	106.56	109.457	110.58
Average	107.255	112.339	105.874	108.489	108.165
Minimum	96.63	87.79	96.14	97.41	97.08
Maximum	116.25	120.08	116.98	115.333	120.21
Discharge	2001	2002	2003	3yr-Ave	2013
Median	68.35	131.85	106.525	102.818	138.66
Average	70.7141	140.785	108.672	106.724	137.909
Minimum	38.6	47.2	40.91	48.0933	48.31
Maximum	129.5	273.1	192.7	181.697	243.76
Temperature	2001	2002	2003	3yr-Avg	2013
Median	16.99	16.11	18.24	17.64	16.78
Average	16.1912	15.4845	17.0334	16.41	16.4675
Minimum	9.59	9.08	8.82	9.16333	8.82
Maximum	19.54	20.02	21.03	20.195	21.18
Forebay Elevation	2001	2002	2003	3yr-Avg	2013
Median	486.7	486.8	486.6	486.7	486.745
Average	486.6	486.7	486.5	486.6	486.576
Minimum	484.4	483.8	484.1	484.7	482.221
Maximum	487.4	487.9	487.9	487.3	487.745

Table 7 Water Quality Data Values for Wanapum Dam Forebay 2001-2003, 3 year average and 2013.

Water Quality Data Values (mean daily average) at Wanapum Dam Forebay, 3yr-Ave (2001-2003), vs. 2013					
TDG (% Sat)	2001	2002	2003	3yr-Ave	2013
Median	107.385	113.22	106.82	107.9	110.54
Average	107.368	111.739	106.083	106.89	107.945
Minimum	96.9	98.77	96.42	96.835	96.1
Maximum	118.48	120.02	115.49	115.647	118.11
Discharge	2001	2002	2003	3yr-Ave	2013
Median	68.9	132.15	107.495	103.583	138.99
Average	73.5978	140.714	109.674	107.995	139.818
Minimum	40.2	44.7	42.03	48.5667	52.31
Maximum	139.8	275.7	184.9	187.23	241.12
Temperature	2001	2002	2003	3yr-Ave	2013
Median	16.935	16.6667	18.275	17.2537	16.87
Average	16.3013	15.8709	16.9095	16.2724	16.685
Minimum	9.18	8.11583	8.83	8.85194	9.22
Maximum	21.19	20.8079	21.51	20.4567	22.06
Forebay Elevation	2001	2002	2003	3yr-Ave	2013
Median	569.67	570.1	569.54	569.648	570.42
Average	568.995	569.665	569.196	569.285	570.214
Minimum	562.82	563.68	564.25	564.203	567.721
Maximum	571.25	571.69	571.45	571.013	571.321

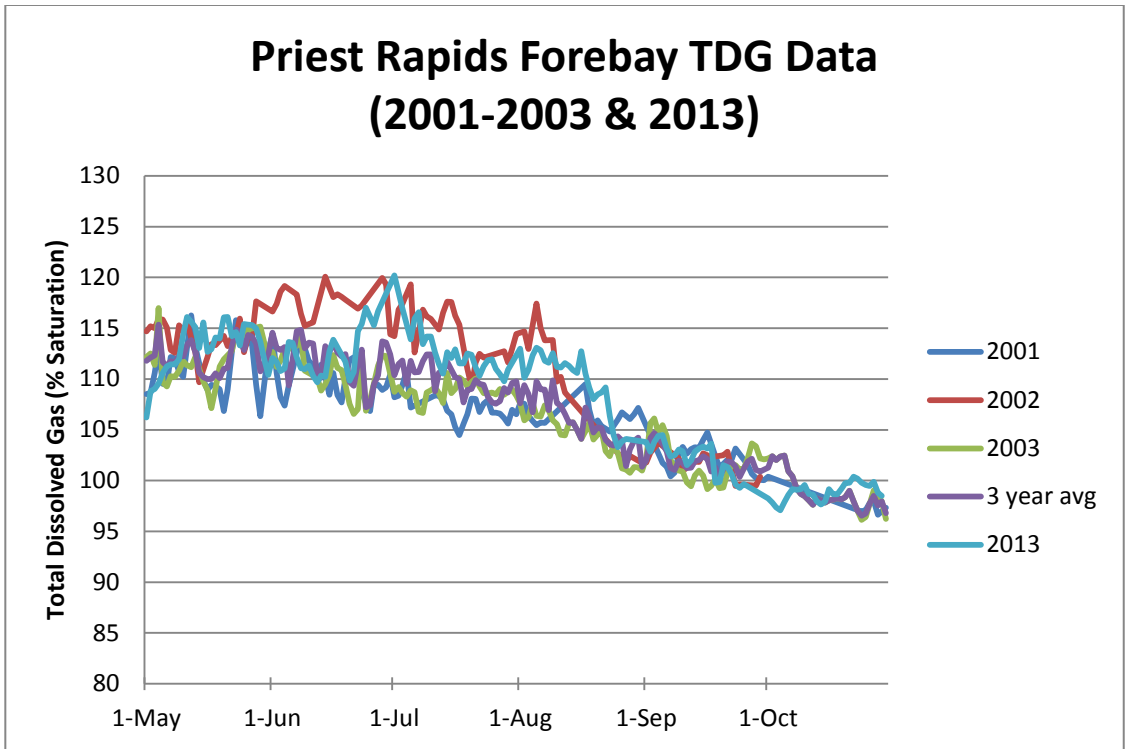


Figure 23 Daily Average TDG Values at Priest Rapids Dam Forebay for the years 2001-2003, the 3 year average and 2013.

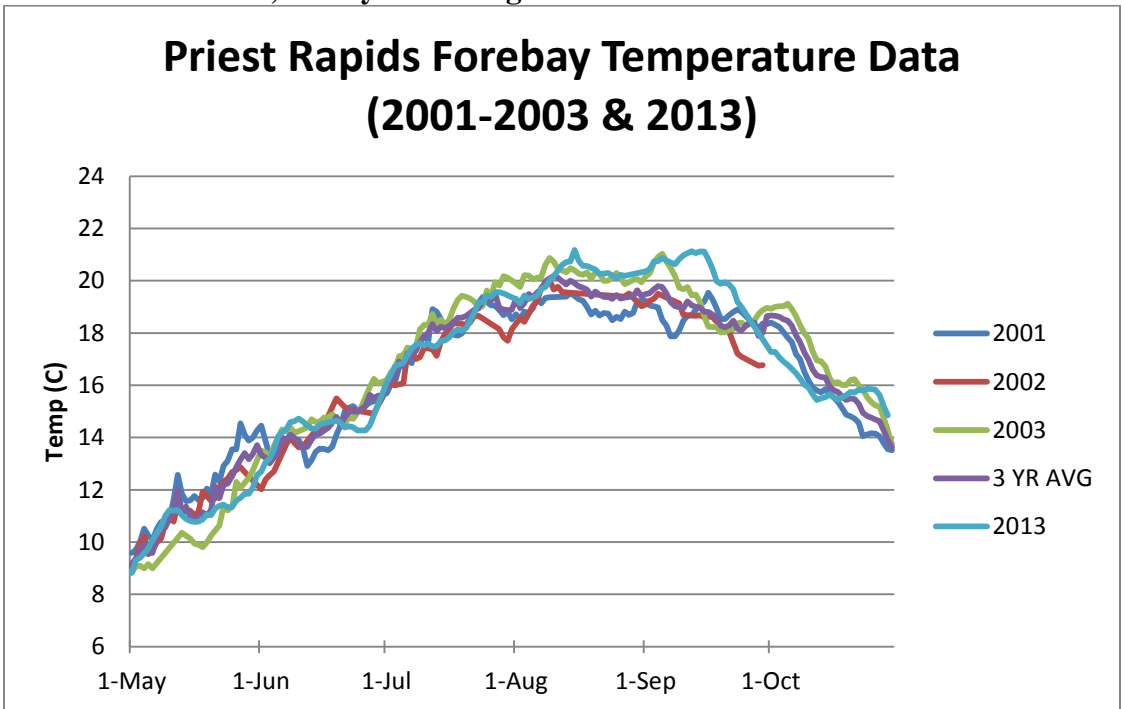


Figure 24 Daily Average Temperature Values at Priest Rapids Dam Forebay for the years 2001-2003, the 3 year average and 2013.

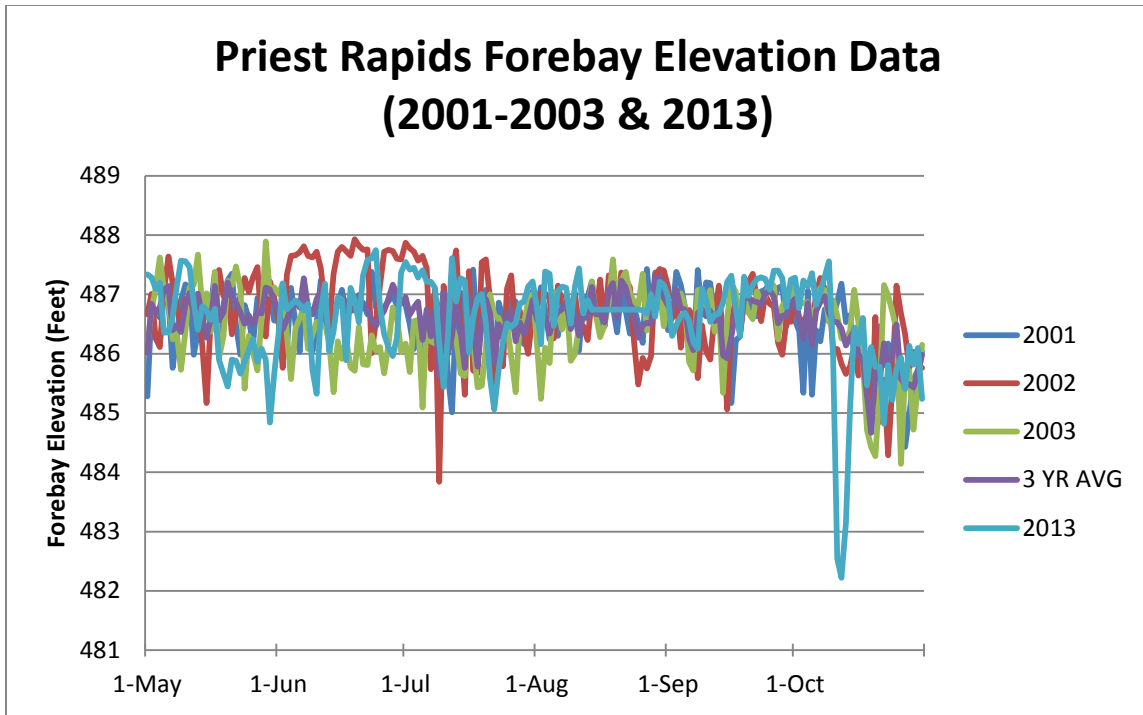


Figure 25 Daily Average Water Level Elevation Values at Priest Rapids Dam Forebay for the years 2001-2003, the 3 year average and 2013.

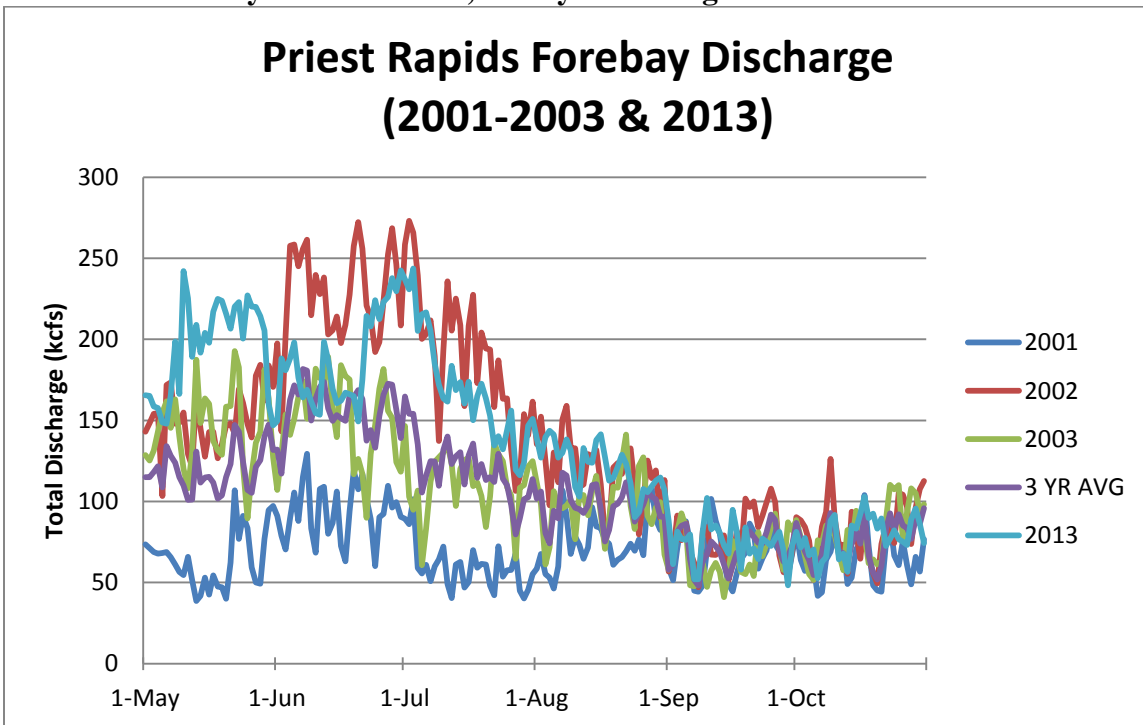


Figure 26 Daily Average Total Discharge at Priest Rapids Dam Forebay for the years 2001-2003, the 3 year average and 2013.

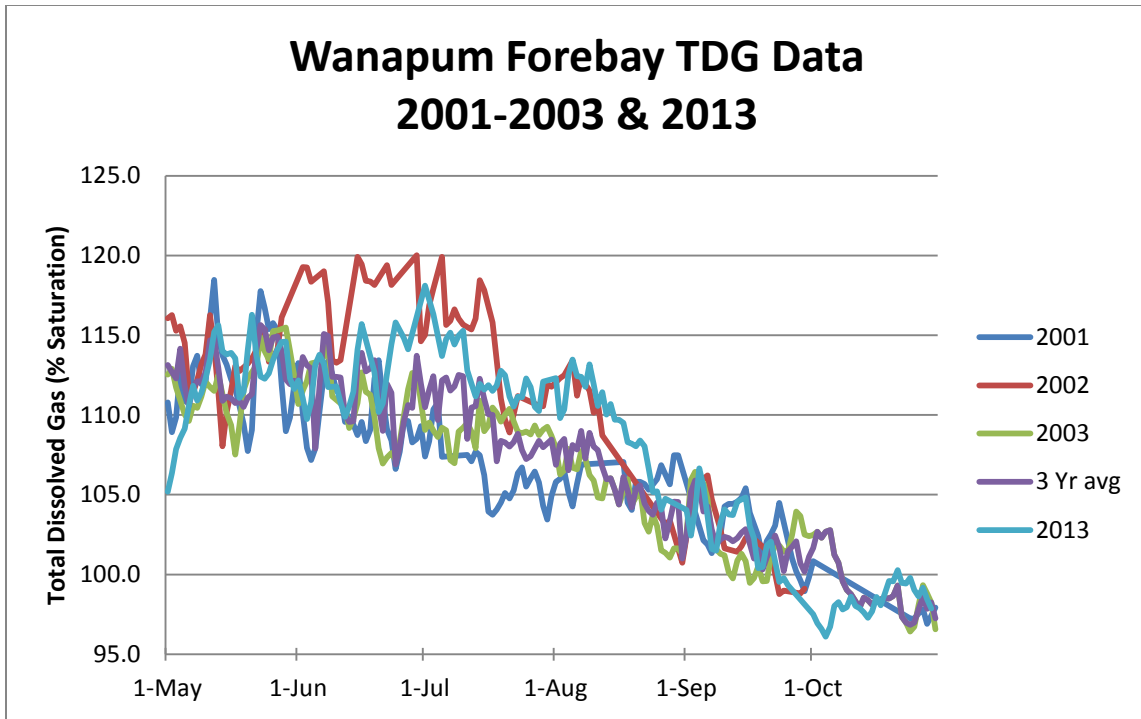


Figure 27 Daily Average TDG Values at Wanapum Dam Forebay for the years 2001-2003, the 3 year average and 2013.

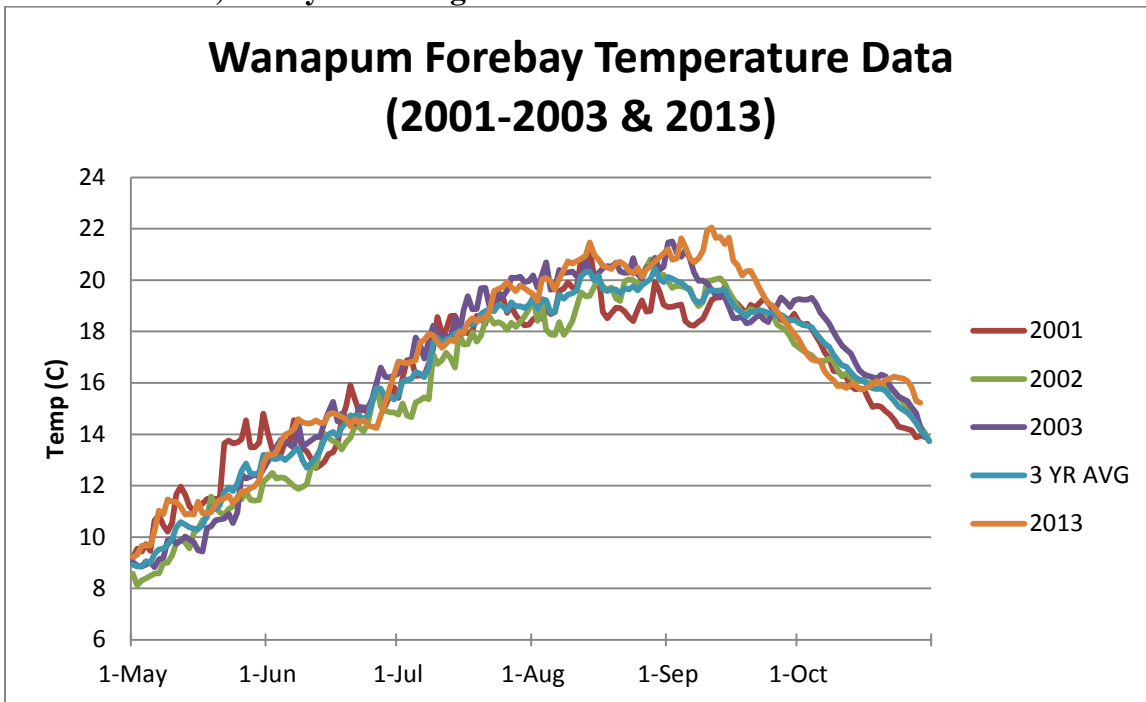


Figure 28 Daily Average Temperature Values at Wanapum Dam Forebay for the years 2001-2003, the 3 year average and 2013.

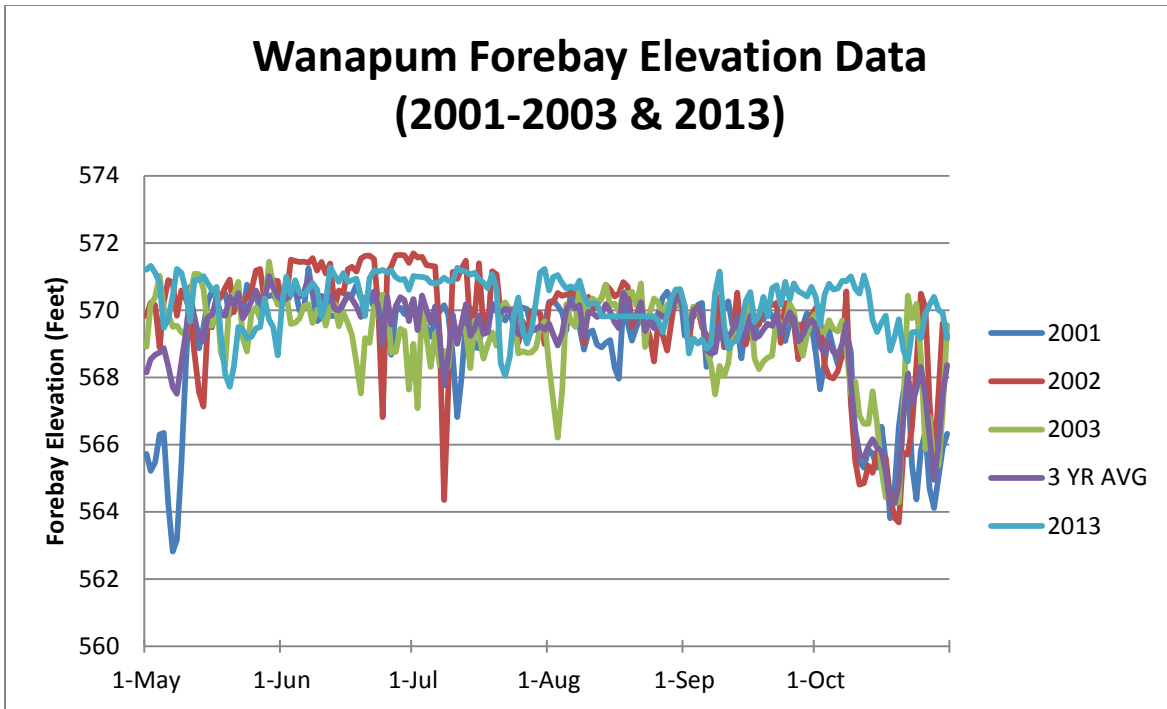


Figure 29 Daily Average Water Level Elevation Values at Wanapum Dam Forebay for the years 2001-2003, the 3 year average and 2013.

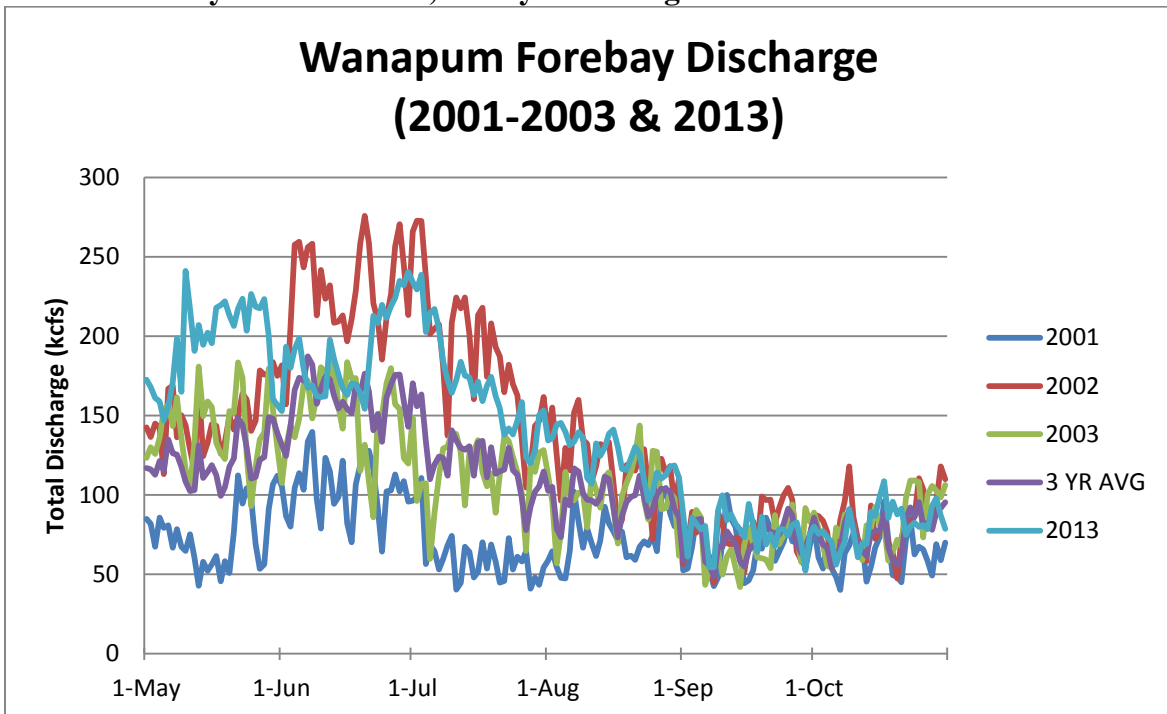


Figure 30 Daily Average Total Discharge Values at Wanapum Dam Forebay for the years 2001-2003, the 3 year average and 2013.

4.1.1 Water Surface Elevation

In 2013, the forebay elevations at Wanapum Dam were significantly higher than the 2001-2003 elevation with a 2013 median elevation of 570.42 feet compared to the 2001-2003 median elevation of 569.65 feet. Although a significantly higher forebay elevation was detected, a negative impact to bull trout migrating through the project due to a nine inch increase in forebay water level elevations appears to be unlikely at this time, due in part to site visits to potential bull trout stranding areas that did not observe any stranded bull trout between 2010-2012 when reservoirs fluctuated three or more feet in forebay elevation in a 24-hour period (Grant PUD 2011-2013).

4.1.2 Total Dissolved Gas

In 2013, TDG was also significantly higher by approximately 2.64 and 2.77 percent saturation (median value) in the Wanapum and Priest Rapids forebays, respectively, compared to the 2001-2003 data. As reported by Keeler (2013) elevated TDG values were observed throughout the mid-Columbia River periodically during the 2013 fish-spill season due to a higher than normal run-off, which resulted in high incoming TDG levels and occasional high levels of involuntary spill. For example, mean daily discharges during the 2013 fish-spill season were slightly higher than the 2002–2013 average (about 12 percent higher on average) over the entire fish-spill season (April 1 through August 31) (Keeler 2013). During the summer fish-spill season (June 15 through August 31), 2013 mean daily discharge values were 6 percent higher than the 2002–2012 average.

Keeler (2013) also reported that 2,207 smolts (n=2,106 Chinook; n=101 steelhead) were examined for gas bubble trauma (GBT) during the 2013 fish-spill season, with 12 total smolts showing signs of GBT. Cumulatively, 0.5 percent of the total smolts sampled were of Rank 1 (n=12 Chinook; n=0 steelhead), thus 99.5% of the smolts sampled had no signs of GBT (i.e. Rank 0; Keeler 2013). According to the Fish Passage Center (FPC 2009), a rank is assigned based upon the percent area of the fin or eye covered with gas bubbles. A rank 0 is assigned if no gas bubbles occur; rank 1 is assigned if one to five percent of the fin or eye is covered with gas bubbles; rank 2 is assigned for six to twenty-five percent area covered; rank 3 for twenty-six to fifty percent area covered; and rank 4 for greater than fifty percent area covered. Although bull trout were not surveyed for GBT because they were not observed within the sampling of fish collected for GBT monitoring (from the Priest Rapids Dam gatewells (see Keeler 2013), it appears to be unlikely this level of GBT would have a negative impact on bull trout in 2013 if it is assumed that any bull trout within the Project area had similar GBT signs.

In summary, Project-related impacts to bull trout appears unlikely due to the relatively small difference (less than 3 percent saturation) between the 2001-2003 and 2013 data, the results of the 2013 GBT monitoring on Chinook salmonids and steelhead, and the GBT compensatory fish behaviors documented in the literature (e.g. Weitkamp et al. 2003).

4.1.3 Discharge

The 2013 discharge was also significantly higher at both dams when compared to the 2001-2003 data. As explained in Section 4.1.2 above, high flows contributed to high TDG levels throughout the mid-Columbia River. In addition, high discharge has the potential to affect the searching ability of fish to find upstream fishways; BioAnalysts (2003) also concluded that although hydrologic operations did not appear to affect survival of adult bull trout, the presence of dams

may slow migration times. However, due to the high flows exhibited throughout the Columbia River system in 2013 (Section 4.1.2 above and Keeler (2013)), any impacts to bull trout due to high discharges was likely found throughout the mid-Columbia, as high flows were seen throughout the coordinated Columbia River system (see Section 4.1.3 above), and were beyond the control of Grant PUD because, being run-of-river projects, Grant PUD has limited ability to reduce high flow volumes coming into the Project area from upstream reservoirs and operations.

During 2013, Grant PUD Project and fish facilities were operated within specified operational criteria. Fishway ladders were operated with a water over weir depth of 1.0 to 1.2 feet throughout 2013 and were able to pass up to 2 kcfs during high flow periods (Keeler 2014). Grant PUD maintained at least one fishway watered at each of its project facilities during winter maintenance activities to ensure that bull trout passage was possible at all times throughout the year. The Wanapum fish bypass was operated at volumes up to 20 kcfs throughout the fish spill season that began on April 17 and ended on August 22 at Wanapum Dam. Project turbines were operated within protocol referred to as “Fish Mode” throughout the 2013 fish spill season to maximize fish survival at both Wanapum and Priest Rapids dams. Fish Mode for Wanapum Dam entails that each turbine has an operational range of 11.8 to 15.7 kcfs and Priest Rapids turbine units are operated between 11.2 to 17.5 kcfs (Grant PUD 2014).

4.2 Monitoring Acclimation Facility Discharge

In 2013, Grant PUD conducted short-term spring Chinook acclimation activities at one location in the White River Basin between March and May, 2013. Fish were acclimated in tanks on the bank at Grant PUD’s Bridge Site (river mile (RM) 2), and fed low-phosphorus feed per established feeding methods. Because surface water was used to acclimate the fish, Grant PUD conducted water quality monitoring monthly above and below the surface water intake and outfall locations. Parameters collected included dissolved oxygen, pH, and total phosphorus. Results of the data collection efforts indicated no negative impacts to water quality. Furthermore, the acclimation return flow water was discharged at the outfall locations to the top of the water surface, into pools with sufficient water depth to avoid erosion of the streambank and subsequent suspension of sediments.

5.0 Summary

In 2013, 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 2013 operations. Note that Grant PUD also provides a separate bull trout report specific to its annual “take” permit that is issued by the USFWS (Turner 2013); however, Table 8 below provides a summary of bull trout “take” in 2013 as defined by the Biological Opinion (USFWS 2007).

Table 8 A summary table of the 2013 reporting period take of 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	21	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	29^
	TOTAL	0	0	21	29

^This number includes bull trout collection from the Nason Creek screw trap (2 of the 29 fish)

The hydrologic and water quality data from 2013 were significantly different than the 2001-2003 averages for TDG, discharge (both Wanapum and Priest Rapids reservoirs) and elevation (Wanapum reservoir) parameters except TDG at the Priest Rapids forebay. The primary reason for these differences can likely be attributed to higher than average flows throughout the mid-Columbia River in 2013, which lead to high water surface elevations, discharge, and TDG values within the Project area (when compared to the 2001-2003 average).

List of Literature

- BioAnalysts, Inc. 2002. Movements of bull trout within the mid-Columbia River and tributaries, 2002-2003. Final Report. Prepared for the Public Utility No. 1 of Chelan County. Wenatchee, Washington. November 2002.
- BioAnalysts, Inc. 2003. Movement of radio-tagged bull trout within Priest Rapids and Wanapum Reservoirs, 2001-2003. Prepared for the Public Utility No. 2 of Grant County. Ephrata, Washington. July 2003.
- BioAnalysts, Inc. 2004. Movements of bull trout within the mid-Columbia River and tributaries, 2001-2004. Final Report. Prepared for the Public Utility No. 1 of Chelan County, Wenatchee, Washington. May 2004.
- 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).
- Hendrick, R. 2009. Quality Assurance Project Plan for Monitoring Selected Water Quality Parameters within the Priest Rapids Hydroelectric Project. Prepared for Public Utility District No. 2 of Grant County, Washington. January, 2009.
<http://www.gcpud.org/resources/resLandWater/waterQuality.htm>
- Keeler, C. 2013. Summary of 2013 Annual Fish-Spill Season and Total Dissolved Gas Monitoring. Prepared for Public Utility District No. 2 of Grant County, Washington. October, 2012.
- Keeler, C. 2014. Total Dissolved Gas Abatement Plan for the Priest Rapids Hydroelectric Project. Prepared for Public Utility District No. 2 of Grant County, Washington. January 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.
- Public Utilities District No 2 of Grant County, (Grant PUD). 2014. Activities Under Priest Rapids Hydroelectric Project, FERC Project No. 2114. January 2014.
- Turner, B.G. 2013. Federal Fish and Wildlife Annual Bull Trout Report, 2012. Permit Number TE022743-4 Amended. The Public Utility District No. 2 of Grant County, WA annual report to USFWS, Ecological Services, Endangered Species Permits, Portland, OR.
- 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.
- USFWS. 2012. Biological Opinion for the White River and Nason Creek Acclimation Facilities for the U.S. Army, Corps of Engineers and Grant Public Utility District No. 2; USFWS Reference: 01E00000-2012-F-0029. U.S. Fish and Wildlife Service. Wenatchee, Washington. June 28, 2012. 143 p.
- Weitkamp, D.E., R.D. Sullivan, T. Swant, and J. DosSantos. 2003. Gas bubble disease in resident fish of the Lower Clark Fork River. Transactions of the American Fisheries Society 132:865-876.

Appendix A
Agency Comments

From: Lewis, Stephen [mailto:stephen_lewis@fws.gov]
Sent: Friday, January 17, 2014 2:06 PM
To: Mike Clement
Subject: Re: FW: 2013 Bull Trout Monitoring and Evaluation Report for the Priest Rapids Project

Yes, that's an accurate depiction of the discussion...

S-

On Fri, Jan 17, 2014 at 1:46 PM, Mike Clement <Mclemen@gcpud.org> wrote:

Steve,

Good discussion this morning and appreciate you taking the time to clarify a few comments related to USFWS review of Grant PUD's 2013 Bull Trout Monitoring and Evaluation Report for the Priest Rapids Project. Based on our discussion related to comment #2 "*Executive Summary (page i)*: PIT-tagging of White River and Nason Creek fish is perhaps an expired relic of the 2007 BiOp and suggest that we revisit this measure to reduce handling of future fish until another agreed-upon timeframe," it is my understanding that both Grant PUD and USFWS agree to defer or postpone tagging and DNA sampling activities during screw trap operations at White River and Nason Creek to reduce direct or indirect effects to bull trout through sampling and potential tag-effect, until both parties agree that future tagging is warranted. Please advise that you concur with this agreement.

Thanks, Mike

Mike C. Clement

Senior Biologist

Grant County PUD

P(509)754.5088 ext. 2633

C(509)750.3024

From: Lewis, Stephen [mailto:stephen_lewis@fws.gov]
Sent: Monday, January 13, 2014 2:44 PM
To: Debbie Firestone
Subject: 2013 Bull Trout Monitoring and Evaluation Report for the Priest Rapids Project

Hi Debbie-

Below are comments relating to the subject document for your consideration. It's our understanding that any relevant comments on this document are due to Grant PUD by January 24, 2014 for incorporation into the final draft. Feel free to circulate these comments to the PRFF as you deem necessary:

- 1.) *Executive Summary (page i)*: There is no mention as to whether or not bull trout were encountered during pike minnow collection activities. In the past, this activity has resulted in incidental occurrences of bull trout. Please clarify whether or not this was the case for 2013.
- 2.) *Executive Summary (page i)*: PIT-tagging of White River and Nason Creek fish is perhaps an expired relic of the 2007 BiOp and suggest that we revisit this measure to reduce handling of future fish until another agreed-upon timeframe.
- 3.) *Table 2 (page 3)*: I'm not quite sure why there is a discrepancy in passage numbers from Priest Rapids to Wanapum on an annual basis during some years? It would benefit this document if this issue could be discussed in the summary of conclusions.
- 4.) *Section 3.0 Bull Trout Observations and Handling on Nason Creek and White River (page 14)*: Please provide a reference in the Literature Cited section for USFWS 2012.
- 4.) *Section 4.1.3 Discharge (page 25)*: I think the more appropriate way to approach this section is by focusing on what Grant PUD does have control over with regard to its passage facilities available to bull trout and whether or not they stayed within criteria during the 2013 high flows. Clarifying how Priest Rapids Project facilities performed during these high flows would be a more useful discussion.
- 5.) *Section 5.0 Summary*: Please delete the word "service" from the last sentence as it is repetitive in the context of the discussion in this section.

Thanks for providing us an opportunity to comment on this document. Please feel free to contact me if further clarification on these comments is needed.

Cheers,

S-

--

Stephen T. Lewis
Hydropower and Energy Coordinator
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Appendix B
Agency Comment and Response Summary Table

Submitting Entity	Date Received	Paragraph #	Agency Comments	Grant PUD Response
USFWS	1/13/2014	Executive Summary (page i)	There is no mention as to whether or not bull trout were encountered during pike minnow collection activities. In the past, this activity has resulted in incidental occurrences of bull trout. Please clarify whether or not this was the case for 2013.	The executive summary has been revised to summarize bull trout encountered during pike minnow collection activities.
USFWS	1/13/2014	Executive Summary (page i)	PIT-tagging of White River and Nason Creek fish is perhaps an expired relic of the 2007 BiOp and suggest that we revisit this measure to reduce handling of future fish until another agreed-upon timeframe.	Grant PUD has inserted an additional paragraph to section 3.0 in response to the communication between S. Lewis (USFWS) and M. Clement (see Appendix A) related to future sampling and tagging.
USFWS	1/13/2014	Table 2 (page 3)	I'm not quite sure why there is a discrepancy in passage numbers from Priest Rapids to Wanapum on an annual basis during some years? It would benefit this document if this issue could be discussed in the summary of conclusions.	Based on the limited bull trout count data available in the Project, Grant PUD suspects some individuals move downstream through dams and reservoirs and then re-ascend on a seasonal basis. Because bull trout are considered a resident fish, are not considered anadromous in the mid-Columbia River, do not out-migrate to the ocean as a component of their life history, it would be expected that there would be a discrepancy in counts from one dam to the next. Grant PUD agrees that there is a "discrepancy in passage counts between dams," however, discerning the seasonal behavior of a limited number of fish, at best, would be highly speculative.
USFWS	1/13/2014	Section 3 (page 14)	Please provide a reference in the Literature Cited section for USFWS 2012.	Comment noted. A reference has been added to the literature cited section for USFWS 2012.
USFWS	1/13/2014	Section 4.1.3 Discharge (page 25):	I think the more appropriate way to approach this section is by focusing on what Grant PUD does have control over with regard to its passage facilities available to bull trout and whether or not they stayed within criteria during the 2013 high flows. Clarifying how Priest Rapids Project facilities performed during these high flows would be a more useful discussion.	Additional information has been added to Section 4.1.3 Discharge that clarifies how Project facilities were operated throughout 2013.

USFWS	1/13/2014	Section 5.0 Summary	Please delete the word "service" from the last sentence as it is repetitive in the context of the discussion in this section.	Grant PUD has modified Section 5.0 in concurrence with this request.
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