Grant County
PUBLIC UTILITY DISTRICT

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VIA ELECTRONIC FILING

May 1, 2014

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

RE: P-2114-266 - Priest Rapids Hydroelectric Project, Wanapum Dam Spillway Monolith No.4 – Interim Fish Passage Operations Plan First Status Report

Dear Ms. Bose,

Attached please find Public Utility District No. 2 of Grant County, Washington's (Grant PUD's) Interim Fish Passage Operations Plan (IFPOP) First Status Report. On March 21, 2014 Grant PUD filed an Interim Fish Passage Operation Plan (IFPOP) to the Federal Energy Regulatory Commission (FERC) which was developed in response to the recent drawdown of the Wanapum Reservoir. On March 26, 2014, FERC issued an Order approving the IFPOP. In paragraph (B) of the Director orders it states:

> *(B) The licensee shall file monthly reports with the Commission documenting its consultation with the Priest Rapids Coordinating Committee (PRCC) and resource agencies, actions taken to implement the Interim Fish Passage Operations Plan, and any needed changes to the plan. Monthly reports shall include meeting minutes, copies of agency correspondence, and any other documentation of consultation. The licensee shall provide copies of the monthly reports to the members of the PRCC at the same time that the reports are filed with the Commission. The licensee shall file the first monthly report by May 1, 2014, and include a schedule for the filing of future monthly reports.*

This status report provides a description of emergency actions that Grant PUD has implemented (to date) to facilitate the continued upstream migration of adult salmonids, steelhead, bull trout and Pacific lamprey, expanded detail on adult salmonid passage monitoring, evaluation and criteria, updated trap and transport protocols, adult pacific lamprey monitoring and juvenile salmonid evaluation occurring within Wanapum reservoir. This status update provides specific details on the following:

- Status of the Wanapum Dam fishways Modifications;
- Status of the Priest Rapids Off Ladder Adult Fish Trap Modifications;
- Adult Salmonid Passage Monitoring, and Evaluation;

ADDRESS PO Box 878
Ephrata, WA 98823
PHONE 509 766 2505
FAX 509 754 6770
grantpud.org

- Adult Salmonid Passage Effectiveness Criterion;
- Updated trap and transport protocol for spring Chinook;
- Adult Pacific lamprey Monitoring and Evaluation;
- Juvenile salmonid and steelhead monitoring and evaluation.

Grant PUD notes that Section 9 of the attached status report provides a summary of consultation to date, while Appendices F and G provide meeting minutes from conference calls and meetings with the PRCC. In addition, Section 10 and Appendix H provide information related to Grant PUD's response to recommended conservation measures provided to date as part of the emergency ESA consultation process. Finally, Section 11 provides Grant PUD's planned schedule for the filing of future IFPOP status reports. Grant PUD is proposing to provide the next status reports on June 6 and July 11, 2014. Grant PUD proposes to provide an updated reporting schedule for the remainder of 2014 in the July 11, 2014 status update.

FERC staff with questions on the IFPOP should be directed to Tom Dresser at 509-754-5088, Ext. 2312.

Sincerely,

Ross Hendrick
License Compliance Manager

Enclosures: Interim Fish Passage Operations Plan First Status Report

CC: PRCC
Jeff Krupka – USFWS
Scott Carlon – NOAA

ADDRESS PO Box 878
Ephrata, WA 98823
PHONE 509 766 2505
FAX 509 754 6770
grantpud.org

Interim Fish Passage Operations Plan
Status Update

ACTIVITIES UNDER PRIEST RAPIDS HYDROELECTRIC PROJECT LICENSE (FERC NO. 2114)

Public Utility District No. 2 of Grant County, Washington
30 C Street SW
Ephrata, Washington 98823

May 1, 2014

Executive Summary

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 Project (Project), and is operated under the terms and conditions of the Federal Energy Regulatory Commission (FERC) Hydroelectric Project License No. P-2114 issued by FERC on April 17, 2008.

Grant PUD operates the Project through the coordinated operation of the seven-dam system and other Columbia Basin entities with current operational agreements with the fishery agencies, tribal representatives and other operators to provide protection and improvement 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 (SSSA). The Project is also subject to the requirements 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 (BiOp) 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 BiOp for the Priest Rapids Project issued by the United States Fish and Wildlife (USFWS) regarding the effect of the Project on bull trout.

The upstream fish passage facilities at Wanapum Dam consist of two fish ladders (left and right bank), entrance channels, and attraction water facilities. The ladders consist of a series of 10 foot. long pools. Each pool is one foot higher than the preceding pool, from tailwater to forebay, yielding a slope of one to ten. The ladders are 16 feet wide with 6 feet high fixed weirs separating the pools. Each fixed weir has two five-foot-wide overflow sections separated by a six-foot-wide non-overflow section and two 18 inch square submerged orifices at the base. Water flow down each ladder is 70 cfs, consisting of 40 cfs over the weirs and 30 cfs through the orifices. Migrating fish may either swim over the top of the weir or through the orifices.

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 has 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 are dewatered, preventing upstream migrating fish from passing Wanapum Dam.

The fish ladder entrances at Wanapum remain operational, due to the tailwater elevation. At an elevation of 562 feet, the Wanapum Dam fish ladders exits would be able to be operated within criteria and without modifications.

Both fish ladders at Priest Rapids Dam are operational and were not impacted as a result of the Wanapum Reservoir drawdown. The right bank ladder is currently being maintained at ladder flow (no fish attraction flow) per guidance from NOAA-Fisheries and the Priest Rapids Coordinating Committee (PRCC) for a period of time, until "proof of concept" evaluations for the Wanapum Fish ladder Exit Passage Systems are underway and/or completed and trap and transport activities are suspended.

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 is intended to provide upstream passage for adult salmonids, steelhead, bull trout and Pacific lamprey through or around the Priest Rapids Project. Development of the IFPOP occurred in consultation with the NOAA Fisheries, USFWS and PRCC. The PRCC is made up of representatives from 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 and Grant PUD.

Grant PUD submitted the IFPOP to the Federal Energy Regulatory Commission (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. This filing is response to the requirement to submit a monthly status report on May 1, 2014. A proposed schedule for future status report submittals has been included.

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1.0 Introduction

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 Project (Project), and is operated under the terms and conditions of the Federal Energy Regulatory Commission (FERC) Hydroelectric Project License No. P-2114 issued by FERC on April 17, 2008.

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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 dewatered at the time for routine annual maintenance.

As of March 4, 2014, the Wanapum Reservoir has 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 are dewatered, preventing upstream migrating fish from passing Wanapum Dam. The fish ladder entrances at Wanapum Dam remain operational, due to the tailwater elevation. At an elevation of 562 feet the Wanapum Dam fish ladders exits would be able to be operated without modifications and would be able to operate within the required fish passage criteria.

Both fish ladders at Priest Rapids Dam are operational and were not impacted as a result of the Wanapum Reservoir. Per direction by NOAA-Fisheries and the PRCC, the right bank ladder at Priest Rapids Dam is being operated at ladder flow; meaning that it is gravity feed, with no fish attraction flows are being provided. The left–bank fish ladder at Priest Rapids Dam is up and operating within criteria. The PRCC will visit the need to keep the right-bank ladder at ladder flow on a weekly basis.

Grant PUD submitted an Interim Fish Passage Operations Plan (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 report on May 1, 2014 which would document the consultation record with the PRCC and resource agencies and actions taken. In addition, Grant PUD was required to include changes to the plan, as well as meeting minutes, copies of agency correspondence, and any other documentation of consultation.

This status report provides a description of emergency actions that Grant PUD has implemented (to date) to facilitate the continued upstream migration of adult salmonids, steelhead, bull trout and Pacific lamprey, expanded detail on adult salmonid passage monitoring, evaluation and criteria, updated trap and transport protocols, adult pacific lamprey monitoring and juvenile salmonid evaluation occurring within Wanapum reservoir. This status update provides specific details on the following:

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2.0 Status of Wanapum Dam Fishways Exit Passage System

The Wanapum Left-Bank Fishway Exit Passage System (LB-FWEPS) was placed in operation on April 15, 2014, while the right bank ladder was fully operational on April 26, 2014. The delay in getting the Wanapum Right-Bank Fishway Exit Passage System (RB-FWEPS) operational was primarily due to weather conditions (excessive wind) and addition of an approach ramp to preclude jumping by salmonids up and onto the flume.

The modifications made to both the Wanapum left and right bank fishways exits, required the installation of weir boxes fabricated from steel plating and members to an overall size of (16 feet x 7 feet x 7.33 feet; Figure 1). The weir boxes were installed near the exit of each ladder and are supplied with approximately 40 cfs of water via four 90 Hp electric submersible pumps in the forebay at each ladder (n=8). The weir boxes have a false weir designed to attract fish from the ladder pools and lamprey passage plates were added on either side of the weir to facilitate adult lamprey passage.

The weirs direct approximately 90% of the flow down the fish ladder (approximately 35 cfs), while the remaining 10% of the flow is used to provide water upstream for the fish exit flume

(approximately 5 cfs). An adjustable weir, incorporated into the design allows for the adjustment of water that is pumped into the fish ladder versus into the forebay flume.

All corners of the weir adjustment were radiused or bull nosed to limit potential injury to adult fish as a result of sharp edges. Silicone has also been added in areas were difficult to radius or filled in objectionable gaps. A flume was constructed of marine plywood and was surfaced with fiber reinforced plywood to reduce risk or injury. As currently designed, adult salmonids, steelhead and other species will enter the Wanapum forebay at a height of approximately 9.0–13.0 feet depending on current reservoir pool fluctuations (Figure 2-4).

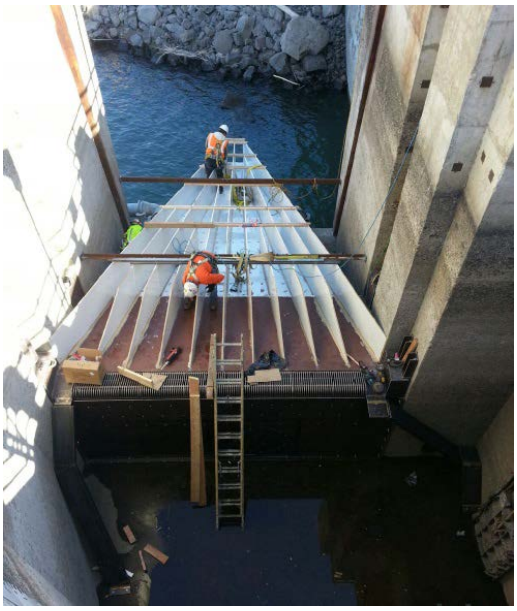

Figure 1 **Construction activities related to the installation of the Wanapum Left Bank Fishway Exit Passage System.**

Figure 2 **Wanapum Left Bank Fishway Exit Passage System – Flume.**

Figure 3 **Wanapum Left Bank Fishway Exit Passage System. Completed and operational on April 15, 2014.**

Figure 4 **Wanapum Right Bank Fishway Exit Passage System. Completed and operational on April 26, 2014.**

Per discussions with the NOAA-Fisheries, USFWS and PRCC; Grant PUD is in the process of designing and will move forward with fabrication of a spiral chute that would deliver adult fish closer to the water surface (~2-5 feet). The chute is currently in the design phase and would not be available for installation until later in the fish passage season (mid-May to June), due to the complexity of design and necessary fabrication timeline. Grant PUD will consult with NOAA-Fisheries, USFWS and PRCC on the need to install the chute at a later date after it has been fabricated and delivered on site.

In the forebay control section of the upper ladder, flow typically passes through two 18 inch x 38 inch orifices. Under the emergency operation both orifice in each weir wall have remained in the open position. In the lower section of the ladder only a couple inches of flow will occur over each weir, and both weir orifices will be in the open position as they would be during normal operations. Most fish historically have shown to pass through the orifices in normal passage mode, and therefore Grant PUD is not anticipating any passage issues in this area.

To facilitate adult Pacific lamprey passage at both the Wanapum left and right bank ladders, plating have been added to both sides of the false weirs. In addition, ramps have been added to the design that approach and extend over the weir and all corners are radiused to reduce impacts to fish/lamprey passage. The ramp design incorporated into the weir is the same design that has been used to successfully pass adult lamprey within the Priest Rapids and Wanapum fishways. Please refer to Section 7.0 below for further discussion on adult Pacific lamprey passage, monitoring and evaluation.

2.1 Wanapum Fishway Ladder Exit Passage System Inspections

A fishway ladder inspection of the Wanapum left bank was conducted by Fish Passage Center staff on April 15, 2014. During this inspection, the Wanapum left-bank ladder was operating within fish passage criteria, as it would be under normal operations. The Wanapum right bank was not inspected, as it was not operational until April 26, 2014. NOAA-Fisheries will be conducting fishway inspections at Wanapum on April 29, 2014. Grant PUD believes that the Wanapum left and right bank ladders will be able to be operated within fish passage criteria, as it would be under normal operations and will not be further impacted by the Wanapum Reservoir drawdown.

2.2 Wanapum Dam Fishways Exit Passage System – Fish Passage Results

As of April 23, 2014, 31 adult spring Chinook salmon and 207 adult steelhead swam over the weir and entered the flume at the left-bank, returning them to the Wanapum forebay near the normal fishway exit. Adult steelhead represented 56% of the fish observed, while adult spring Chinook represented approximately 6%. A majority of the remaining 38% of the fish passing the FWEPS observed were mountain whitefish.

Preliminary information indicates that 73% of the fish are successful on their first attempt to swim over the false weir, with a majority of the fish entering the weir via swimming (97%). Initial orientation upon entry onto the false weir is on their bellies (96%) and in the head first position at the top of the flume (84%). Information indicates that 78.5% of the fish tried to swim back up the flume and by the time they reached the bottom of the flume (before exit into the forebay), 79% of the fish were in a tail first orientation. Nearly 100% (99.4%) of the fish exit the flume within the water column, with 59.4% of those fish entering in the tail position. No instantaneous mortalities and stunned fish have been observed.

Representative video clips are have being collected (on a daily basis) to capture specific fish behavioral response to the FWEPS and can be viewed at Wanapum Fish Behavior Response to FWEPS 04-16-2014.

3.0 Priest Rapids Off-Ladder Adult Fish Trap Modifications

Modifications to the Priest Rapids Off-Ladder Adult Trap (OLAFT) were completed on April 11, 2014 and it was put into operation on April 15, 2014 (Figure 5). Modifications included the installation of a PVC transport chute to direct fish from the OLAFT to the transport vehicles to eliminate the need to physically handle fish. Extension of the existing flume downstream of a false weir, transitioning the flume into pipe, and a pipe turn of approximately 150 degrees allows for direct fish loading. Prior to diversion and loading of fish onto transport vessels, fish are scanned for PIT-tags, via a detection system located in the OLAFT.

Figure 5 Modifications implemented at the Priest Rapids Off-Ladder Adult Fish Trap. Completed and operational on April 11, 2014.

3.1 Priest Rapids Off-Ladder Adult Fish Trap – Trap and Transport Results

As of April 29, 2014, 111 adult spring Chinook and 33 steelhead have been diverted through the OLAFT and into transport vessels. Transported adult salmon and steelhead were trucked to the Rocky Coulee release location approximately 3 mile upstream of Wanapum Dam (Figure 6).

Figure 6 Rocky Coulee release location and infrastructure located approximately 3 miles upstream of Wanapum Dam.

No bull trout were observed or transported to date (April 30, 2014) and all other non-target species were sorted through a swing-gate and diverted back to the left bank ladder. An updated plan trap and transport standard operation procedures (SOP), detailing protocols associated with all activities related to trap and transport can be reviewed in Appendix A.

4.0 Adult Salmonid Passage PIT-Tag Detection Infrastructure

PIT-tag detection infrastructure at the Priest Rapids Project (Priest Rapids OLAFT, Priest Rapids Dam, and temporary PIT-tag array at Wanapum Dam) and Rock Island (Chelan PUD owned and operated facility) was operational on April 15, 2014 and will be operational throughout the fish passage season. The temporary Wanapum Dam PIT tag arrays were installed within both the left and right bank fishways at Wanapum Dam (Figure 7). Further details on adult salmonid PIT tag detection infrastructure were provided in the March 21, 2014 IFPOP (see Grant PUD's IFPOP).

All interrogation PIT tag data collected at the Priest Rapids OLAFT, Priest Rapids Dam, temporary PIT-tag arrays at Wanapum Dam and Rock Island are uploaded to the Pacific States Marine Fisheries Commission's PIT-tag Information System (PTAGIS) web page, http://test.ptagis.org/ptagis/index.jsp. Data is uploaded onto the PTAGIS on a 3 to 24 hour cycle.

Figure 7 Temporary PIT-Tag arrays installed into the Wanapum Dam fishways.

5.0 Adult Salmonid Passage Migration and Metrics (spring Chinook)

After considerable discussion on April 14, 2014, the PRCC and Grant PUD agreed to implement an adult spring Chinook salmon migration and metrics plan in response to fishway passage systems installed at Wanapum Dam and the trap and transport program. Consensus was not reached on all passage criteria contained within the plan, which is discussed in detail in Section 5.1 below.

Due to the need to implement that plan immediately, Grant PUD implemented the plan based on a majority vote. These criteria will be used to inform NOAA-Fisheries and the PRCC on whether

the fishway passage systems are effective and when the trap and transport would be discontinued. The adult spring Chinook migration and metrics plan, PowerPoint presentation provided to the PRCC and comments received on that plan have been included in Appendix B, Appendix C and Appendix D, respectively.

Implementation of the migration and metrics plan occurred on April 15, in which all migrating adult salmon, steelhead and bull trout ascending the left bank Priest Rapids ladder were diverted into the OLAFT. Based on input of the PRCC, the right bank ladder at Priest Rapids Dam was reduced to ladder flow only. At ladder flow, fish may still pass through the right bank fishway, however no additional fish attraction flow is provided. This was done as a result of concern over potential delay in adult migration as a result of operation of the OLAFT.

Fish entering the OLAFT were then diverted to transport trucks or holding tanks. Fish that were diverted to the holding tanks (only hatchery origin) were systematically selected for tagging and initially sedated with MS-222. All natural-origin (adipose present) fish will be directed into transport trucks and transported to the release location approximately 3 miles upstream of Wanapum Dam. This transfer is water-to-water and no supplemental tagging is occurring.

Due to concerns raised by tribal representatives over the potential consumption of fish sedated with MS-222, Grant PUD switched to the use of Aqui-S on April 23, 2014. Of the 108 handled and tagged, 14 fish have been were sedated with MS-222 and they were externally marked with a caudal fin punch for future identification it captured in the tribal harvest. As of April 29, 2014, 50 spring Chinook were marked with a PIT-tag and surgically implanted hydroacoustic tag.

5.1 Passage Criteria

Passage criteria is described below and if criteria are meet, Grant PUD will convene the PRCC to determine the most appropriate strategy (ladder passage vs trap and transport) to implement for the remainder of the spring Chinook migration period. If the test fish are not meeting the criteria as outlined below passage will be evaluated, adaptively managed, and re-evaluated by the PRCC until criteria are met. After the run-at-large is allowed to pass through the fishway passage systems, monitoring will continue to ensure that passage rates remain within these criteria.

5.1.1 Travel Time Using Passive Integrated Transponders (Criteria 1)

The first criteria used to evaluate the effectiveness of the Wanapum FWEPS is travel time; which will be based on migration time from the Priest Rapids PIT array to the Rock Island Dam PIT array. Based on data from a 10 year period (2003-2013), travel time from Priest Rapids Dam to Rock Island Dam is <356 hours for 90% of the fish (detected at Priest Rapids Dam and Rock Island Dam). This value represents the highest 90% percentile travel time observed since 2003 when ladders were operating under normal conditions (Figure 8). The majority of observations are <350 hours, however, travel times above 350 hours do occur under normal circumstances.

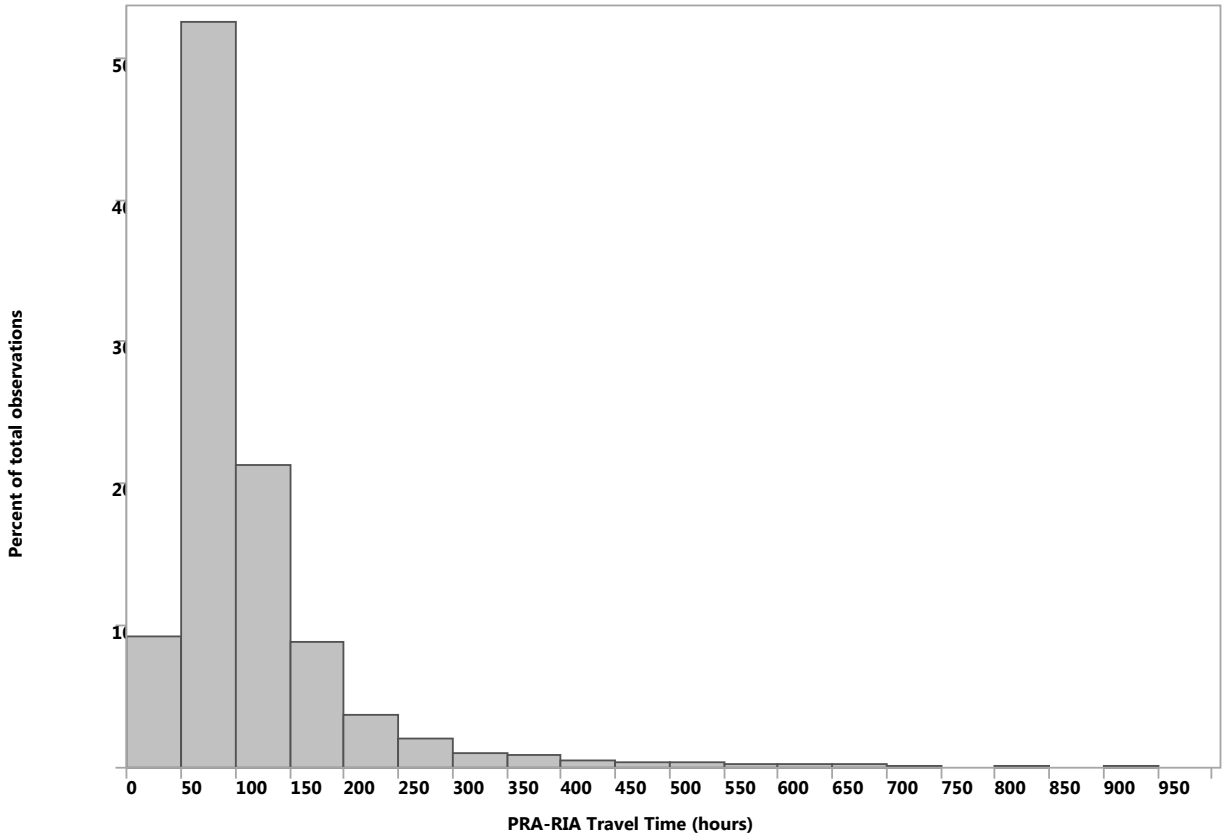

Figure 8 Travel time distribution for spring Chinook salmon migrating between Priest Rapids and Wanapum dams, using Passive Integrated Transponder detections for years 2003-2013.

Figure 9 illustrates the year-by-year distribution of travel time for spring Chinook salmon from 2003 through 2013. The box and whiskers represent the percentiles of the observations (e.g., the 50th percentile equals the median value). In 2004, the 90th percentile travel time was approximately 356 hours. Travel times above 300 hours occur throughout the run (Figure 9).

Historical travel time data from Priest Rapids Dam to Wanapum Dam using PIT-tags is not available; 2014 will be the first year that PIT-arrays are installed in the Wanapum Dam fish ladders. NOAA-Fisheries, the PRCC and Grant PUD will use observed travel times from Priest Rapids Dam through Wanapum Dam using radio telemetry observations from studies in 1995 and 1997 (Table 1). The radio telemetry studies will provide a qualitative context for PIT-tag based travel time observations from Priest Rapids Dam to the Wanapum Dam fish ladder arrays.

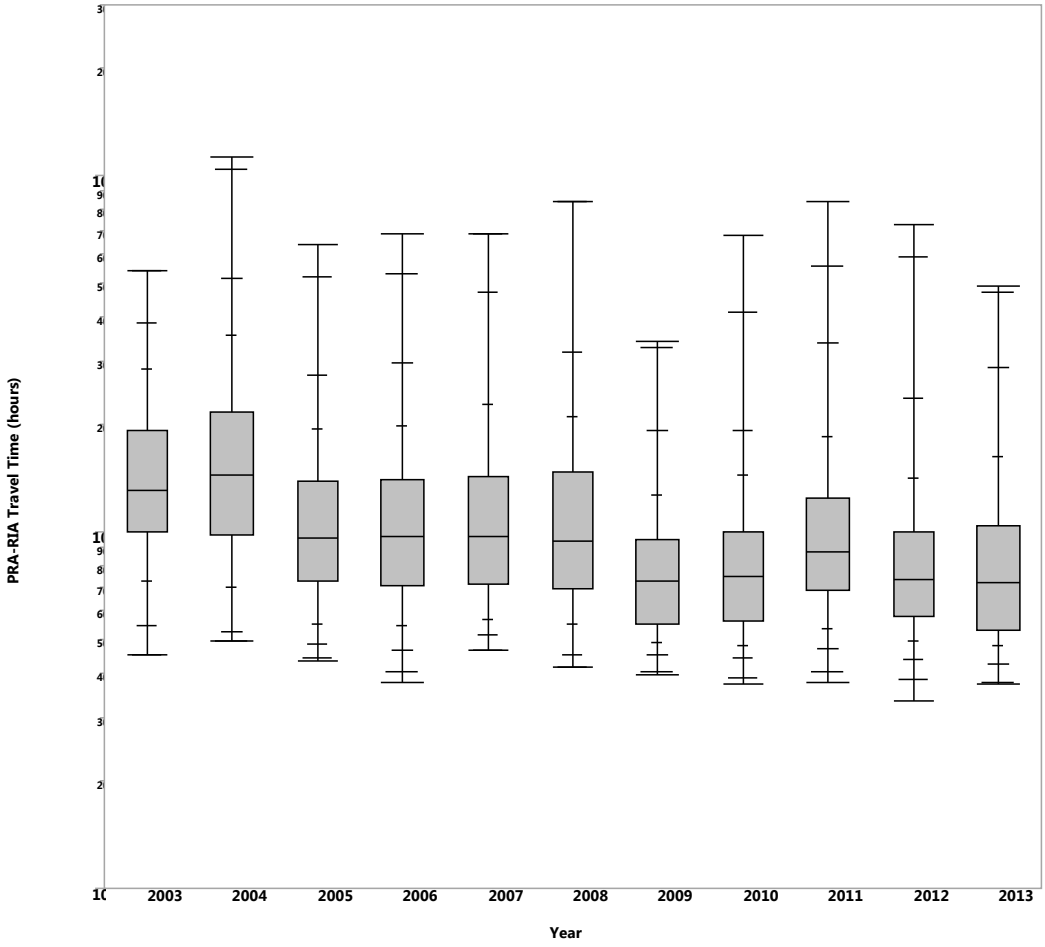

Figure 9 **Travel time in hours for PIT-tagged spring Chinook salmon migrating between Priest Rapids and Rock Island dams for years 2003-2013.**

Table 1 **Review of spring Chinook radio telemetry passage evaluation through the Priest Rapids Project.**

Report	Passage Time in Hours (median and range)			Fallback Rate	
	Priest Rapids Dam to Wanapum Tailrace	Through Wanapum Dam	Total Passage Time	Priest Rapids Dam	Wanapum Dam
Stuehrenberg et al. 1995	15.8 (6.8-1,314)	46.0 (2.0-496)[1] 35.7 (2.6-1,108)[2]	51.5 - 61.8	17.7%	8.1%
Perry et al. 1998	12.5 (N/A)	20.1 (2.3-17.0)[3]	32.6	3.0%	4.1%

[1]Study fish implanted with radio tags at Priest Rapids Dam.
[2]Study fish implanted with radio tags at John Day Dam.
[3]Study fish implanted with radio tags at Bonneville Dam.

5.1.2 Conversion Rates Using Passive Integrated Transponders (Criteria 2)

The second criteria used to evaluate the effectiveness of the Wanapum FWEPS is conversion rates based on Passive Integrated Transponders detections from the Priest Rapids Dam and Rock Island Dam PIT arrays. The conversion rate from Priest Rapids Dam to Rock Island Dam is greater than 80%, which is the lowest observed annual conversion rate from 2008-2013 when permanent ladders were operating (Table 2). Conversion rates before 2008 are available, however hatchery transportation studies from Priest Rapids around Rock Island Dam occurred during those years and confound conversion rate calculations. These conversion rates are 'uncorrected', meaning that they have not been adjusted for array detection efficiencies and detections upstream of Rock Island Dam.

During passage evaluations, uncorrected conversion rates are what will be available in real-time and therefore will be used for the ladder passage criteria. Corrected conversion rates for all fish passing the Project will be available with post hoc analyses. Array detection efficiency studies have been conducted at Priest Rapids Dam and Rock Island Dam by Biomark, Inc. and the Columbia Basin Research group at the University of Washington, respectively (Grant PUD 2014, Chelan PUD 2011). At both dams, detections efficiencies were estimated at >98% for all stocks. Given this rate of detection, the expectation is that the uncorrected conversion rates will be an accurate indicator of true conversion rates.

There was considerable discussion and debate within the PRCC related to this criteria and consensus was not reached. Based on the need to implement the plan immediately and a majority level of support from NOAA-Fisheries and the PRCC, Grant PUD began implement the plan using the criteria of a >80% conversion rate from Priest Rapids Dam to Rock Island Dam. Grant PUD will convene the PRCC to further discuss if conversion rates are between 80% and 90%.

5.1.3 Direct Observations – Wanapum Dam fishway exits (Criteria 3)

An observed criteria of <5% instantaneous mortality is being implemented at the Wanapum Dam FWEPS. Should estimates of instantaneous mortality approach 5%, Grant PUD would immediately notify NOAA-Fisheries and the PRCC to determine next steps.

Table 2 Spring Chinook salmon conversion rates from Priest Rapids to Rock Island Dams, 2003-2013.

Observation Year	Priest Rapids Observations	Rock Island Observations	Conversion Rate
2013 Total	333	308	92%
2012 Total	372	349	94%
2011 Total	631	506	80%
2010 Total	491	469	96%
2009 Total	190	176	93%
2008 Total	129	117	91%
2007 Total[2]	110	103	94%
2006 Total[2]	500	441	88%
2005 Total[2]	641	479	75%
2004 Total[2]	719	355	49%
2003 Total[2]	158	104	66%
All Years (2003-2013)	**4274**	**3407**	**80%**
		Average ± SD	*83% ± 15%*
		95% CI	*74% - 93%*
		Minimum	*49%*
		Maximum	*96%*

[1]Data as reported by Columbia Basin Research Data Access in Real Time.

[2]Hatchery transportation studies from Priest Rapids Dam were conducted these years.

5.2 Achieving Criteria and Continued Monitoring for Spring Chinook

During the initial passage evaluations for spring Chinook salmon and until the criterion described above is achieved (e.g. (1) travel time from Priest Rapids Dam to Rock Island Dam is <356 hours for 90% of the fish that are detected at Priest Rapids Dam and at Rock Island Dam (2) conversion rate from Priest Rapids Dam to Rock Island Dam is greater than 80%, and (3) observed criteria of <5% instantaneous mortality is observed at the Wanapum Dam FWEPS), all non-test fish that enter the OLAFT will be trapped and transported and released at the Rocky Coulee location (~3 miles upstream of Wanapum Dam). Data would be presented to the PRCC on a weekly basis to determine when trap and transport activities can be discontinued.

After the initial evaluations have been completed, criteria met, and the run-at-large is allowed to pass upstream using the adult ladders, passage will continually be monitored with run-of-river PIT-tags and visually observed at the Wanapum Dam ladder exits during peak migration times. Passage conditions, metrics, and unforeseen issues will be discussed with to the PRCC on a weekly basis.

During these evaluations passage conditions will be adaptively managed. In the event that the procedures and/or protocols require adjustment and revision of the passage evaluation plan(s) is necessary, Grant PUD will notify NOAA-Fisheries and convene the PRCC.

5.2.1 Travel time Using Passive Integrated Transponders – Results

A total of 55 (of the target 200) spring Chinook salmon have been trapped, PIT tagged and released from the Priest Rapids OLAFT as of April 27, 2014. As these fish (and others PIT

tagged fish) migrate upstream through the Priest Rapids, Wanapum and Rock Island PIT tag arrays, travel times will be determined and used to compare to current criteria (Section 5.1.1).

As of April 27, 2014, 1 of the 41 currently PIT tagged spring Chinook has migrated up through the Priest Rapids, Wanapum, and Rock Island arrays. The travel time for this individual fish was 95.6 hrs. Three other PIT tagged spring Chinook PIT released from the Priest Rapids OLAFT was detected on the Wanapum PIT array on April 27, 2014. Travel time for this fish from the Priest Rapids array to the Wanapum array was 64.6 hours (Table 3).

As of April 29, 2014, 50 adult spring Chinook have been implanted with an acoustic tag and injected with a PIT tag. Travel time or behavior information is unavailable at this time for these fish.

As of April 25, 2014; 14 previously PIT tagged adult steelhead migrated up through the Wanapum Fishway Exit Passage System on the left-bank and up through the Rock Island PIT array between the dates of April 15 and April 23, 2014. Average travel time for the 14 steelhead was 68.4 hours (Table 4).

Table 3 Passive Integrated Transponder Detections and Travels Time Data for adult spring Chinook salmon trapped, tagged and released from the Priest Rapids Off-Ladder Adult Fish Trap.

Species	Tag & Release Data	Travel Time Priest Rapids to Wanapum (hours)	Travel Time Wanapum to Rock Island (hours)	Total Travel Time Priest Rapids-Rock Island (hours)
Spring Chinook	4/15/2014	61.4	34.6	95.6 hours
Spring Chinook	4/16/2014	TBD	TBD	TBD
Spring Chinook	4/18/2014	TBD	TBD	TBD
Spring Chinook	4/21/2014	TBD	TBD	TBD
Spring Chinook	4/21/2014	93.6	TBD	TBD
Spring Chinook	4/22/2014	TBD	TBD	TBD
Spring Chinook	4/23/2014	68.7	TBD	TBD
Spring Chinook	4/23/2014	TBD	TBD	TBD
Spring Chinook	4/23/2014	TBD	TBD	TBD
Spring Chinook	4/23/2014	TBD	TBD	TBD
Spring Chinook	4/23/2014	TBD	TBD	TBD
Spring Chinook	4/24/2014	TBD	TBD	TBD
Spring Chinook	4/25/2014	31.6	TBD	TBD
Spring Chinook	4/25/2014	TBD	TBD	TBD
Spring Chinook	4/25/2014	TBD	TBD	TBD
Spring Chinook	4/25/2014	TBD	TBD	TBD

Table 4 Passive Integrated Transponder Detections and Travels Time Data for previously PIT tagged adult steelhead migrating past the Wanapum and Rock Island PIT Arrays (April 15 through April 23, 2014).

Species	Date Detected at Wanapum	Date Detected at Rock Island	Total Travel Time Hours
Steelhead	4/15	4/17	40.5
Steelhead	4/15	4/17	59.9
Steelhead	4/15	4/18	83.5
Steelhead	4/15	4/18	74.1
Steelhead	4/15	4/22	169.2
Steelhead	4/16	4/22	123.5
Steelhead	4/17	4/20	66.8
Steelhead	4/18	4/19	35.1
Steelhead	4/18	4/20	52.2
Steelhead	4/18	4/20	47.5
Steelhead	4/18	4/21	64.8
Steelhead	4/19	4/21	35.4
Steelhead	4/21	4/23	47.8
Steelhead	4/22	4/24	56.7

5.2.2 Conversion Rates Using Passive Integrated Transponders – Results

As of April 29, 2014, limited data precludes the development of conversion rates for adult spring Chinook salmon. Only a single spring Chinook salmon has been detected at Priest Rapids, Wanapum and Rock Island arrays and three have migrated from Priest Rapids were detected on the Wanapum PIT arrays.

5.2.3 Direct Observations – Wanapum Dam Fishway Exits – Results

As of April 23, 2014, 31 adult spring Chinook salmon and 207adult steelhead swam over the weir and entered the flume at the left-bank, returning them to the Wanapum forebay near the normal fishway exit. Adult steelhead represented 56% of the fish observed, while adult spring Chinook represented approximately 6%. A majority of the remaining 38% of the fish passing the FWEPS observed were mountain whitefish.

No instantaneous mortalities or stun fish were observed and all adult spring Chinook salmon, steelhead and mountain whitefish exit the Wanapum Fishway Passage System swam away. Additional details on specific fish behavior can be reviewed in Section 2.2.

6.0 Adult Summer Chinook, Sockeye, and Steelhead Monitoring

The summer Chinook run begins at Priest Rapids Dam on June 14. Sockeye returns to Priest Rapids Dam typically begin in the second or third week of June. Steelhead began arriving at Priest Rapids Dam by the last week of July. Runs will primarily be monitored via run-of-river PIT-tags.

Monitoring activities will largely depended on ladder operations, trap and haul operations, reservoir elevations, etc., at the time of return. Lessons learned from the Stage I (spring Chinook) monitoring will be used to inform monitoring through Stage II. Monitoring metrics (travel time and conversion rate) will be revised to reflect the historical standards for these species and stocks and are currently in development. Grant PUD is currently in the process of developing the monitoring metrics for steelhead, summer Chinook, and sockeye.

7.0 Pacific Lamprey Passage Monitoring and Evaluation

Adult Pacific lamprey passage typically begins at Priest Rapids Dam by the first week of August. Lamprey passage provides unique challenges that will be addressed in the coming month and may require refinement to infrastructure to facilitate lamprey passage at the Wanapum Fishway Passage Systems or at Priest Rapids Dam. Grant PUD will develop a lamprey passage monitoring and evaluation and passage plan in collaboration with the Priest Rapids Fish Forum.

8.0 Juvenile Salmonid and Steelhead Evaluation

NOAA-Fisheries, the PRCC and Grant PUD agreed that a Wanapum Reservoir juvenile acoustic tag survival evaluation (presence/absence) is necessary to inform resource managers, tribal representatives and Grant PUD on the potential impacts on the juvenile salmonid and steelhead run at large as it relates to the necessary drawdown of Wanapum Reservoir and stabilization of Wanapum Spillway Monolith 4 (SOA 2014-02; Appendix E). The Priest Rapids Reservoir survival and Priest Rapids Top-spill behavior and survival will also be conducted as originally planned and agreed to in November of 2012 (Grant PUD 2013 Activities Under Priest Rapids Project).

To estimate Wanapum Project (dam and reservoir) survival under an emergency drawdown scenario, outside normal operating conditions, a paired-release model, following the methods of Skalski et al. (2005) will be employed. The general paired-release methodology study design to estimate survival at Wanapum under atypically operating condition will be consistent with previous survival evaluations conducted under normal operating conditions at Wanapum and Priest Rapids dams (Skalski et al. 2011, Skalski et al. 2010, Skalski et al. 2009 a &b, Sullivan et al. 2009).

Paired releases of 400 and 700 and 550 run-of-river steelhead and yearling Chinook will be tagged with acoustic transmitters (Lotek Model L-AMT-2.1 JSATS tag) and released in each the tailraces of Rock Island, Wanapum and Priest Rapids dams respectively (Table 5). Up to 22 replicates are currently scheduled to occur at each site.

Acoustic tagged fish will be detected at three separate location within the Wanapum project (dam and reservoir); Crescent Bar, Sundland Estates (RM 426), and Wanapum Dam (RM 416). Two

sites downstream of Wanapum dam will also be used to monitor acoustically tagged fish as they migrate downstream (Mattawa at RM 409 and Priest Rapids Dam at RM 397; Figure 10). Acoustically tagged fish released and/or migrating through the Priest Rapids project (dam and reservoir), will be monitored at two sites downstream of Priest Rapids Dam; Vernita Bridge (RM 388) and in the Hanford Reach near the Ringold Hatchery (RM 361). The Vernita Bridge array is located 11 miles downstream from Priest Rapids Dam, while the Ringold site is 4 miles downstream from the Vernita Bridge array (Figure 10). Table 6 summarizes the release and detection locations for acoustic-tag projects.

Route-specific survival for steelhead and yearling Chinook will be collected at Wanapum (if possible) and Priest Rapids dams. Due to the fracture on spillway monolith 4 and the potential need to have the spillway area of Wanapum Dam clear for repair/construction activities, it may not be possible to collect route specific survival. If it is possible, route-specific survival will be estimated for the powerhouse, spillway, and surface bypass individually (where these routes are available). Information on migration rates, detection efficiencies, and arrival distributions of downstream migrating smolts will also be estimated for Wanapum and Priest Rapids dams. At Priest Rapids Dam, fish passage efficiency (FPE) and route specific survival rate of the newly constructed Priest Rapids Fish Bypass will be determined by following methods employed by Skalski et al. (2009 a & b).

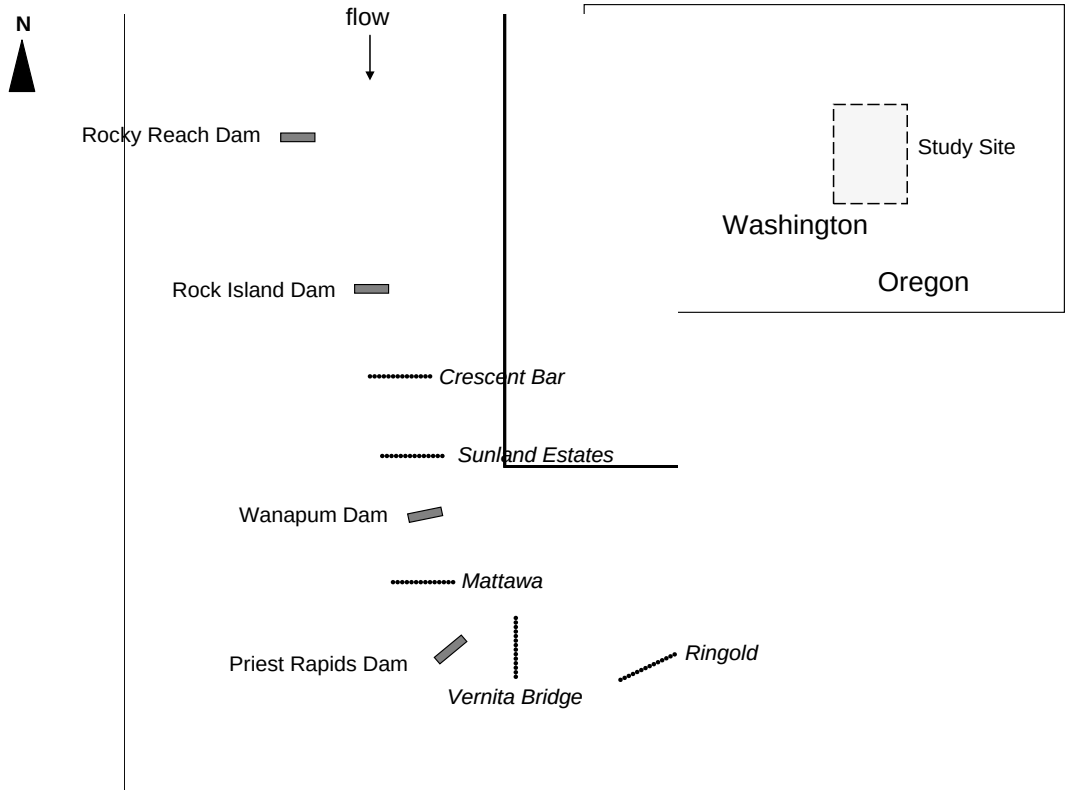

Figure 10 Plan view showing the study site with acoustic tag detection identified.

Table 5 **Number of juvenile salmonids to be tagged and released by Grant PUD for Wanapum and Priest Rapids dams 2014 acoustic-tag studies and tag life test.**

Release Location	(2014) Steelhead	(2014) Chinook
Rock Island Dam Tailrace	400	400
Wanapum Dam Tailrace	700	700
Priest Rapids Dam Tailrace	550	550
Tag Life Tests	25	25
Total Tags	1,675	1,675

Table 6 **Release and detection locations of acoustic-tagged steelhead and Chinook smolts for the Wanapum and Priest Rapids dams spring 2014 studies.**

Location	Acoustic-tags
Rock Island Dam Tailrace	Release
Wanapum Dam	Detection
Wanapum Dam Tailrace	Release
Riverside Road/Mattawa	Detection
Priest Rapids Dam	Detection
Priest Rapids Dam Tailrace	Release
Vernita Bridge	Detection
Ringold Hatchery	Detection

9.0 Consultation

On February 28, 2014, Grant PUD initiated communication with NOAA-Fisheries, USFWS, PRCC and other interested regional stakeholders as it related to the Wanapum spillway fracture and fish passage issues at Wanapum Dam and communication has been ongoing since that date. This communication has occurred via phone, conference calls, meetings, and tours.

Appendix I summarize these phone conservations, conference calls, meetings that Grant PUD has conducted since March 17, 2014 through April 28, 2014. Meeting minutes from the conference calls regarding the joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plan and PRCC meeting minutes and conference calls are provided in Appendices F and G, respectively. Specific recommended conservation measures received from the USFWS and NOAA Fisheries as part of the emergency ESA consultation process are covered in Section 10 and Appendix H.

10.0 Recommended Conservation Measures Received form USFWS and NOAA Fisheries

As part of the consultation process for the March 21, 2014 IFPOP, NOAA-Fisheries provided recommended conservation measures as part of the on-going emergency ESA consultation process via email on March 18, 2014. In addition, the USFWS provided recommend conservation measures as part of the on-going emergency ESA consultation process via letter on March 28, 2014. Appendix H provides the specific recommended conservation measures received to date, and Grant PUD's response to these recommended measures (e.g. meeting, not meeting, or not applicable with an accompanying comment).

11.0 Future Status Update Schedule

Grant PUD is proposing to provide the next status reports on June 6 and July 11, 2014. It is anticipated that the June 6 status report will provide a summary of information related to adult spring Chinook passage at the Wanapum FWEPS, trap and transport program, and results related to meeting the passage criteria for adult spring Chinook. It is also anticipated that the June status update will provide adult passage migration and metric criteria, as well as an updated trap and transport protocol for summer Chinook and sockeye. The July 11, 2014 status report would provide a summary of information related to adult summer Chinook and sockeye passage at the Wanapum FWEPS, mid-season results of the trap and transport program for summer Chinook and sockeye (if needed) and passage migration and metric criteria for adult lamprey. Grant PUD proposed to provide an updated reporting schedule for the remainder of 2014 in the July 11, 2014 status update.

12.0 Adaptive Management

The IFPOP will be adaptively managed, as needed, via consultation with the PRCC, NOAA-Fisheries, and USFWS. Grant PUD expects that this will occur within the PRCC as new issues are identified as it relates to the interim actions contained within this plan.

Grant PUD proposes to implement the IFPOP under the same adaptive management principles that were incorporated into the Priest Rapids SSSA. As defined in the SSSA, adaptive management is an active systematic process for continually improving management policies and practices by sequential learning from the outcomes of operational programs. Adaptive management employs management programs that are designed to experimentally compare selective policies or practices by evaluating alternative hypotheses about the system being managed. The sequence of adaptive management steps include: (1) problem assessment, (2) project design, (3) implementation, (4) monitoring, (5) evaluation, and (6) adjustment of future decisions. Adaptive management is not considered complete until the planned management actions have been implemented, measured and evaluated and the resulting new knowledge has been fed back into the decision-making process to aid in future planning and management. The fundamental objective of adaptive management with respect to IFPOP is to achieve the best possible adult passage based on the emergency situation at hand.

The Grant PUD, NOAA-Fisheries, USFWS and the PRCC have been utilizing this approach over several decades and included such approach in the issued 2004 & 2008 NMFS Biological Opinions, SSSA, Water Quality Certification, the FERC License and Orders. Key examples of application of the approach include implementation of juvenile salmonid behavior and survival evaluations, calculation of NNI Funds, predator control programs, planning, designing, prototype testing, construction and biological testing as it relates to the Wanapum Future Unit Bypass

(WFUB), design and current construction of the Priest Rapids Fish Bypass (PRFB), and implementation of the various hatchery and habitat programs.

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Appendix A
Standard Operating Procedures – Trap and Transport of Spring Migrating Adult Salmon, Steelhead, and Bull Trout from the Priest Rapids Off-Ladder Adult Trap

Phase I

STANDARD OPERATING PROCEDURES
Trap and Transfer of Spring Migrating Adult Salmon, Steelhead and Bull Trout from the Priest Rapids Off-Ladder Adult Fish Trap

Public Utility District No. 2 of Grant County, Washington

April 23, 2014
Version-2

Table of Contents

List of Appendices

1.0 Introduction and Overview

This reference manual contains the standard operating procedures (SOP) for Grant PUD's Phase I Trap and Transport Program at the Priest Rapids Dam Off-Ladder Adult Fish Trap (OLAFT) being conducted as a result of the temporary emergency drawdown of Wanapum Reservoir. This trap and transport operation will run from 5 a.m. to 10 p.m., 7 days per week, starting April 15, 2014 and remain in effect until the end of the spring migration season or when adequate fish passage at Wanapum Dam has been achieved, as determined by the Priest Rapids Coordinating Committee. Should trap and transport for salmon, steelhead and bull trout species **(target species)** be necessary beyond the spring migration period (April 15-June 15), separate SOPs will be developed and issued for Phase II (summer migrants) and/or Phase III (fall migrants).

Overall management of the spring migrant Trap and Transport Operation (TTO) is being conducted in collaboration between Grant PUD and WDFW. A **Project Team** has been identified to manage the overall responsibilities of the operation and is identified in Appendix D. Two distinct work crews will operate the TTO in a manner which ensures fish are safely collected, transported, and released back into the Columbia River, while maintaining the safety of all personnel. These two crews are referred to as the **OLAFT Operators** and the **Fish-transport Truck Drivers**. The specific duties and responsibilities of these crews are detailed later in this document.

For the purpose of this SOP, all upstream migrating fish ascending the Priest Rapids left bank fishway will be diverted through the OLAFT. Salmon, steelhead and migratory bull trout will be diverted to waiting fish-transport trucks and transported to the Rocky Coulee Boat Launch for release in the Wanapum Reservoir, approximately 26 miles upstream from the OLAFT. The only exception to this protocol is the tagging and marking of hatchery spring Chinook associated with monitoring and evaluating passage through the Wanapum and Rock Island fish ladders. Up to 250 of the first hatchery Chinook to ascend the Priest Rapids Dam left-bank fish ladder will be tagged at the OLAFT then diverted back into the ladder. All non-target species will be sorted via a swing gate and diverted back to the left-bank ladder.

2.0 Preparing to Operate Trap and Load Fish

Note: Always consult the complete OLAFT SOP for information on specific equipment settings and operation criteria. A copy of this SOP is located in the OLAFT office.

A minimum of two OLAFT Operators will work during each 9-hour shift (5 a.m. to 2 p.m. and 1 p.m. to 10 p.m.) Their duties are as follows:

1. Upon arrival, one person will contact the Priest Rapids Control Room to notify presence at OLAFT for the day (**ext. 2718 or ext. 2719**).
2. Scan previous day's OLAFT checklist and all transport data sheets and email them to the Project Team. Contact information for the Project Team is included in Appendix D. Include any comments, questions, or suggestions from crew members.
3. Complete start-up checklist (Appendix A) as you follow Steps 4 through 15.
4. Ensure Denile-bypass picket gates are in the down position.
5. Ensure Denile-entrance picket gate is in the down position.

6. Ensure picket gates in the main fishway are in the down position.
7. Ensure trap entrance gate from fishway is open. Consult mark on worm-gear cover for proper height.
8. Ensure OLAFT return-channel gate is in the open position.
9. Ensure orifice gate in weir immediately downstream of OLAFT return-channel exit is in closed position.
10. Ensure Denile, false weir, and sorting-flume water flows are at desired levels, per OLAFT SOP and experienced WDFW staffs' recommendations.
11. Ensure first sorting-flume gate is closed (in the *to-truck* position).
12. Ensure gate to holding-tank flume is closed.
13. Ensure gate to return flume is open.
14. Ensure auxiliary holding tank is filled with water.
15. Ensure bucket and dip net are standing by auxiliary holding tank.
16. Ensure transport truck is in position under loading pipe and the truck and driver are fully ready to receive fish (per transport-truck SOP).
17. Fill anesthesia/auxiliary-holding tank with water

3.0 Trapping and Loading Fish

All target species encountered in the OLAFT are to be loaded into the trucks. See specific bull trout instructions, below.

1. Raise Denile-entrance picket gate.
2. Monitor the sorting flume with gate controller in hand. *To-truck* is the default configuration for gates. *To-return-flume* is secondary configuration. *To holding-tank-flume* is tertiary position.
3. Tally target fish entering the truck by species.
4. If a truck needs to transport and unload because it is fully loaded, or a maximum of 7 hours have passed since loading the first fish, or fish are showing signs of stress, one staff lowers Denile-entrance picket gate. **PLEASE NOTE: Fish may not be held longer than a total of 8 hours, from the loading of the first fish to the last one released at Rocky Coulee.**
5. Other staff continues to monitor the sorting flume until confident all fish have cleared the Denile and false weir.
6. Record loaded fish data on data sheet.
7. Driver pulls out loaded truck and other driver puts next truck in place (already filled with water).
8. Raise Denile-entrance picket gate when ready to resume trapping and loading.

4.0 Tagging and Marking

Beginning on April 15, up to 250 hatchery-origin (adipose clipped) **spring Chinook** will be systematically selected and diverted from the OLAFT into holding tanks. Of these 250 'test fish,' up to 200 will be marked with a PIT-tag (pelvic-girdle), and up to 50 will be marked with both a

PIT-tag and a surgically implanted hydroacoustic tag. The hydroacoustic tagging will be weighted toward the front of the run (April 15-early May). Because marking will require the use of a sedative (such as Aqui-S, clove oil, or MS-222), all test fish will be externally marked with a **caudal fin hole punch**. After marking and recovery, the test fish will be returned to the Priest Rapids Dam adult ladder via the OLAFT exit channel and monitored as they migrate upstream.

OLAFT Operators will be responsible for PIT-tagging and punching a hole in the caudal fin up to the first 250 adipose-clipped spring Chinook encountered at the trap. All adipose-present target species should be diverted to the truck and transported for release. The only exception to this protocol is on the days designated for surgical implantation of hydroacoustic tags, WDFW will shunt ad-clipped Chinook to the anesthesia tank and Battelle/PNNL crews will handle all PIT-tagging of ad-clipped fish. OLAFT Operators will be notified prior to Battelle/PNNL coming on site for these activities.

OLAFT Operators will be responsible each day for compiling and distributing via email all PIT-tag data to Blue Leaf Environmental. Contact information for this distribution can be found in Appendix D.

5.0 Bull Trout Encounters

1. Once a bull trout is identified it will be netted from the sorting flume and placed in a self-contained PVC perforated tube that will be placed inside the loading fish transfer truck. At the point of release, the tube will be removed prior to release of the other target species and the bull trout will be released.
2. Complete a datasheet for each bull trout transported.

6.0 End of Trapping Day

1. At 8 p.m., lower Denile-entrance picket gate.
2. Ensure all fish have cleared Denile, false weir, and sorting flume.
3. Shut off water flow to sorting flume.
4. Pick up any trash and put away all equipment. Coil water hoses and close associated valves.
5. Put all data sheets in the OLAFT office for processing by the OLAFT Operators the following morning.
6. Log off computer and ensure office is locked.
7. Lock and otherwise secure all fish trucks which will remain overnight in the OLAFT parking area.
8. One person will contact Priest Rapids Control Room Operators (ext. 2718 or 2719) to notify intent by the entire group to leave the OLAFT for the day.

7.0 Fish-transport Truck Drivers

During Phase I (April 15, 2014 through June 15, 2014), the Fish-transport Truck Driver schedule will start with 7-day-per-week collection and transport operations. Three different 10-hour shifts will occur daily, starting and ending at the following times: 5 AM to 3 PM, 7 AM to 5 PM, 12 PM to 10 PM. A Fish-transport Truck Driver schedule for the first 30 days has been provided by WDFW with start times, preferred truck, and overnight lodging needs listed for each driver. If

the schedule needs to be changed for any reason, contact your respective complex manager as soon as possible so that a replacement driver can be arranged.

8.0 Job Duties

Each Fish-transport Truck Driver will monitor dissolved oxygen, water temperature, and make periodic visual inspections when fish are on board their designated transport truck, based on additional protocols attached to this document. A data sheet will be filled out for each load of fish transported and released. This data sheet includes the number of fish transports, number of fish released, number of mortalities, observations of any usual fish behavior, and any occurrences of undue delays. Each of these data sheets will be scanned the following morning by the first shift OLAFT Operator and emailed to the Project Team identified in Appendix D.

All transport vehicles will carry a copy of these protocols and any required permits, as deemed necessary by WDFW.

9.0 Fish Loading Densities

The number of fish to be transported in each truck is proportionate to the size of tank, using a ratio of 0.9 lbs. of fish per gallon of water. This density is based on WDFW and NOAA Fisheries recommendations for ESA-listed spring Chinook. For example, in a tank with 2,350 gallons of usable capacity and using an average spring Chinook weight of 14 pounds, this tank will carry approximately 151 spring Chinook, unless the risks of delaying fish exceed the risks of transporting fish at a higher density. Staff will enumerate fish being loaded into the truck as they move down the sorting flume. Fish will not be held longer than eight hours, from the time the first fish is loaded to the time the last one is released. If fish in a transport truck are showing signs of stress that load is to be transported and released as soon as possible. Crews are responsible for determining the optimal time for unloading based on fish health, maximum holding time, and shift changes.

10.0 Protocols

Each of the following protocols must be adhered to by the Fish-transfer Truck Driver during this operation and is the responsibility of the driver:

10.1 Pre-loading Inspection and Preparation

1. Verify all truck maintenance is up to date.
2. Ensure truck tank and hoses have been disinfected per the protocol outlined in Appendix C if it has been used for transporting any other fish stock or non-program water source immediately prior to the current transfer. Disinfect at the rate of 30 ppm. Disinfection chemicals are available at the OLAFT.
3. Verify that oxygen bottles have enough oxygen to complete the planned transfer.
4. Install oxygen pressure regulator and flow meters, if necessary.
5. Inspect air stone condition. Clean if necessary.
6. Test release valve operation.
7. Turn on aerators and verify that each operates.
8. Test truck lift bed operation, if equipped.

The following protocols are based on Washington Department of Fish and Wildlife's (WDFW's) fish-transfer protocols. Any questions about the applicability of these protocols should be directed to the TTO Field Supervisor before loading or transporting fish.

The Fish-transfer Truck Driver is responsible for monitoring the health of fish on board. If the driver has a question, concern, or believes a deviation from this protocol is necessary, consultation with either the primary or secondary Field Supervisor is required before implementing that deviation.

10.1.1 Loading Protocols

1. Use the attached data sheet (Appendix B) to record the required information for each transfer.
2. Verify all tank valves are closed.
3. Fill tank(s) with water using hose connected to water supply valve located adjacent to wooden stairs.
4. Determine initial tank fill level.
5. Test each oxygen stone.
6. Test each aerator.
7. Measure and record the exact water level in each compartment (if applicable).
8. Measure and record the dissolved oxygen (DO) level and temperature (°C) where the fish are being held.
9. Turn on aerators in each compartment.
10. Load fish into tank based on criteria provided by field supervisor. **Assume 0.9 lbs. of fish per gallon of water if no other instructions are provided. Note: the water displacement method of determining fish-load density will not work because the truck tanks will be plumbed with single-pass water.**
11. Record the number of fish loaded into each truck, by species.
12. Monitor DO levels and temperature in each compartment during loading. Keep DO within 2 mg/L of source water throughout the transfer process until unloading the fish at the destination.
13. Ready the truck for transport.
14. Call WSDOT representative **Dennis Palmer at 509-387-6629** when leaving the OLAFT facility. A secondary contact is identified in Appendix D. This notifies flagger crews working on the Mattawa Hwy 243 Roundabout Project that a fish truck will be arriving at the site in approximately 10 minutes (for more detailed information, see Section 14.0). When the fish truck is observed approaching a stopped line of traffic at the project, WSDOT has agreed that the line of traffic will be released to avoid undue delays for the fish transport truck. If the line is not released, phone the designated representative again to alert them the truck has arrived.

10.1.2 Transport Protocols

1. During transport, monitor DO levels in the tank. Adjust oxygen flow meters as necessary. Prior to release look for signs of fish stress, such as belly-up and on-side positions. Measure and record water temperature and DO level in tank. If 5% (e.g., 7 fish out of 15

for a 2,350 gallon tank) or more of the fish show signs of stress or mortality during any inspection contact the Field Supervisor.

2. If unexpected delays occur during transport, such as truck mechanical issues or emergency road closures, inspect each compartment of fish every 45 minutes. Measure and record water temperature and DO level in each compartment. Adjust oxygen flow meters as necessary.

10.1.3 Destination Protocols

1. All crews must wear high-visible orange safety vests at the release site.
2. Immediately after arrival at the transfer destination, inspect each compartment of fish, and measure and record DO level and water temperature in each compartment. Adjust oxygen flow meters as necessary.
3. If unexpected delays occur at the release site, inspect the fish and measure and record DO and water temperature in each compartment every 30 minutes while standing by at the destination.
4. Measure and record the DO level and water temperature of the river. If truck tank and river water temperatures differ by more than 3-degrees C, consult with Field Supervisor prior to unloading.
5. If the driver of the last release of the evening is not returning to OLAFT that night, they will leave their data sheet in the white envelope in the yellow fuel cabinet at the release site.

11.0 Release Location

All fish are to be released at the Rocky Coulee Boat Launch, located approximately 26 miles upstream of the OLAFT. The site is located on the west (right) bank upstream of Vantage (see map). Alternate release sites that may be used if necessary are the Wanapum Upper Boat Launch and Kirby Billingsly Hydro Park upstream of Rock Island Dam near East Wenatchee.

Prior to transporting fish, all drivers must visit the release site to identify any special needs or concerns related to the unloading of fish that may pertain to their individual truck. Because of lower Wanapum Reservoir levels, an adjustable hopper and pipe assembly will be provided to facilitate safe fish release.

Two staff (one Fish-transport Truck Driver and one OLAFT Operator, or two Fish-transport Truck Drivers) will handle the fish release duties. Water temperature will be recorded and fish behavior will be monitored as fish are released into the reservoir. A gasoline-powered water pump will be stationed at the release site to provide flushing water for the trucks and release pipe. The pump will need to be started and shut down before and after each release event.

12.0 Reporting

All fish transfer data sheets and OLAFT operation checklists need to be placed in the designated basket or location in the OLAFT office. The exception to this is if a driver has the late shift and doesn't plan to return to the OLAFT after the last release. If this is the case, place the data sheet in a binder located in the locked fuel cabinet at the release site. The first driver to get to the release site the following day needs to return the data sheet to the OLAFT. Once all of the previous day's data sheets and checklists have been compiled, they should be scanned and emailed to the Project Team (Appendix D of the SOP).

13.0 Monitoring and Evaluation

Before and after each release, WDFW staff will observe the immediate area for any signs of unusual activity, including but not limited to predation threats, suspicious behavior by fish, animals, or people, and fish mortalities. Any such activity should be recorded on the data sheet

(Appendix B). Additionally, WDFW staff will use the standard data sheet to report the number of fish loaded, tank water level, travel time, dissolved oxygen levels, temperature, release time, and transport mortalities. All mortalities which can be recovered will be transferred to a freezer at Priest Rapids Hatchery and preserved for sampling by fish pathologists.

14.0 Fish Health and Disease

Fish are expected to be collected, transported and released with as little handling as possible throughout this process. A fish pathologist has reviewed these protocols to ensure proper fish capture and handling techniques and transport conditions meet appropriate criteria. To help maintain good fish health and minimize the risk of disease, be sure to adhere to loading densities and disinfection protocols referred to in this document. Direct any questions to the Field Supervisor.

15.0 Road Construction

Three portable radios will be assigned for use by WDFW staff during transport. A road construction project on State Route (SR) 243 at the Road 24-SW intersection in Mattawa, WA is scheduled for April 15-May 31. Because this project has the potential to delay fish transport during this time period, Grant PUD and Washington State Department of Transportation (WSDOT) staff have coordinated to move fish transport trucks through the construct site unimpeded. Prior to leaving the OLAFT, WDFW staff is to contact **Dennis Palmer with WSDOT by radio in the fish transport truck or cell phone (509-387-6629)** to notify them a truck is leaving Priest Rapids Dam with a load of fish. Upon arriving at the site, the flaggers will open its lane for travel, reducing the amount of waiting time through the construction zone. If this does not occur in a timely manner, please contact the above number again as well as the Field Supervisor.

Additional road construction on I-90 just east of the Vantage Bridge is underway and will run through the end of June. This project replaces the asphalt driving lanes on I-90 for 11 miles from the Vantage Bridge to a mile west of George. During construction, one lane of traffic will remain open, with the exception of paving at the Exit 137 off SR26 onto I-90, during which there will be short closures and traffic will be diverted across the Vantage Bridge and returned to I-90 in the eastbound lanes. How this may affect travel from OLAFT to the Rocky Coulee Boat Launch is unknown at this time but will be monitored and updates provided as needed. Report any significant delays to the Field Supervisor. Due to safety reasons, drivers may not use cross-over roads between exits if they are detoured for any reason.

16.0 Facility Access and Security

Priest Rapids Dam and OLAFT are accessed via a motorized gate that can be activated by electronic security cards, or badges. Badges will be issued to each crew member and must be used to access the the main gate at Priest Rapids Dam. Badges must be worn visibly by drivers at all times while on site. All security rules must be obeyed.

1. Do not follow another vehicle through an open gate without scanning your truck's access card.
2. Do not allow other drivers to follow you through an open gate without scanning their card.

3. Do not bring guests inside the gate without prior approval from Grant PUD security department.
4. Do not access any area inside the gate for any reason other than to conduct your work.
5. Do not visit any site other than OLAFT, such as the powerhouse, without a Grant PUD employee escort.
6. There are numerous security cameras which monitor the facility and access road 24-hours per day.
7. If you observe any criminal or suspicious act, event, unusual conduct, unusual inquiry, or any questionable activity involving Grant PUD physical or cyber facilities or personnel, call extension 2518 or 9-1-1 from a PUD phone. There is a PUD phone in the OLAFT office and one at the main gate. To call in from an outside line, such as via your mobile phone, dial 509-754-5088, then the extension 2518.

While working at OLAFT, you are considered a Grant PUD contractor. Wearing a contractor badge at all times will be required for OLAFT Operators and Fish-transport Truck Drivers. A Contractor Checklist will need to be completed and submitted prior to receiving a badge for the first time for all new contractors. In addition, every contractor needs to complete both the Safety and Security training and provide a photo and copy of their driver's license. For questions about this process, contact the Field Supervisor. If you already have received a contractor badge in the past, you may still be required to take the Safety and Security training.

In addition to the security badge, a fuel card and key will be provided for refueling at Grant PUD filling stations and for accessing the gate at the Rocky Coulee Boat Launch, respectively.

17.0 Safety

Safety of WDFW staff and fish are of the highest importance. You are expected to conduct yourself in a safe manner at all times. If you observe any behavior at any time that is suspect, you should report it to your supervisor immediately. Note: OLAFT and the parking lot are *not* hard hat or safety vest-required areas.

18.0 Mechanical support and materials

Grant PUD mechanical and transportation crews will respond to all requests for maintenance or repairs of trucks or the OLAFT facility. Please contact the designated personnel (Appendix D) immediately after an issue arises. Some basic materials and supplies will be stored at or near OLAFT to assist with TTO, such as disinfection chemicals and compressed oxygen bottles. Oxygen bottles should be replaced as needed prior to transporting fish. Disinfection chemicals and materials are stored in the yellow cabinet adjacent to the truck-fill station at OLAFT.

19.0 Scheduling

A crew schedule is being managed by the WDFW Project Supervisor and WDFW hatchery complex managers from the Eastbank and Wells hatchery facilities. If any crew member needs to make a schedule change, please notify your respective supervisor from these areas.

20.0 Accommodations and Meal Per Diem

Hotel accommodations are available at the Desert Aire Motel and will be paid for by Grant PUD. Arrangements for booking and payment have been made through May 15 for personnel who

have requested it. The motel is located approximately five miles north of Priest Rapids Dam just off Hwy 243 at Desert Aire. **Cancellations must be made by 7 p.m. on the date of check-in, or the hotel will be charged at full rate. Pets are not allowed at the Desert Aire Motel.** Please call Grant PUD Administrative Assistant Debbie Williams at 509-220-1724 or the Desert Aire Motel directly at 509-932-4300 to cancel your room. Debbie Williams will assist with all bookings.

WDFW will reimburse all employees for meals during their shift per established GSA per diem rates. Grocery stores are located in the Desert Aire and Mattawa communities.

21.0 Communication

Clear, frequent, and concise verbal and written communication is important to ensure human and fish safety. A complete contact list of key individuals is provided in Appendix D.

Appendix A
OLAFT Start-Up Checklist

Daily Checklist for OLAFT Set Up and Operation

1	Scan previous day's OLAFT and transport data sheets and email them to Project Team?	YES	NO
2	Denile-bypass picket gates in down position?		
3	Denile-entrance picket gate in down position?		
4	Picket gates in main fishway in down position?		
5	Trap entrance gate from fishway open?		
6	OLAFT return-channel gate in open position?		
7	Orifice gate immediately downstream of OLAFT return-channel exit closed?		
8	Denile, false weir, sorting-flume water flows at desired level?		
9	First sorting-flume gate closed?		
10	Gate to holding-tank flume closed?		
11	Gate to return flume open?		
12	Auxiliary holding tank filled?		
13	Bucket and dip net standing by auxiliary holding tank?		
14	Transport truck in position under loading pipe?		
15	Truck and driver fully ready to receive fish?		

Appendix B
Grant PUD Fish Transfer Data Sheet

Grant PUD Fish-transfer Data Sheet

Pre-Loading	
Date of transfer	
Driver's name and organization	
Fish loading location	
Fish destination	
Tanks and hoses disinfected? (y/n)	
Temperature of fish-source water	
DO level of fish-source water	
Recirculation pumps on? (y/n)	

Loading		
Prior to loading		
Water level		
DO level		
Water temp (°C)		
Time Loading Began		
After loading		
Water level		
DO level		
Water temp (°C)		
Lbs. of fish		
No. of fish loaded	Chinook Steelhead Sockeye	Coho Bull Trout
Time loading completed:		

Destination			
Immediately upon arrival			
Arrival Time	DO level	Tank water temp	River water temp
Visual inspection comments			
Visual inspection comments			
Visual inspection comments			
Unloading			
Morts Observed by Species			
Morts Recovered and Transported to PRH by Species			
Time Unloading Completed			

Appendix C
Disinfection Protocol

The following outlines WDFW procedure for disinfecting fish transfer trucks and fish pumps between handlings of different fish stocks.

DISINFECTING FISH TANKERS

It is vital that fish transfer tanks be disinfected between stocks of fish being hauled for the reasons already described in previous disinfection sections of this manual. Liquid chlorine bleach, which is available in several concentrations, is the preferred disinfectant for this use. Chlorine in solid form is also an effective disinfectant, but is difficult to dissolve completely and has high human health risks, and therefore is not recommended. To properly disinfect tankers, use the following protocol.

1. Fill the tanker approximately half full with water at the shipping station. Add enough liquid chlorine bleach to achieve a 20 ppm active ingredient solution (30 ppm if water is noticeably dirty or discolored), Table 5.
2. Recirculate this solution for at least 10 minutes in the tanker and fish pump so that all surfaces are wetted.
3. Following recirculation, add the appropriate amount of sodium thiosulfate, Table 5, to the tanker and circulate another 10 minutes to neutralize the chlorine and make it safe to discharge.
4. As a precaution, prior to discharge, check the water in the tanker with a test kit to make sure the chlorine is COMPLETELY neutralized.
5. Empty the tank where the discharged water will not contact fish.
6. Rinse thoroughly and refill with clean water for fish hauling.

TABLE 5. CHEMICAL QUANTITIES REQUIRED FOR TANKER DISINFECTION

TANKER SIZE IN GALLONS	AMOUNT OF WATER	AMOUNT OF 12% BLEACH FOR 20 PPM	AMOUNT OF 12% BLEACH FOR 30 PPM	POUNDS OF SODIUM THIOSULFATE TO NEUTRALIZE 20 PPM[1] / 30 PPM
6000	3000 gal.	1811 ml	2717 ml	3.8 / 5.7
2500	1250 gal.	764 ml	1160 ml	1.6 / 2.4
1800	900 gal.	566 ml	849 ml	1.1 / 1.7
1000	500 gal.	311 ml	481 ml	0.6 / 0.9

[1] 0.56 grams sodium thiosulfate per 10 gallons of 20 ppm chlorine.

Appendix D
Contact List

OLAFT Trap and Transport Contacts

PROJECT TEAM	Name	Phone	Email	
GPUD OLAFT TTO Coordinator	Shannon Lowry	509-289-9244	slowry@gcpud.org	
WDFW OLAFT TTO Coordinator	Jeff Korth	509-457-9336	jeff.korth@dfw.wa.gov	
WDFW Project Supervisor	Mike Lewis	509-607-6156	mikel.lewis@dfw.wa.gov	
GPUD Field Supervisor - primary	Dave Duvall	509-797-5171	dduvall@gcpud.org	
GPUD Field Supervisor - secondary	Eric Lauver	509-797-5175	elauver@gcpud.org	
First point of contact	**Name**	**Phone**	**Secondary**	
Fish health issues	John Kerwin	360-902-2681		
Mechanical repairs - OLAFT	Steve Gwynn	509-398-6183		
Mechanical repairs - fish trucks (5 am to 4 pm)	Phil Vidonne	509-750-3323 or 754-5088 x. 2575	Mike Phelps	509-989-6184
Mechanical repairs - fish trucks (4 pm to 10 pm)	Rotating	509-754-5005	Mike Phelps	509-989-6185
Mechanical repairs - Rocky Coulee release	Ian Hunter	509-885-0394		
OLAFT operation	Janet Eckenberg	509-840-4637		
Mattawa Round-About Project	Dennis Palmer	509-387-6629	Ted Snodgrass	509-679-8363
Security	Dick Robert	509-860-0749		
Bookings or cancellations at Desert Aire Motel	Debbie Williams	509-220-1724	Desert Aire Motel	509-932-4300
Radio communication	Trung Tran	509-989-3520		
Drivers		**Cell**	**Office**	
David Dinsmore (non-CDL)	Wells Complex	509-341-4515	509-996-3144	
Brandon Haynes	Wells Complex	603-325-5969	509-923-2471	
Matt Moore (non-CDL)	Wells Complex	509-341-4499	509-997-2013	
Scott Moore	Wells Complex	509-449-3103	509-923-2471	
Dana Marsh	Wells Complex	509-429-1405	509-923-2471	
Jayson Wahls	Wells Complex	360-631-6166	509-923-2471	
Scott Peterson	EB Complex	509-387-2106	509-661-8301	

Mauro Solorio	EB Complex	509-393-3186	509-661-8301
Kyle Thompson	EB Complex	207-240-7940	509-661-8301
Travis Burnett	EB Complex	425-894-2971	509-661-8301
Bruce Ault	Ringold	509-430-5143	509-269-4448
Kyle Huwe	Ringold	509-430-5143	509-269-4448
Ken Westrope	Col. Basin	509-750-0334	509-765-7714
Steve Mansfield	Col. Basin	509-750-0334	509-765-7714
Mike Erickson	Ringold	509-430-7408	509-269-4448
Glen Pearson	Priest Rapids	509-823-7639	509-754-5075
Alternate drivers		**Cell**	**Office**
Brian Lyon	Wells Complex	509-431-3900	509-476-3130
David Dinsmore (non-CDL)	Wells Complex	509-341-4515	509-996-3144
Jayson Wahls	Wells Complex	360-631-6166	509-923-2471
Mike Lewis	PRH Complex	509-607-6156	509-765-7714
OLAFT operators			
OLAFT office			509-754-5088, x 4525
Janet Eckenberg	OLAFT	509-840-4637	509-932-4168
Andrea Eckenberg	OLAFT	509-830-5700	
Justin Burrus	OLAFT		
Megan Daley	OLAFT	425-218-6355	
Lori Fronsman	OLAFT		
Nick Bessaw	Priest Rapids	509-770-0667	509-754-5075
Nathan Roberts	Priest Rapids	509-770-0667	509-754-5075
Renee Shaw	Priest Rapids	509-770-0667	509-754-5075
Paul Goodmanson	Priest Rapids	509-770-0667	509-754-5075
Bruce Ault	Ringold	509-430-5143	509-269-4448
Kyle Huwe	Ringold	509-430-5143	509-269-4448
Ken Westrope	Col. Basin	509-750-0334	509-765-7714
Steve Mansfield	Col. Basin	509-750-0334	509-765-7714

Mike Erickson	Ringold	509-430-7408	509-269-4448
Glen Pearson	Priest Rapids	509-823-7639	509-754-5075
Evaluation studies			
Blue Leaf Environmental	Mark Timko	509-210-7422	
PNNL/Battelle	Rich Brown	509-371-7189	
PIT-tag data distribution			
Mark Timko	mtimko@blueleafenviro.com		
Suzie Rizor	srizor@blueleafenviro.com		
Peter Graf	pgraf@gcpud.org		

Appendix B
Spring Chinook Salmon Migration and Metrics Plan

Monitoring and Evaluation of Adults in Response to Modifications to Wanapum Dam Adult Ladders

Introduction

As a result of a horizontal fracture discovered in spillway monolith 4 on February 27, 2014, the Wanapum Reservoir water surface elevation was drawn down to relieve the load on the spillway to an elevation where the structure is stable. Due to the drawdown, the Wanapum Dam fish ladder exits are dewatered and the ability for fish to use entrances into the Rock Island Dam fish ladders have been affected. As identified in the *Interim Fish Passage Operation Plan* (IFPOP), reestablishing adult fish passage at Wanapum Dam is the foremost priority. Modifications to the Wanapum Dam ladders exits to reestablish passage during the drawdown are ongoing. The Wanapum Dam left-bank ladder will be operational on April 15 and the right-bank ladder is scheduled to be operational the following week (~April 23).

In parallel to the ladder modifications, Grant PUD is preparing to trap and haul migrating fish around Wanapum Dam from Priest Rapids Dam (see IFPOP for details). As described in the IFPOP, the preferred passage route for migrating adults is through the adult fish ladders. When operational, the ladders provide the most direct and safest route through the Project. Trap and haul, due to fish handling and the potential for migration delays, is a temporary solution for passage until the Wanapum Dam adult ladders are operational.

In order to evaluate passage routes, adaptively manage passage operations, and assess the impacts to migrating adults, the following monitoring and evaluation (M&E) plan has been developed. This plan is complementary to other M&E plans that are being developed for trap and haul (IFPOP) as well as juvenile monitoring. The continual monitoring and evaluation of passage conditions during the Wanapum Reservoir drawdown will provide for opportunities to adaptively manage interim fish passage measures and confirm the ladder modifications provide timely and safe passage for migrating adults. The monitoring and evaluation activities will be implemented using a staged approach, each stage representing a migration time period and potentially associated with the phase I and II modifications of the Wanapum Dam adult ladders.

Each stage will be used to inform the next and adaptively manage passage conditions.

- Stage I will evaluate the Wanapum Dam adult ladder modifications and the passage of returning spring Chinook (see Figure 1).
- Stage IIa will monitor migrating summer/fall Chinook, steelhead and sockeye.
- Stage IIb will monitor Pacific lamprey. Pacific lamprey present a unique challenge and will likely require additional infrastructure and additional monitoring activities, which will be developed in the Priest Rapids Fish Forum.

Adult Passage Monitoring Infrastructure

The following are the adult passage monitoring infrastructures that will be used during the Wanapum Reservoir drawdown (Figure 2).

PIT-tag Detection Arrays

PIT-tag detection arrays (full-duplex, or FDX) will be operational in the adult fish ladders at McNary Dam, Priest Rapids Dam, Wanapum Dam, Rock Island Dam, Rocky Reach Dam, and Tumwater Dam (Wenatchee River). Data from these interrogation sites are uploaded to PTAGIS frequently (every 3 to 24 hours) and together provide high detection efficiencies.

Half-duplex (HDX) arrays for monitoring lamprey passage will be operational at McNary Dam, Priest Rapids Dam, Wanapum Dam, Rock Island Dam, and Rocky Reach Dam.

Hydroacoustic Receiver Arrays

During Stage I (and Stage II if necessary) hydroacoustic receiver arrays will be deployed from Priest Rapids Dam to Rock Island Dam. These receivers will provide detailed information on the behavior and migration pattern of tagged adults including reach specific passage times, fallback, and the location of possible delays. This information may be helpful in identifying the location of delays if they occur and therefore contribute to informing focused adaptive management. Initially data will be downloaded from the receivers and processed at weekly intervals, but the frequency may be adjusted as more is learned about passage success and timing.

Direct Observation

Personnel will observe fish exiting Wanapum Dam adult fish ladder during the initial passage evaluation and throughout the return of migration adults as needed. Personnel will observe fish as they exit the ladders and record their behavior and condition. Representative video recordings of fish passing the weir box and exiting the ladder will be collected.

Census Fish Counting

Video recorded census fish counting will be available at Priest Rapids Dam and Rock Island Dam. The Wanapum Dam fish counting infrastructure will not be operational during the interim ladder operations. Fish counting at both Priest Rapids Dam and at Rock Island Dam will have begun by April 15.

Methods

Stage I: Spring Chinook Initial Passage Evaluation and Criteria

Passage of adult spring Chinook salmon through the modified Wanapum Dam fish ladders, the Wanapum Reservoir, and through Rock Island Dam will be monitored via PIT-tags, hydroacoustic tags, and direct observation (Figure 2). The intent of this phase of the adult migration monitoring program is to confirm that successful passage through Wanapum Dam is occurring for spring Chinook and that travel time and conversion rates through the Project are consistent with historical passage data.

Test Fish Migration and Metrics

On April 15, 2014, all migrating adults ascending the Priest Rapids adult ladders will be diverted into the Priest Rapids Off-Ladder Trap (OLAFT) (the right bank ladder will be closed to passage). After entering the OLAFT, fish will be directed via swing gates into either fish transport trucks or holding tanks. Beginning on April 15, up to 250 hatchery-origin (adipose clipped) fish will be systematically selected and diverted from the OLAFT into holding tanks. Of these 250 'test fish', up to 200 will be marked with a PIT-tag (pelvic-girdle), and up to 50 will be marked with both a PIT-tag and a surgically implanted hydroacoustic tag. The hydroacoustic tagging will be weighted towards the front of the run (April 15-early May).

Because marking will require the use of a sedative (MS-222), all test fish will be externally marked with a pelvic fin hole punch. After marking and recovery, the test fish will be returned to the Priest Rapids Dam adult ladder via the OLAFT exit chute and monitored as they migrate upstream.

Passage evaluation metrics (travel time and conversion rate) will be monitored with PIT-tags using the Priest Rapids, Wanapum Dam, and the Rock Island ladder PIT-tag detection arrays. Migration behavior into the Wanapum Dam ladders, from the Wanapum Dam ladder exit through the Wanapum Reservoir, and to the Rock Island tailrace will be monitored with hydroacoustic tags. Using both PIT-tags and hydroacoustic tag will allow for the evaluation of passage time and conversion rates and the identification of delay locations or fallback if they should occur.

During the evaluations, all natural-origin (adipose present) fish will be directed into transport trucks and transported around Wanapum Dam. This transfer will be water-to-water and no supplemental tagging will occur.

If Stage I results indicate further monitoring of behavior is necessary (e.g., excessive fallback, flume modifications are implemented, etc.), additional fish will be marked with a PIT-tags and surgically inserted hydroacoustic tags.

Ladder Exit Evaluation

In addition to monitoring upstream migration metrics, fish used in the passage evaluation will be observed exiting the Wanapum Dam ladders. Fish behavior at the false weir and the ladder exit will be visually evaluated. During daylight hours, personnel will observe the fish exiting the ladders and entering the Wanapum Reservoir. Observers will record ladder exit leaping/swimming behavior, orientation on the exit flume, orientation at entry into the reservoir, initial behavior after pool entry, and approximate height from exit flume to the reservoir water surface. Representative video recordings of fish passing through the modified ladder exits will be collected and provided to the PRCC.

Passage Criteria

If during this initial evaluation, passage through the Project meets the criteria described below, the run-at-large will be allowed to pass upstream of Priest Rapids Dam through both the left and right bank adult ladders (see Figure 2). If the test fish are not meeting the criteria, passage will be evaluated, adaptively managed, and re-evaluated until criteria are met. After the run-at-large is allowed to pass through the ladder, monitoring will continue to ensure that passage rates remain within these criteria.

1. **Travel time** from Priest Rapids Dam to Rock Island Dam is less than 356 hours for 90% of the fish that are detected at Priest Rapids Dam and at Rock Island Dam. This value represents the highest 90% percentile travel time observed since 2003 when ladders were operating under normal conditions.
    a. Travel time will be measured from the Priest Rapids Adult (PRA) array to the Rock Island Adult (RIA) array.
    b. See Figure 2 for a schematic of array detection locations.
    c. See Figure 3 for the travel time distribution for spring Chinook from 2003-2013. The majority of observations are less than 350 hours, however, travel times above 350 hours do occur under normal circumstances.
    d. See Figure 4 for a year-by-year distribution of travel time for spring Chinook from 2003-2013. The box and whiskers represent the percentiles of the observations (e.g., the 50^{th} percentile equals the median value). In 2004, the 90th percentile travel time was approximately 356 hours.
    e. See Figure 5 for plot of the observed travel times for spring Chinook in 2013. This plot demonstrates the individual variability in travel time. Travel times above 300 hours occur throughout the run.
    f. See Table 1 for a summary of observed travel times from Priest Rapids Dam through Wanapum Dam using radio telemetry observations from studies in 1995 and 1997. Historical travel time data from Priest Rapids Dam to Wanapum Dam using PIT-tags is not available; 2014 will be the first year that PIT-arrays are installed in the Wanapum Dam fish ladders. The radio telemetry studies will provide a qualitative context for PIT-tag based travel time observations from Priest Rapids Dam to the Wanapum Dam fish ladder arrays.
2. **Conversion rate** from Priest Rapids Dam to Rock Island Dam is greater than 80%, which is the lowest observed annual conversion rate from 2008-2013 when permanent ladders were operating. Conversion rates before 2008 are available, however hatchery transportation studies from Priest Rapids around Rock Island Dam occurred during those years and confound conversion rate calculations. These conversion rates are 'uncorrected', meaning that they have not been adjusted for array detection efficiencies and detections upstream of Rock Island Dam. However, during passage evaluations, uncorrected conversion rates are what will be available in real-time and therefore will be used for the ladder passage criteria. Corrected conversion rates for all fish passing the Project will be available with post hoc analyses. Array detection efficiency studies have been conducted at Priest Rapids Dam and Rock Island Dam by Biomark, Inc and the Columbia Basin Research group at the University of Washington, respectively (Grant PUD 2013, Chelan PUD 2011). At both dams, detections efficiencies were estimated at >98% for all stocks. Given this rate of detection, the expectation is that the uncorrected conversion rates will be an accurate indicator of true conversion rates.
    a. Conversion rate will be measured from the Priest Rapids Adult (PRA) array to the Rock Island Adult array (RIA).
    b. See Figure 2 for a schematic of array detection locations.
    c. See Table 2 for historical conversion rates.
3. **Wanapum Dam ladder exit** monitoring observes less than 5% instantaneous mortality.

Stage I Run-at-Large Monitoring

During the initial passage evaluations and until ladder passage meets the aforementioned criteria, all non-test fish that enter the OLAFT will be diverted into fish transport trucks and hauled to an upstream location (depending on passage conditions at Rock Island Dam, see the IFPOP for release location details

and within transport monitoring protocols). The migration of the trap and hauled fish after release will be monitored via run-of-river PIT-tags. To limit handling, no additional tagging on trap and hauled fish will occur (see Figure 6 for the number of run-of-river PIT-tags that returned to Priest Rapids Dam relative to the total run in 2013).

After the initial evaluations and the run-at-large is allowed to pass upstream using the adult ladders, passage will continually be monitored with run-of-river PIT-tags and visually observed at the Wanapum Dam ladder exits during peak migration times (10am-4pm) (see Figure 7 for migration timing at the Priest Rapids adult ladders). Passage conditions, metrics, and unforeseen issues will recurrently be provided to the Priest Rapids Coordinating Committee (Grant PUD, NOAA Fisheries, U.S. Fish and Wildlife Service, Washington Department of Fish and Wildlife, Yakama Nation and Confederated Tribes of the Colville Reservation).

During these evaluations passage conditions will be adaptively managed. If additional monitoring is required, or in-season adjustments are made (e.g. ladder exit flume adjustments), more marking (PIT and/or acoustic) and direct observations will be made available as needed. In the event these procedures and/or protocols require adjustment and/or if revised passage evaluation plan(s) need to be developed the PRCC will be requested to provide input for adaptively managing these procedures and protocols.

Stage IIa Monitoring

The summer Chinook run begins at Priest Rapids Dam on June 14. Sockeye returns to Priest Rapids Dam typically begin in the second or third week of June. Steelhead begin arriving at Priest Rapids Dam by the last week of July. These runs will primarily be monitored via run-of-river PIT-tags. However, monitoring activities will largely depended on ladder operations, trap and haul operations, reservoir elevations, etc., at the time of return. Lessons learned from the Stage I monitoring will be used to inform monitoring through Stage II. Monitoring metrics (travel time and conversion rate) will be revised to reflect the historical standards for these species and stocks.

Stage IIb Monitoring

Pacific lamprey typically arrive at Priest Rapids Dam by the first week of August. Lamprey passage provides unique challenges that will be addressed in the coming months. Stage IIb will include refinement to infrastructure changes to facilitate lamprey passage as well as monitoring and evaluation activities to allow for adaptive management.

As part of the current IFPOP design, plating has added to both sides of the ladder exit weir box to facilitate adult Pacific lamprey passage at both the Wanapum and left and right bank ladders. In addition, ramps have been added to the design that go up and over the weir and all corners have been rounded to reduce impacts to lamprey passage. The ramp design incorporated into the weir is the same design that has been used to successfully pass adult lamprey within the Priest Rapids and Wanapum ladders at several of the orifices. In addition to the currently IFPOP elements (i.e., weir box) at

Wanapum Dam ladders, Grant PUD has requested that HDR Engineering (HDR) explore potential elements that might be used to ensure that lamprey are able to efficiently pass at this location.

Grant PUD is committed to developing a lamprey passage monitoring and evaluation plan in collaboration with the Priest Rapids Fish Forum. As with salmon, historical migration behavior of adult Pacific lamprey through the Priest Rapids Project has been monitored and evaluated using HD PIT-tags and radio-telemetry. These data will be used to help design and inform lamprey passage conditions. In 2002, lamprey passage was monitored using radio-tags. Passage efficiency (approach to passage) was estimated at 51% and 70% through Priest Rapids and Wanapum Dams, respectively (Nass et al. 2003). Subsequently, substantial ladder modifications were made to address lamprey passage, including the installation of HDX PIT-tag arrays for monitoring. A total of 10 HDX arrays are currently installed in both the Priest Rapids and Wanapum Dam adult fish ladders. Using run-of-the-river HDX PIT-tags lamprey passage studies have been conducted to estimate passage efficiencies and travel time through the Priest Rapids Project. Project passage has been estimated at 73% and 70% through Priest Rapids Dams and Wanapum Dams, respectively (Grant PUD, 2013). Using these data, as well as annual observational data, lamprey passage will be monitored and evaluated throughout the 2014 migration season. Grant PUD has anticipated the need to evaluate passage of early migrates and will download the HD-PIT receivers earlier and with more frequency to evaluate passage delays, fallback, passage modifications, etc.). Specific monitoring activities and metrics will be developed and refined in the Priest Rapids Fish Forum and conveyed to the PRCC.

Table and Figures

Table 1. Review of Spring Chinook Radio Telemetry Passage Evaluation through the Priest Rapids Project.

Report	Passage Time in Hours (median and range)			Fallback Rate	
	Priest Rapids Dam to Wanapum Tailrace	Through Wanapum Dam	Total Passage Time	Priest Rapids Dam	Wanapum Dam
Stuehrenberg et al. 1995	15.8 (6.8-1,314)	46.0 (2.0-496)[1] 35.7 (2.6-1,108)[2]	51.5 - 61.8	17.7%	8.1%
Perry et al. 1997	12.5 (na)	20.1 (2.3-17.0)[3]	32.6	3.0%	4.1%

[1]Study fish implanted with radio tags at Priest Rapids Dam.
[2]Study fish implanted with radio tags at John Day Dam.
[3]Study fish implanted with radio tags at Bonneville Dam.

Table 2. Spring Chinook Conversion Rate[1] from Priest Rapids Dam to Rock Island Dam (2003-2013).

Observation Year	Priest Rapids Observations	Rock Island Observations	Conversion Rate
2013 Total	333	308	92%
2012 Total	372	349	94%
2011 Total	631	506	80%
2010 Total	491	469	96%
2009 Total	190	176	93%
2008 Total	129	117	91%
2007 Total[2]	110	103	94%
2006 Total[2]	500	441	88%
2005 Total[2]	641	479	75%
2004 Total[2]	719	355	49%
2003 Total[2]	158	104	66%
All Years (2003-2013)	**4274**	**3407**	**80%**
		Average ± SD	*83% ± 15%*
		95% CI	*74% - 93%*
		Minimum	*49%*
		Maximum	*96%*

[1]Data as reported by Columbia Basin Research Data Access in Real Time.
[2]Hatchery transportation studies from Priest Rapids Dam were conducted these years.

Figure 1. Fish passage evaluation and criteria schematic.

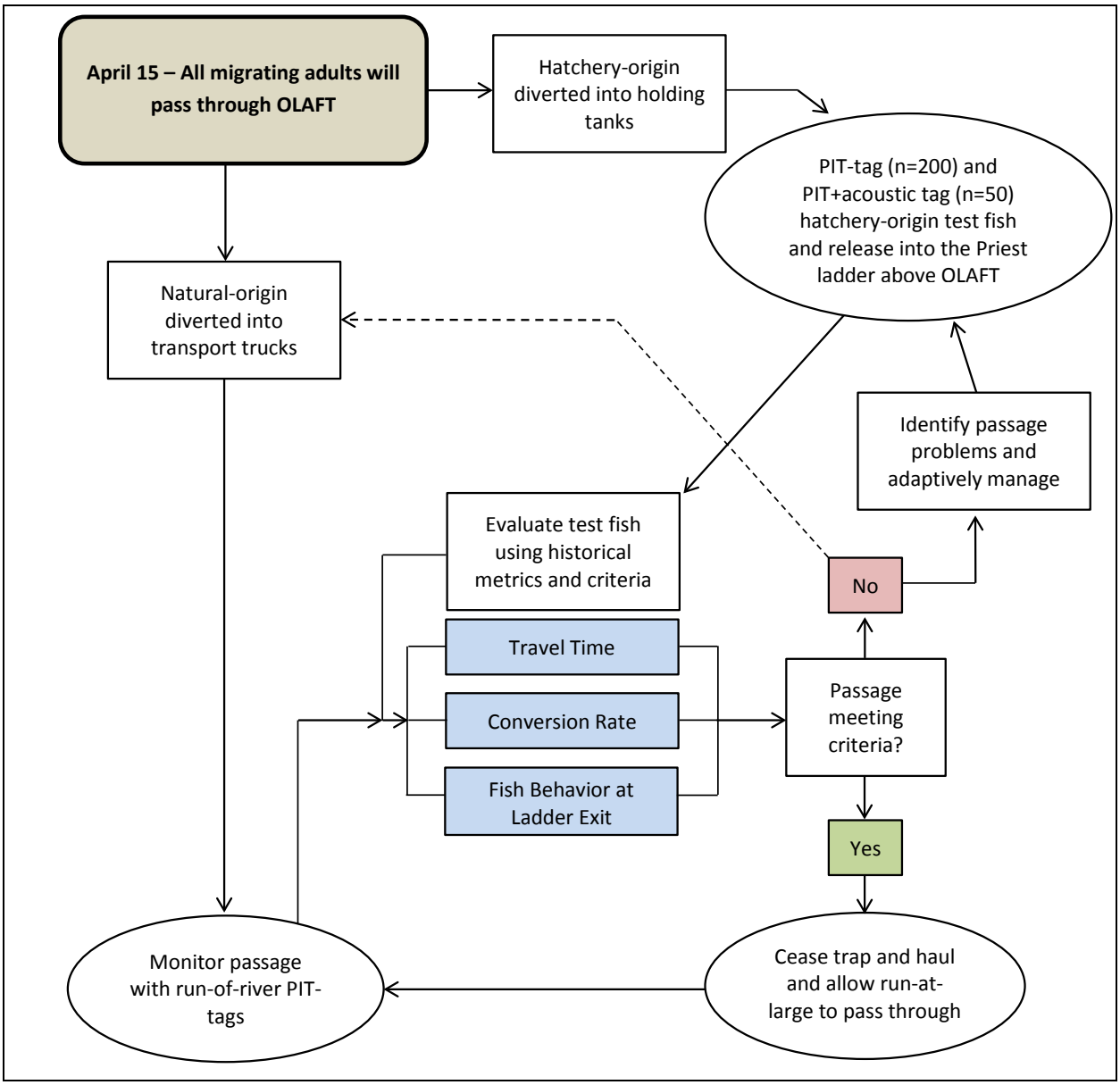


Figure 2. Conceptual study design for PIT-tagged and acoustic-tagged fish for monitoring and evaluating adult passage conditions.

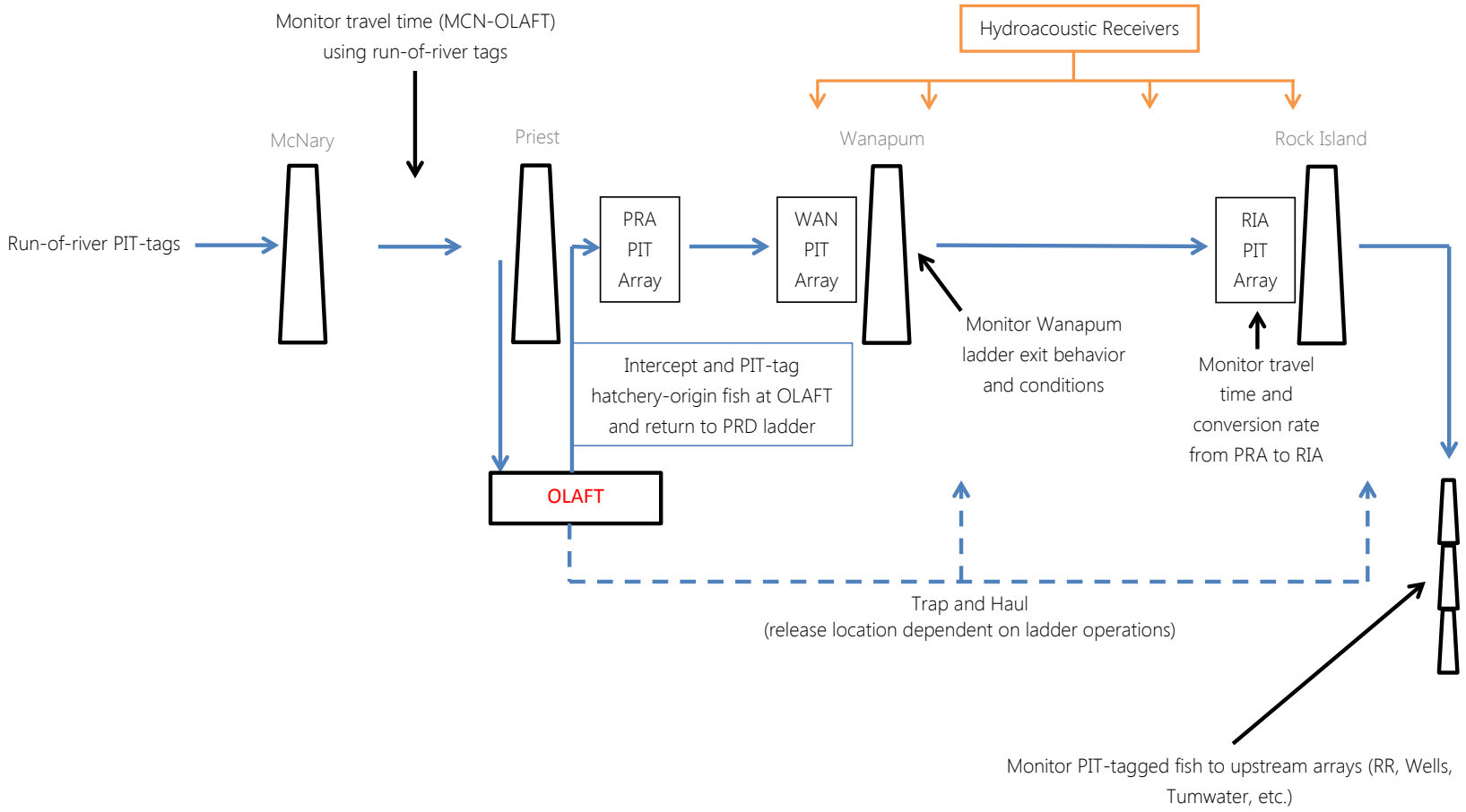


Figure 3. Travel time (hours) of PIT-tagged spring Chinook salmon from Priest Rapids Dam to Rock Island Dam (2003-2013).

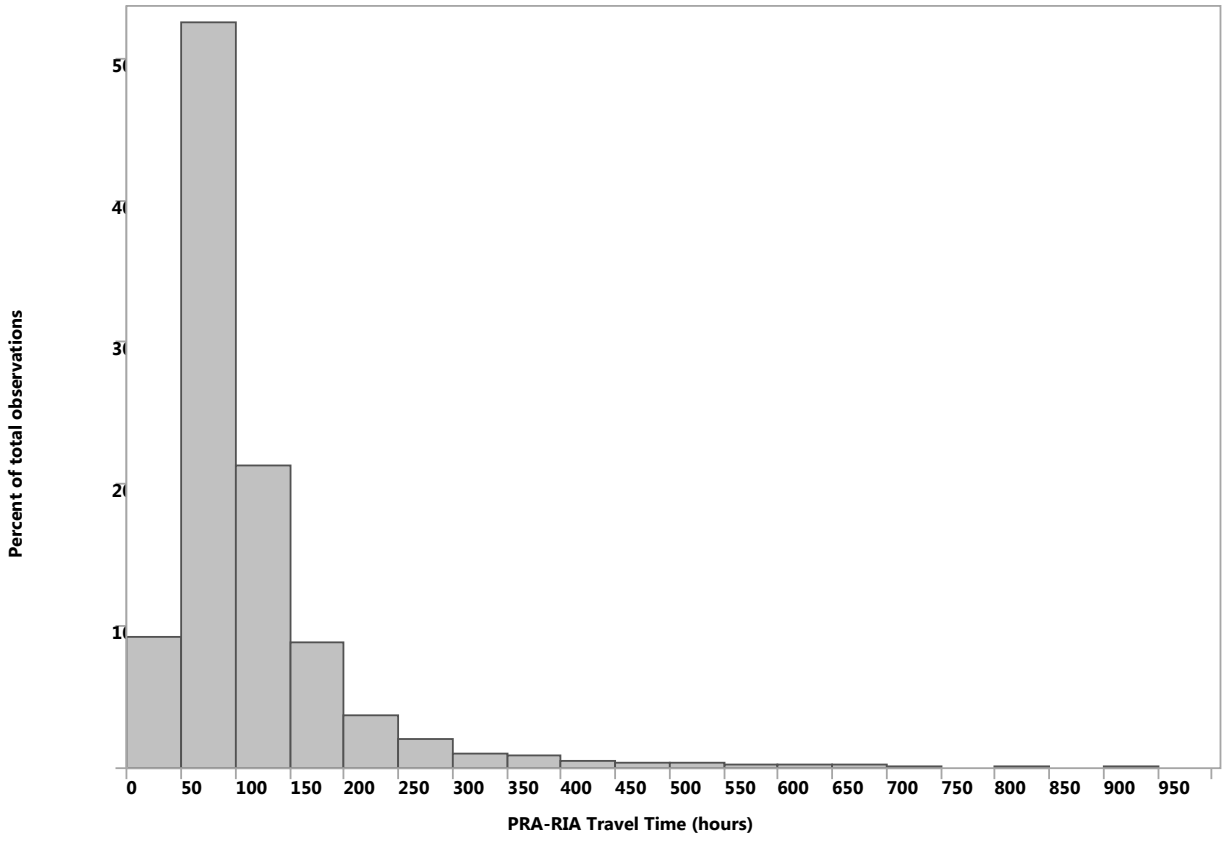


Figure 4. Travel time (hours) of PIT-tagged spring Chinook salmon from Priest Rapids Dam to Rock Island Dam (2003-2013).

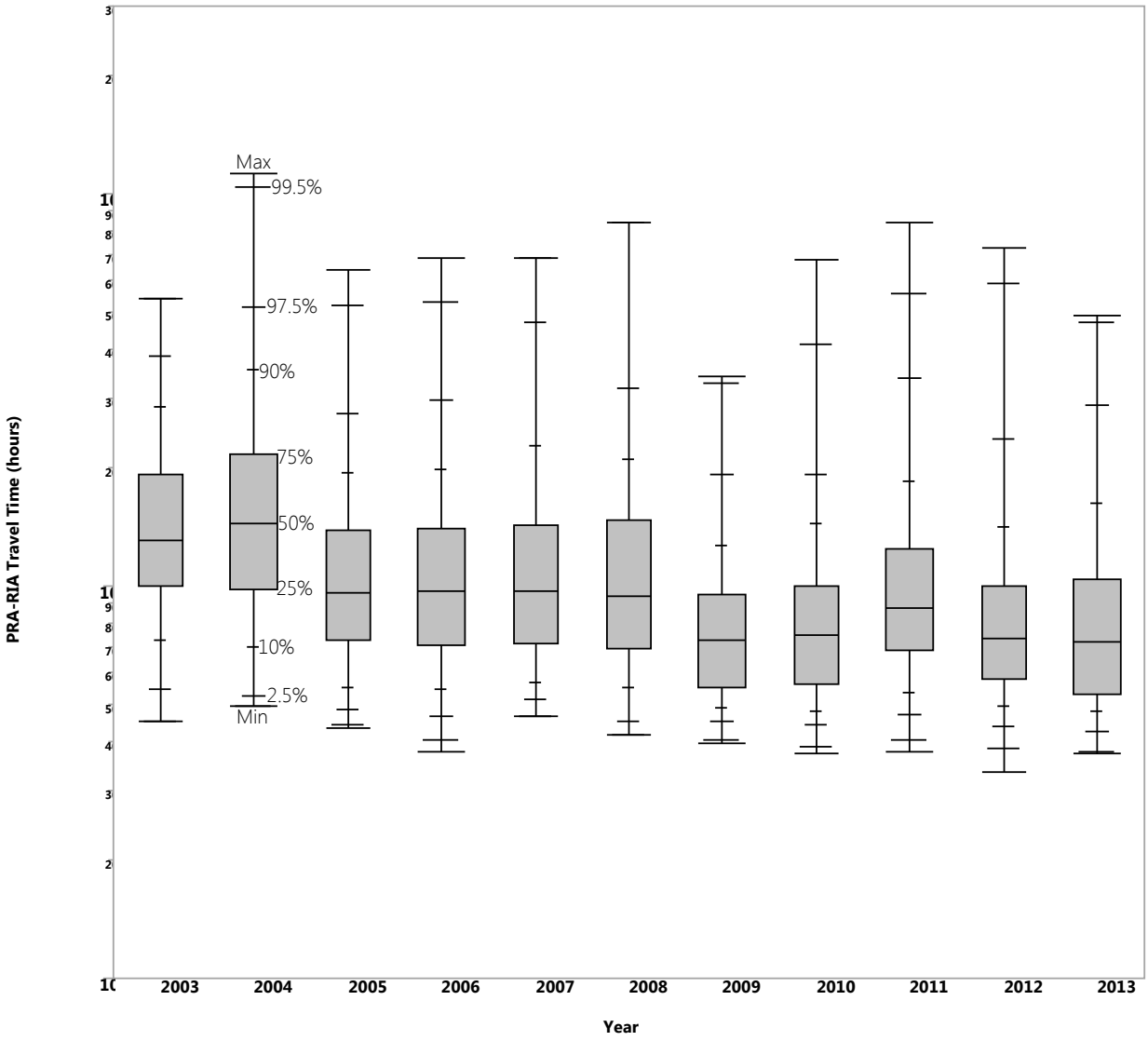


Figure 5. Individual fish travel time from Priest Rapids to Rock Island in 2013. Each dot represents the arrival date at Rock Island (x-axis) and duration (hours) from Priest Rapids to Rock Island (y-axis).

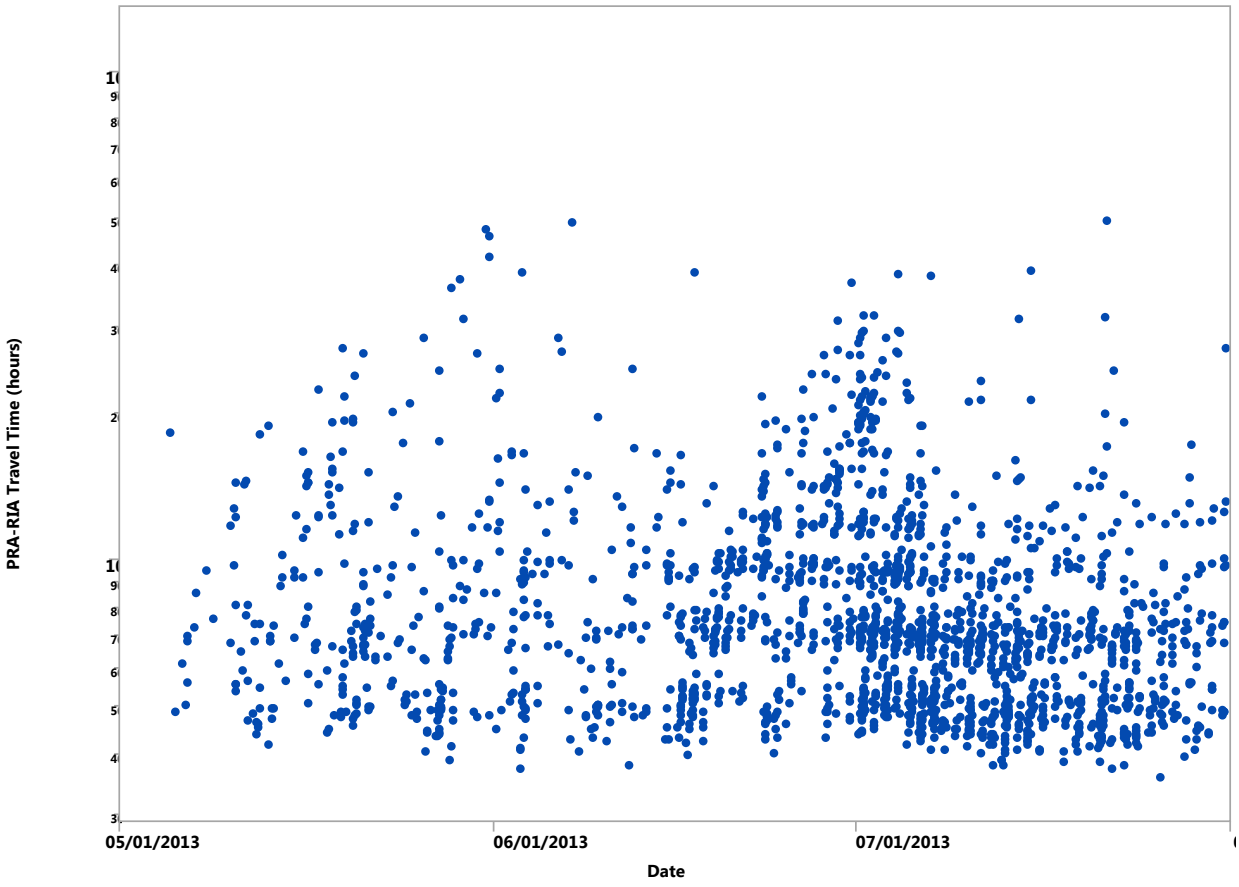


Figure 6. The total run return and PIT-tag return to Priest Rapids Dam in 2013.

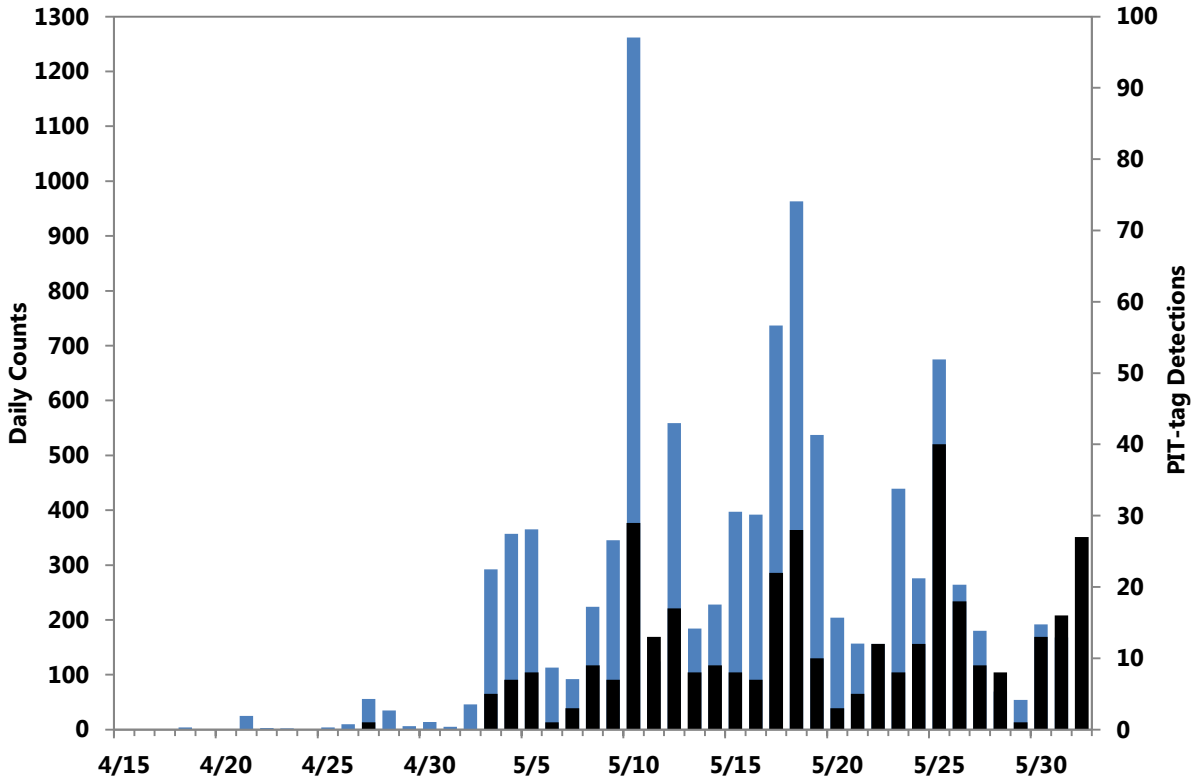
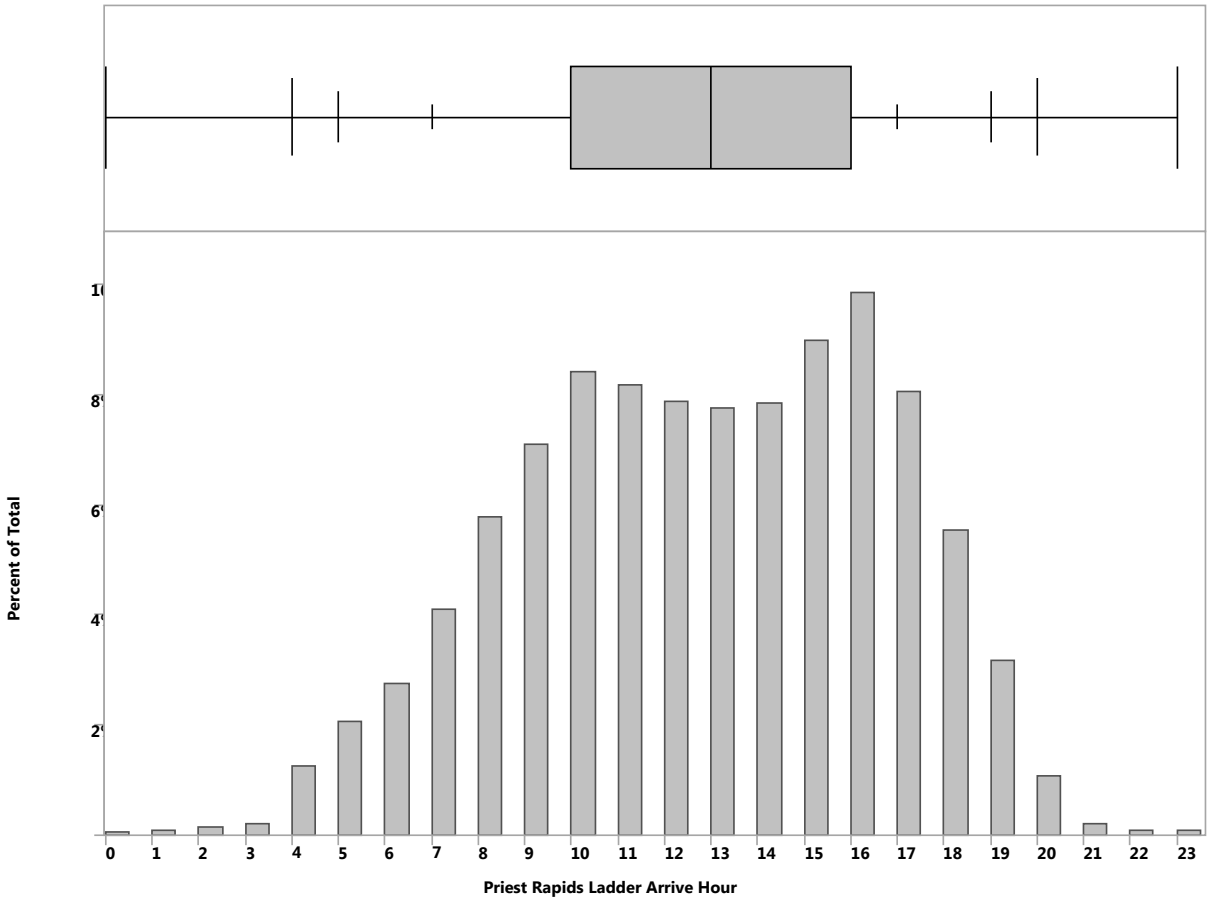


Figure 7. Timing of PIT-tag detections of migrating spring Chinook salmon at Priest Rapids Dam.



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Chelan County PUD. 2011. Detection Efficiencies at Rock Island, Rocky Reach, and Tumwater Dam Adult Ladders, 2010. Prepared by R.A. Buchanan and J.R. Skalski, Columbia Basin Research.

Grant County PUD. 2014. Priest Rapids Dam Adult Fishway PIT-Tag Detection Efficiency and Characterization of PIT-tagged Fish Passage in 2013. Prepared by R.J. Richmond and S.M. Anglea, Biomark, Inc.

Grant PUD. 2013. Pacific lamprey Management Plan, Comprehensive Annual Report, for the Priest Rapids Hydroelectric Project, Project No. 2114. Power Point Presentation. Public Utility District No. 2 of Grant County, Ephrata, WA. March 2014.

Nass, B.L., C. Sliwinski, K.K. English, L. Porto, and L. Hildebrand. 2003. Assessment of adult lamprey migratory behavior at Wanapum and Priest Rapids Dams using radio-telemetry techniques, 2001-2002. Report prepared by LGL Limited, Sidney, BC, Canada, for Public Utility District No. 2 of Grant County, Ephrata, WA.

Appendix C
Spring Chinook Salmon Migration and Metrics – PowerPoint Presentation

Wanapum Dam – Left & Right Bank Ladder Exit Passage Systems

Priest Rapids Trap and Transport

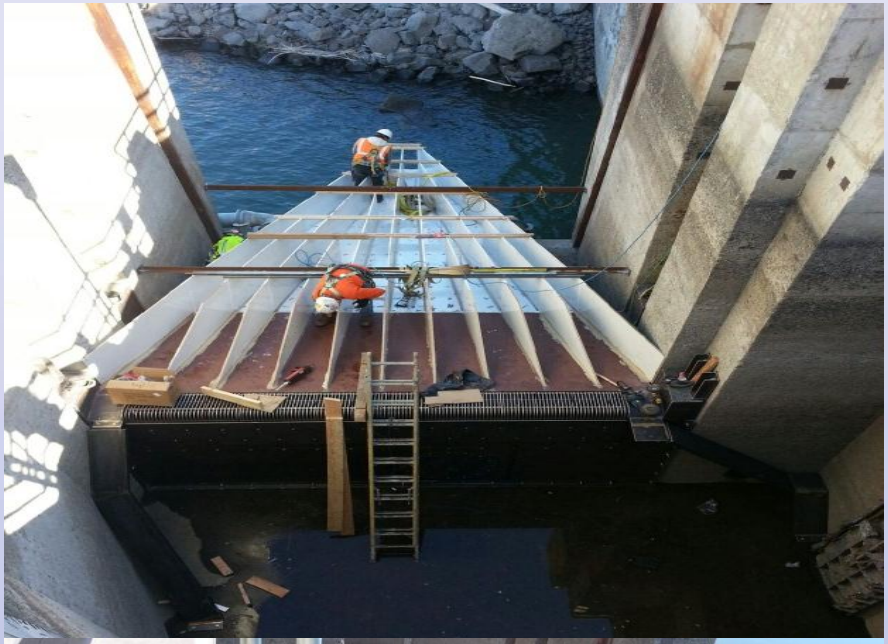
&

Adult Passage and Monitoring Plan

PRCC/HCP Briefing
April 21, 2014

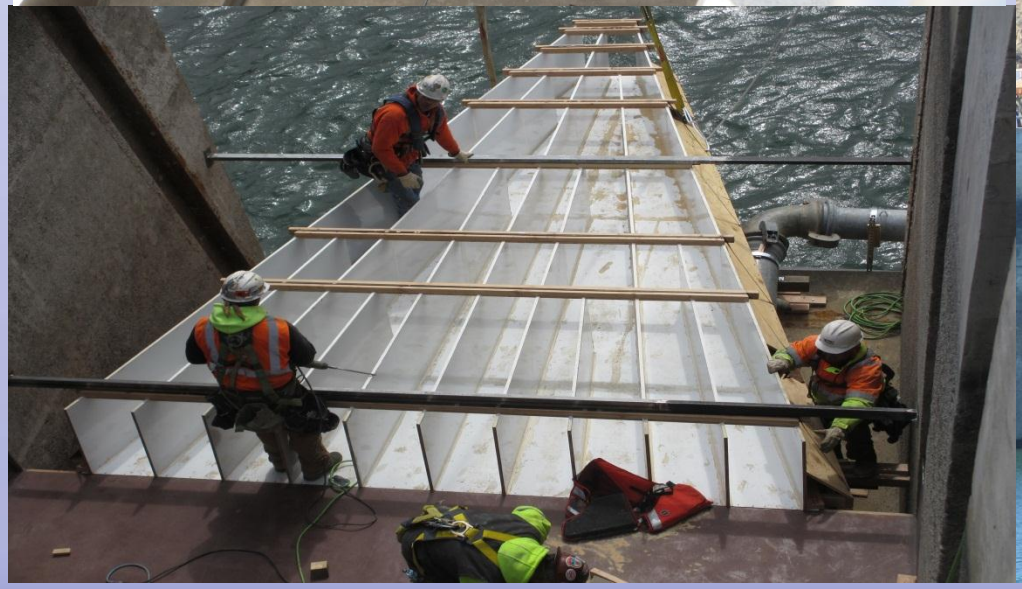
Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

Fish Ladder Modifications Wanapum Dam – Left bank



- Operational on April 15th
- Preferred Passage Option
- Extensive communication and coordination with PRCC Members and other resource managers
- Timely Adaptive Management Crucial to make this all work
  - Based on monitoring and data collection
  - Criteria Developed
- Phase I - ramp
  - Maintain orientation
  - 10-19” spacing
  - Entry Height ~9-13’
  - Lamprey ramps
- Phase II – ramp + spiral flume
  - In progress
  - Maintain orientation
  - Reduced slope
  - Entry height ~2-5’

Fish Ladder Modifications
Wanapum Dam – right bank
Operational April 23rd



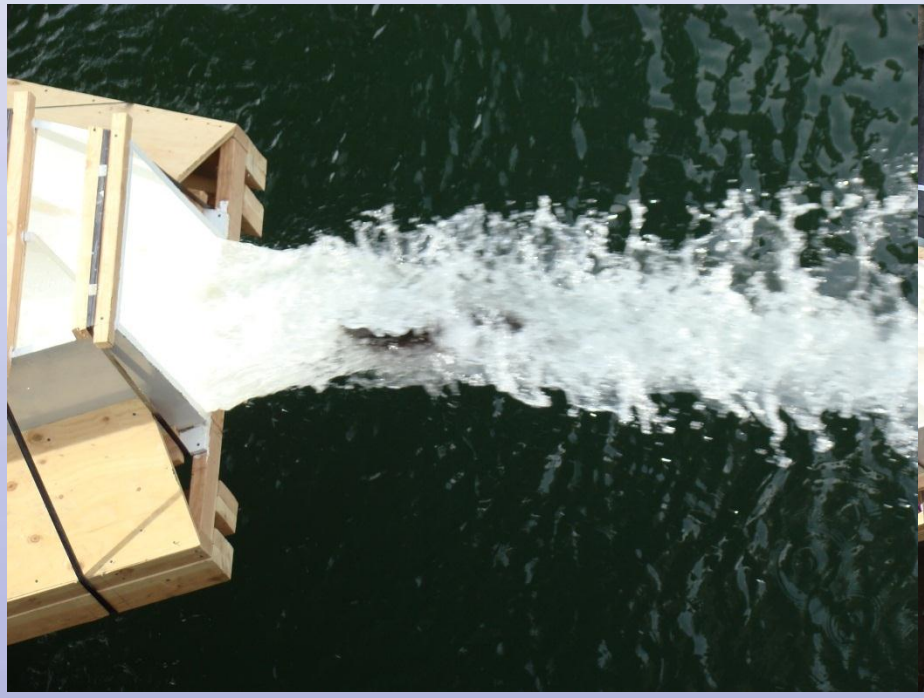
Wanapum Dam Fishway Exit Passage System in Operation

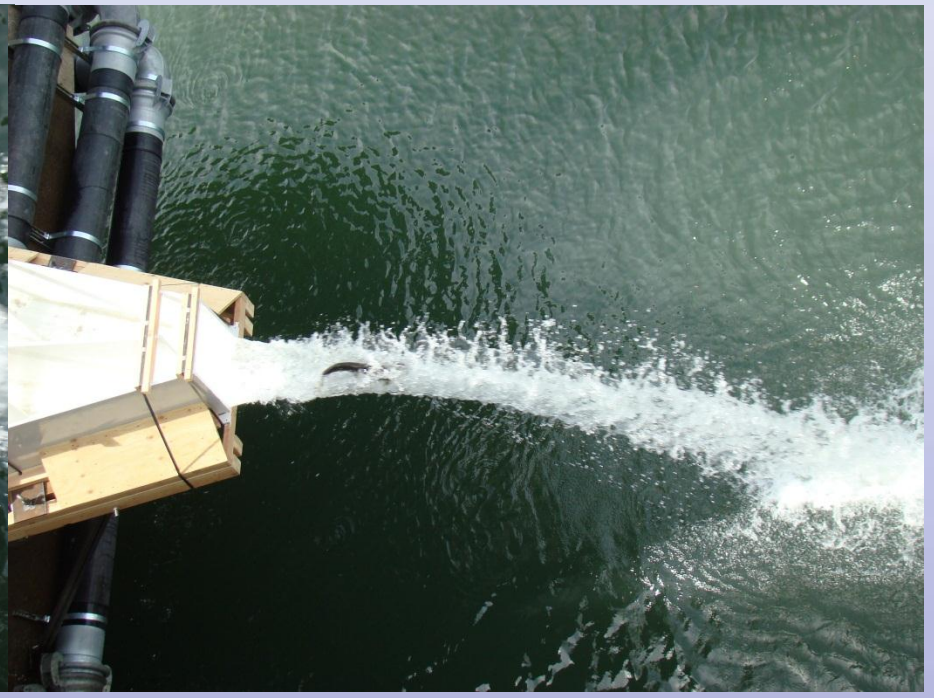
Wanapum Left-Bank Ladder Exit Data Collection Efforts

- Species;
- Entry time onto flume;
- Weir Entry Method: Jump/Swim;
- Weir Entry Success: Yes/No;
- Initial Orientation: Vertical/Horizontal;
- Orientation Down Flume: Start/Mid/End;
- Behavior on Flume: With Water/Holding;
- Swim Position Down Flume: Head/Tail;
- Movement Down Flume: Snake/Flop;
- Water Exit: With/Without;
- Landing Orientation: Head/Tail/Dorsal/Ventral/Lateral;
- Landing Behavior: Swim/Stunned/Mortality;
- Additional Notes/Comments;
- Representative Video Clips Collected Daily

Photo Courtesy of Tom Skiles

Wanapum Dam Fishway Exit Passage System in Operation



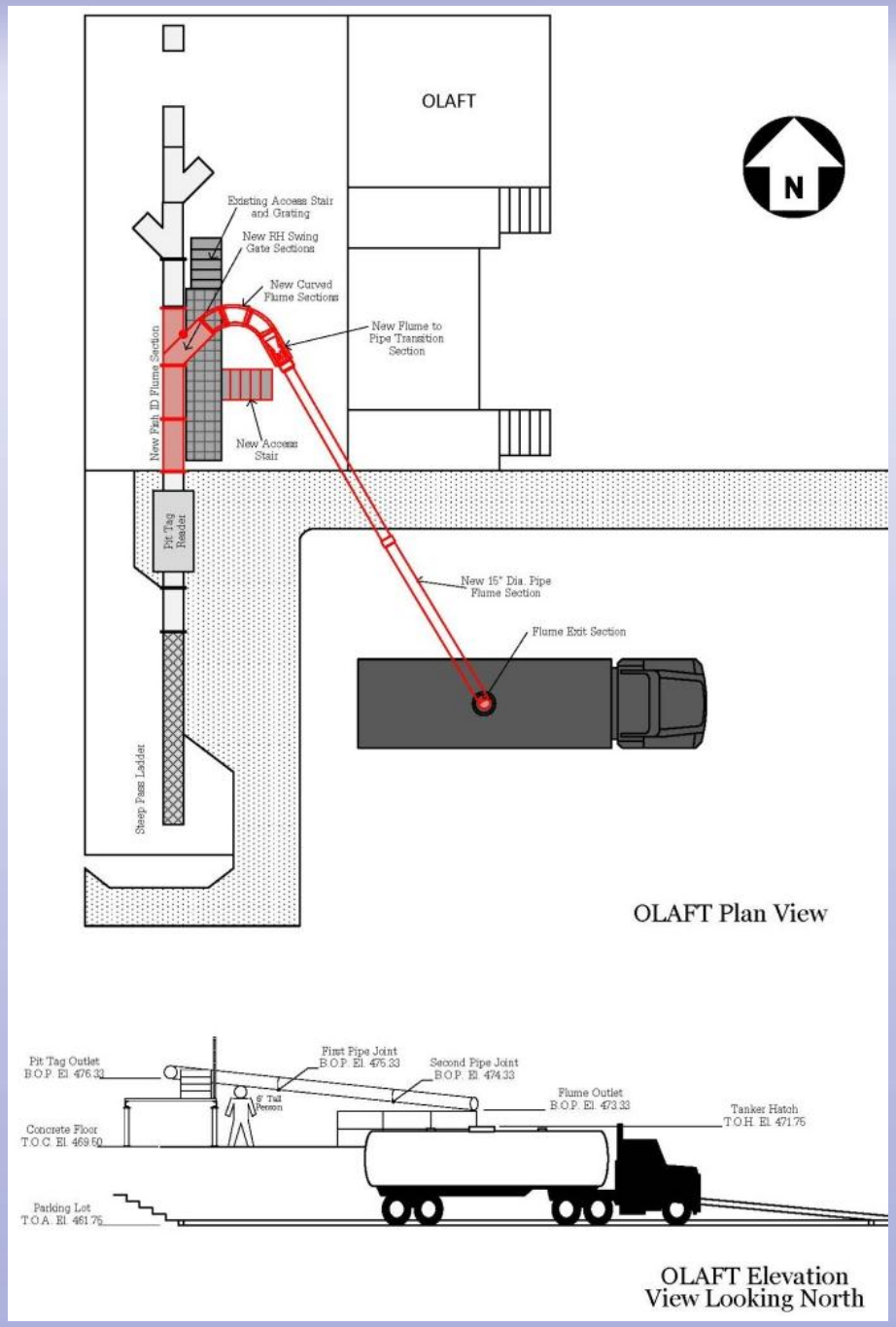


Wanapum Left-Bank Ladder Exit Results (April 15 – April 19)

- 14 adult spring Chinook have successfully passage the Wanapum Fishway Exit Passage System;
- 187 adult steelhead have successfully passage the Wanapum Fishway Exit Passage System
- No Instantaneous Mortalities;
- No stunned fish;
- All fish passing through the Wanapum Fishway Exit Passage System swam away.

Wanapum Left-Bank Ladder Exit Results (April 15 – April 19)

- Species Composition
  - Spring Chinook = 5%
  - Steelhead = 63%
  - Most Whitefish = 32%
- Weir Success
  - 73% first attempt
- Weir Entry
  - 97% Swim / 3% Jump
- Initial Orientation
  - 97% vertically (on bellies)
- Swim Orientation
  - 77% head first at top
  - 81% tail orientation at bottom
- Water Exit
  - 99.5% within water column
- Landing Orientation
  - 55% tail first
  - 29% head first
- Slide Rate
  - 82% held off/fought slide
  - 18% Moved with water



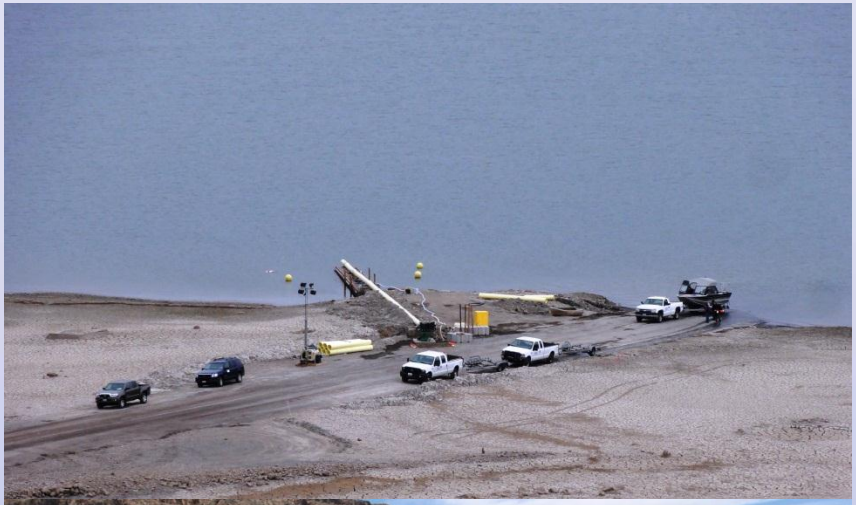
Off ladder adult fish trap Priest Rapids Dam

- Operational on April 11
- Extensive communication and coordination with PRCC Members and other resource managers
  - Providing expertise to trap and transport fish
  - Development of designs
  - Transport criteria and monitoring
- Timely Adaptive Management Crucial to make this all work
  - Based on monitoring and data collection
  - Criteria Developed
- Daily transport capacity
  - Up to eight trucks committed
  - Multiple release locations for flexibility
  - Up to 1,500 fish per day
- Incorporated flexibility to adapt
  - Monitoring passage timing and success
  - Gates to divert fish
  - Developing decision tree and criteria

Priest Rapids Off-Ladder Trap Results (April 15 – April 19)

- 3 adult spring Chinook have been PIT tag and bypassed into the Priest Rapids Fishway for migration upstream;
- 2 adult steelhead have been PIT tag and bypassed into the Priest Rapids Fishway for migration upstream;
- 1 previously PIT tagged adult steelhead was trapped and bypassed into the Priest Rapids Fishway for migration upstream;
- 13 adult steelhead have been successfully trapped and transported to the Rocky Coulee Release Location;
- No Handling/Tagging/Transport Mortalities;

Rocky Coulee Release Location



Adult Spring Chinook Monitoring and Evaluation Infrastructure

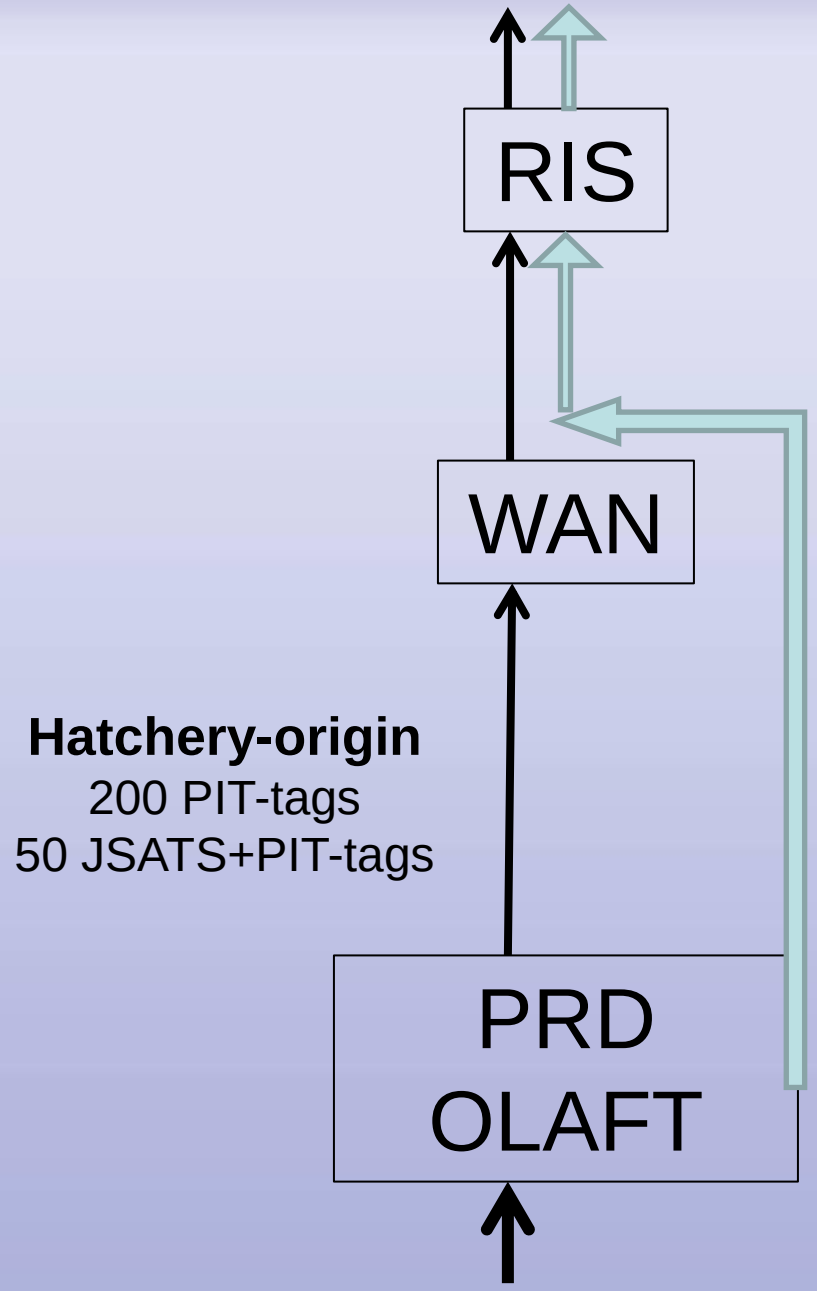
- ***PIT-tag Detection Arrays***
  - Priest Rapids Dam,
  - Wanapum Dam,
  - Rock Island Dam,
  - Rocky Reach Dam, and
  - Tumwater Dam (Wenatchee River).

- ***Hydroacoustic Receiver Arrays***
  - Hydroacoustic receiver arrays deployed from Priest Rapids Dam to Rock Island Dam. Provide information on the behavior and migration pattern of tagged adults (passage times, fallback, etc.).

- ***Direct Observation***
  - Personnel will observe fish exiting Wanapum Dam adult fish ladder during the initial passage evaluation and throughout the return of migration adults as needed.

- ***Census Fish Counting***
  - Video recorded census fish counting will be available at Priest Rapids Dam and Rock Island Dam. Fish counting at both Priest Rapids Dam and at Rock Island Dam began on April 15.

Tagging and Release Schematic



Hatchery-origin
200 PIT-tags
50 JSATS+PIT-tags

Natural-origin & Hatchery-origin
Up to 600 previously PIT-tagged

PIT Tag Detections

- **1 spring Chinook**
  - Priest Rapids to Wanapum (4/15–4/18) **= 2.5 days**
  - Wanapum to Rock Island (4/18–4/20) **= 2.1 days**
- **1 steelhead**
  - Priest Rapids to Wanapum (3/21– 4/15) = 25 days
  - Wanapum to Rock Island (4/15-4/17) **= 1.7 days**
- **1 steelhead**
  - Priest Rapids to Wanapum (3/24-4/18) = 24.7 days
  - Wanapum to Rock Island (4/18-4/20) **= 2.0 days**
- **1 steelhead**
  - Priest Rapids to Wanapum (3/24-4/18) = 24.7 days
  - Wanapum to Rock Island (4/18-4/20) **= 2.0 days**
- **1 steelhead**
  - Wanapum to Rock Island (4/15-4/18) **= 3.5 days**

Key Decisions

- Priest Rapids Right-bank ladder maintained at ladder flow
- Criteria
  - Travel time >90% within 356 hours
  - Conversion rate >80%
  - Instantaneous mortality <5%
- PIT/Acoustic Tag sample size
    - 200 PIT at OLAFT
    - 50 acoustic tag – plus PIT tagged
    - 10-20 acoustic tag fish in transport group
    - Monitoring in-river previously PIT tagged fish

Data Summary

- 14 spring Chinook Salmon and 187 adult steelhead passed Wanapum Left Bank
- Able to collect detailed fish behavior information at Wanapum Left-Bank
- Travel Time for single spring Chinook (Wanapum to RI) = 51.2 hours
- Travel Time for 4 steelhead (Wanapum to RI) = ave. of 57.9 hours (max 83.5 hrs)
- 3 adult spring Chinook were PIT tagged and bypassed at PR OLAFT;
- 2 adult steelhead were PIT tagged and bypassed at PR OLAFT;
- 13 adult steelhead were transported to the Rocky Coulee Release Location;
- No Handling/Tagging/Transport Mortalities;
- Wanapum Right Bank Ladder Exit Passage System Operational – April 23rd

Ongoing Evaluations

- Juvenile yearling Chinook and steelhead acoustic evaluation Wanapum Reservoir;
- Juvenile yearling Chinook and steelhead route specific evaluation at Wanapum Dam (if possible);
- Juvenile yearling Chinook and steelhead acoustic evaluation Priest Rapids Reservoir;
- Juvenile yearling Chinook and steelhead route specific evaluation at Priest Rapids Dam (PR Top-spill bypass – focal point);
- Adult spring Chinook Observational Evaluation (Wanapum Fishway Exits);
- Adult spring Chinook PIT-Tag passage Evaluation (Wanapum Fishway Exits);
- Adult salmon and steelhead PIT-tag run-at-large Monitoring;
- Adult spring Chinook acoustic tag Evaluation (Wanapum Fishway Exits);
- Adult spring Chinook acoustic tag Evaluation (Trap & Transport);
- Avian Predation Surveys within Wanapum Reservoir;

Questions?

Appendix D
Agency and Tribal Representative Comments Received on Spring Chinook Salmon Migration and Metrics Plan

Appendix Table D: Agency and Tribal Representative Comments on Monitoring and Evaluation of Adult spring Chinook in response to modifications to the Wanapum Adult ladders. Recommended Conservation Measures by the USFWS and NOAA Fisheries are covered in Section 10 of this status update and in Appendix H.

Submitting Entity	Date Received	Comment Topic	Agency Comment	Grant PUD Response
CRIFTC	4/15/2014	General	Overall, CRITFC is pleased with the spring Chinook adult monitoring white paper, as it demonstrates a best-effort attempt to minimize damage to salmon, steelhead and lamprey passage at the affected projects. Also, CRITFC is happy to be involved in the ongoing and adaptively managed process.	Comment Noted
CRITFC	4/15/2014	Additional Tagging	There are only a few areas of the plan that we'd like to see bolstered. In particular and for reasons described below, we feel very strongly that tagging additional fish at the OLAFT will set the stage for more informed management decisions and thus, the additional tags need to be deployed.	Grant PUD will implement that plan as proposed and supported by a majority of the Priest Rapids Coordinating Committee Members. This includes PIT tagging 200 hatchery origin (HOR) adult spring Chinook and tagging an additional 50 HOR spring Chinook adults with acoustic tags plus PIT tags for a total of 250 fish. These fish will be allowed to migrate up through the Priest Rapids Reservoir, Wanapum Fishway Exit Passage Systems and past Rock Island and provide information on travel time and conversion rates between Priest Rapids, Wanapum and Rock Island. In addition, PIT tag arrays at Priest Rapids, Wanapum and Rock Island Dam will be downloaded on a daily basis (3-24 hours) and provide additional information on travel times and conversion rates. Based on discussion within the PRCC 10-20 fish will also be acoustically tagged and transported upstream of Wanapum Dam.
CRIFTC	4/15/2014	Additional Tagging	CRITFC staff would like the total number of tagged fish in the Adult Monitoring Plan to be described absolute in language, not "up to." As the tagging and monitoring work proceeds, if Grant County thinks that the explicitly stated number of fish cannot or should not be tagged, Grant should consult with the PRCC. The PRCC would retain voting authority in such cases. We realize and appreciate Grant County's concerns that a requirement to tag a maximum number of fish may increase reporting and processing time and consequently, delay crucial management decisions (e.g. whether to allow volitional passage or continue trap-and-haul operations), but the decision to tag fewer than the stated number of fish should not be left solely to Grant County without input from the PRCC.	Refer to Comment Above.
CRITFC	4/15/2014	Trap and Transport Evaluation	For this reason, CRITFC staff strongly recommends a study that evaluates trap-and-haul conversion in a way that is similar to the volitional passage monitoring described in the passage plan, using 250 "test fish". Given the inherent uncertainties surrounding the timing and magnitude of spring Chinook returns to Priest Rapids, priority tagging should be given to the volitional passage study group. Only after the first 250 "test fish" are tagged and released into the Priest Rapids fish ladder, should the additional tagging of 250 "test fish" (200 PIT and 50 PIT plus acoustic tag) be tagged and hauled to their release location in the Wanapum Pool. In this way, concurrent conversion metrics can be evaluated and compared.	Grant PUD will implement that plan as proposed and supported by a majority of the Priest Rapids Coordinating Committee Members. This includes PIT tagging 200 hatchery origin (HOR) adult spring Chinook and tagging an additional 50 HOR spring Chinook adults with acoustic tags plus PIT tags for a total of 250 fish. These fish will be allowed to migrate up through the Priest Rapids Reservoir, Wanapum Fishway Exit Passage Systems and past Rock Island and provide information on travel time and conversion rates between Priest Rapids, Wanapum and Rock Island.
CRITFC	4/15/2014	Reports/Data	Data collected from adult passage studies should be available for public review. This includes all raw and processed data.	Grant PUD will be providing weekly summaries to the PRCC and other interested stakeholders at the weekly joint PRCC-CP briefings. As draft reports are completed, they will be provided to the PRCC for review and comment.
CRITFC	4/15/2014	Wanapum Fishway Exit Passage System	Reviewing photos of the exit flume it seems that additional padding beyond the split garden hose would be warranted. At the very least glued neoprene or thick pipe insulation to better pad those fins/ridges to reduce injury from adults as they cross the weir and enter the flume would be required.	Grant PUD has implemented a direct observational evaluation at the Wanapum Fishway Exit Passage Systems and is currently collected representative videos clips throughout the day. If data indicates an issue, Grant PUD will consult with the PRCC on potential measures to implement.
CRITFC	4/15/2014	Intermediate Pool Raise	Lastly, we're hopeful that Wanapum pool elevations can be raised to 562 feet mean sea level (MSL) in July, thereby rewetting the Wanapum ladder exits.	Comment Noted.
CRITFC	4/15/2014	Avian Predator and nesting shore and wading birds	However, nesting migratory birds along the shoreline or on islands within the MSL band between 542feet and 562feet could preclude reservoir refill. For this reason, hazing migratory birds to better protect juvenile passage and discourage nesting on exposed islands and shoreline could prove invaluable to project success.	Grant PUD will be implementing a wading/shorebird nesting and fledging survey within the Wanapum Reservoir to determine the extent of nesting/fledging of wading/shorebirds. If nesting and/or fledging is occurring during a proposed reservoir refill, Grant PUD will working with the USFWS to determine appropriate measures. Grant PUD will also be conducting observational surveys throughout the Wanapum Reservoir to determine if Caspian terns and/or gulls attempt to nest or if increased foraging activities are observed. Grant PUD would work with the resource managers to determine appropriate measures.

CRITFC	4/15/2014	General Comment	Again, thank you for giving us the time and opportunity to comment on Grant's spring Chinook passage and monitoring white paper. We'd be happy to work collaboratively with Grant County staff in order to see our requests come to fruition. Please, don't hesitate to contact me.	Comment Noted
CRIFTC	4/15/2014	Monitoring and Evaluation – Rock Island Dam	Is there a similar document for whatever is being done at Rock Island?	Grant PUD encourages CRITFC to contact Chelan PUD directly to determine their monitoring plans.
CRIFTC	4/15/2014	Steelhead passage	Evaluate steelhead passage in spring. About 6% of the total 2013 steelhead passage at Priest Rapids Dam occurred before the last week of July.	At this time, Grant PUD is collecting direct observational data on adult steelhead passage at the Wanapum Fishway Exit Passage System. In addition, Grant PUD is collecting information on travel times and conversion rates for PIT tagged run-of-river returning adults.
CRIFTC	4/15/2014	Pacific lamprey	The first lamprey recorded at Priest Rapids Dam in 2013 passed on May 10.	Grant PUD is aware of timing for lamprey passage at the Priest Rapids Project and has begun discussions with members of the Priest Rapids Fish Forum (PRFF) on the most appropriate means and methods to address adult lamprey passage at Wanapum Fishway Exits. Grant PUD encourages the CRITFC to participate in the PRFF, which meets monthly on the first Wednesday of each month.
CRIFTC	4/15/2014	Hydroacoustic Receiver Arrays	How will this be determined if it is necessary or not?	Grant PUD will initially download data from acoustic receivers and processed at weekly intervals, but the frequency may be adjusted as more is learned about passage success and timing. Timing of downloads will be guided by reviewing travel times and conversion rates.
CRIFTC	4/15/2014	Hydroacoustic Receiver Arrays	Hydro-acoustic download frequency should be increased at first and modify the schedule as needed.	Grant PUD will initially download data from acoustic receivers and processed at weekly intervals, but the frequency may be adjusted as more is learned about passage success and timing. Timing of downloads will be guided by reviewing travel times and conversion rates.
CRIFTC	4/15/2014	Wanapum Fishway Exit Passage Systems	The chute should be finished so fish don't have to free-fall down to the river.	Per discussions with the NOAA-Fisheries, USFWS, and PRCC, Grant PUD is in the process of designing and will move forward with fabrication of a spiral chute that would deliver adult fish closer to the water surface (~2-5 feet). The chute is currently in the design phase and would not be available for installation until later in the fish passage season (mid-May to June), due to the complexity of design and necessary fabrication timeline. Grant PUD will consult with NOAA-Fisheries, USFWS and PRCC on the design and fabrication of the chute, as well as the need to install the chute at a later date after it has been fabricated and delivered on site.
CRIFTC	4/15/2014	Video Recording	Representative recordings are a start but a more rigorous schedule needs to be developed, something like 40 minutes out of each hour to hour and half. This allows time for downloads and battery swapping. Also looking at the location where the photo for the PowerPoint slide was taken would be an ideal location to mount a camera. Also we would suggest that a camera be positioned to film where the fish are returned to reservoir to better assess how the fish are responding to the drop.	Grant PUD will implement that plan as proposed and supported by a majority of the Priest Rapids Coordinating Committee Members. It includes collecting represented video recordings throughout the fish passage season and represents directly observed and documented fish behavior, which includes fish behavior on the flume, exiting the flume, entry into the forebay and behavior after entry. Section 2.2 of the status update includes details on the fish behavior exhibited to date.
CRIFTC	4/15/2014	Trap and Transport Protocol	They should establish a protocol. Most of the total daily counts early in the run will be fives and tens of fish per day. What proportion of clipped fish will be part of the test and what proportion of clipped will be transported?	Grant PUD has developed a trap and transport protocol for adult spring Chinook in coordination with WDFW. The trap and transport protocol was included with Grant PUD's filing of the Interim Fish Passage Operations Plan to FERC on March 21, 2014. A revised and updated trap and transport protocol for adult spring Chinook is included in Appendix A of this status update. A total of 200 hatchery origin (HOR) adult spring Chinook will be PIT tagged and an additional 50 HOR spring Chinook adults will be tagged with acoustic tags plus PIT tags for a total of 250 fish. These fish will be allowed to migrate up through the Priest Rapids Reservoir, Wanapum Fishway Exit Passage Systems and past Rock Island and provide information on travel time and conversion rates between Priest Rapids, Wanapum and Rock Island. An additional 10-20 acoustically tagged HOR adult spring Chinook will be trap and transported. All other fish will be trap and transported to a release location in Wanapum Reservoir (Rocky Coulee).

CRIFTC	4/15/2014		50 acoustic fish will not be enough, we would advocate for more. Furthermore some of these fish should be released into the trucks to get an idea how they are reacting to the truck and haul option.	Grant PUD will implement that plan as proposed and supported by a majority of the Priest Rapids Coordinating Committee Members. This includes PIT tagging 200 hatchery origin (HOR) adult spring Chinook and tagging an additional 50 HOR spring Chinook adults with acoustic tags plus PIT tags for a total of 250 fish. These fish will be allowed to migrate up through the Priest Rapids Reservoir, Wanapum Fishway Exit Passage Systems and past Rock Island and provide information on travel time and conversion rates between Priest Rapids, Wanapum and Rock Island. An additional 10-20 acoustically tagged HOR adult spring Chinook will be trap and transported.
CRIFTC	4/15/2014	Fish anesthetic	They should not use MS-222. The sport spring chinook fishery opens in the Chelan River on May 15. The sport fishery in Icicle Creek opens May 24. The tribal fishery in Icicle Creek will open about that time. Typically people have used a 21-25 day period before allowing fisheries on fish treated with MS-222. The proposed treatment period will almost certainly last into a time period when some of these fish could be caught and consumed.	Due to concerns raised by tribal representatives over the potential consumption of fish sedated with MS-222, Grant PUD switched to the use of Aqui-S on April 23, 2014. Only 14 fish were sedated with MS-222 and they were externally marked with a caudal fin punch for future identification if captured in the tribal harvest. A total of 41 spring salmon were marked with a PIT-tag (pelvic-girdle) and 50 were marked with both a PIT-tag and a surgically implanted hydroacoustic tag was employed.
CRIFTC	4/15/2014	Fish anesthetic	To reduce the number of fish exposed to MS-222, AquiS should be used for all marking. CRITFC successfully uses AquiS monitoring adults at Bonneville Dam. If the acoustic fish require the use of MS-222, that is acceptable. Information on AquiS can be found at Investigational New Animal Drug program http://www.fws.gov/fisheries/aadap/AQUIS-E.HTM	See Comment Above
CRIFTC	4/15/2014	Fish Marking	A pelvic fin punch is not a typical mark that fishermen would normally know about or be able to readily identify. Fins can be degraded by any number of natural causes rendering a punch illegible.	All fish anesthetized with MS222 will be externally marked with a caudal fin punch for future identification if captured in the tribal harvest
CRIFTC	4/15/2014	Fallback	What is excessive?	Comment Noted.
CRIFTC	4/15/2014	Wanapum Fishway Exit Passage Systems	They need to finish the flume/chute.	Per discussions with the NOAA-Fisheries, USFWS and PRCC; Grant PUD is in the process of designing and will move forward with fabrication of a spiral chute that would deliver adult fish closer to the water surface (~2-5'). The chute is currently in the design phase and would not be available for installation until later in the fish passage season (mid-May to June), due to the complexity of design and necessary fabrication timeline. Grant PUD will consult with NOAA-Fisheries, USFWS and PRCC on the design and fabrication of the chute, as well as the need to install the chute at a later date after it has been fabricated and delivered on site.
CRIFTC	4/15/2014	Travel Time	Figure 3 looks like about 90% of the fish pass in 200 hours or less.	Comment Noted.
CRIFTC	4/15/2014		This is confusing. Are they saying that this is longest range of travel times (least conservative standard) or shortest range of travel times (most conservative standard)	Grant PUD will implement that plan as proposed and supported by a majority of the Priest Rapids Coordinating Committee Members. During the initial passage evaluations for spring Chinook salmon and until the following criterion is achieved; (1) travel time from Priest Rapids Dam to Rock Island Dam is <356 hours for 90% of the fish that are detected at Priest Rapids Dam and at Rock Island Dam (2) conversion rate from Priest Rapids Dam to Rock Island Dam is greater than 80%, and (3) observed criteria of <5% instantaneous mortality is observed at the Wanapum Dam FWEPS. Grant PUD is providing weekly updates to the PRCC and other external stakeholders via the joint PRCC-HCP coordination meeting.
CRIFTC	4/15/2014	Fallback	How will they assess fall back?	Grant PUD intends to use data from the 50 acoustic tagged adult spring Chinook to inform the PRCC on potential fallback issues. In addition, PIT tagged fish that migrate through the Wanapum Fishway Exit Fish Passage Systems, fallback and then travel back up fishways will be used to also access fallback. This can then be compared to previous historical information (Stuehrenberg et al. 1995 and Peery et al. 1997).
CRIFTC	4/15/2014	Travel Time	It looks like something close to 99% of travel times are less than 350 hours.	Comment Noted.

CRIFTC	4/15/2014	Travel Time	It appears from looking at the short whisker (90%) that 2004 is actually a bit of an outlier for the dataset. It does appear that in all the other years the travel time was much faster for 90% of the fish. It looks like on average 90% of the fish have made it to RIS in about 200 hours (~8 days) or less. This should be the standard they try to reach.	Grant PUD will implement that plan as proposed and supported by a majority of the Priest Rapids Coordinating Committee Members. During the initial passage evaluations for spring Chinook salmon and until the following criterion is achieved; (1) travel time from Priest Rapids Dam to Rock Island Dam is <356 hours for 90% of the fish that are detected at Priest Rapids Dam and at Rock Island Dam (2) conversion rate from Priest Rapids Dam to Rock Island Dam is greater than 80%, and (3) observed criteria of <5% instantaneous mortality is observed at the Wanapum Dam FWEPS. Grant PUD is providing weekly updates to the PRCC and other external stakeholders via the joint PRCC-HCP coordination meeting.
CRIFTC	4/15/2014	Instantaneous Mortality <5%	Last year the spring chinook count at Wanapum was 14,177. Apparently, if they observe that 4.5% of these fish die immediately after entering the pool (not counting any fish that die immediately and are not observed), they will figure they are doing ok. 4.5% of last year's spring chinook run would have been 638 fish. This seems like a lot. I'm thinking their standard should be zero observed mortalities from fish doing the drop into the pool.	Grant PUD will implement that plan as proposed and supported by a majority of the Priest Rapids Coordinating Committee Members. An observed criteria of <5% instantaneous mortality would be implemented at the Wanapum Dam FWEPS. Should estimates of instantaneous mortality approach 5%, Grant PUD would immediately notify NOAA-Fisheries and the PRCC to determine next steps. Grant PUD is providing weekly updates to the PRCC and other external stakeholders via the joint PRCC-HCP coordination meeting.
CRIFTC	4/15/2014	Tag Codes	They need to provide tag codes for all fish that are transported.	Grant PUD is providing tag codes on a daily basis.
CRIFTC	4/15/2014	Antennae Arrays	Depending on where the antennae weirs are at PRD, the "arrival" at these locations could be different from the time they would exit the ladder at PRD. And the timing of fish using the ladders at PRD could be different from Wanapum or other dams.	Comment Noted.
CRIFTC	4/15/2014	Passage Standards	We should ask NMFS to lay out some standards that must be followed, not just agree to try a bunch of stuff to see how it works and do some adaptive management if it doesn't seem to work. How is any of this fitting into any ESA consultation on this issue?	Grant PUD with the support of NOAA Fisheries and a majority of the PRCC members will implement that plan as proposed. During the initial passage evaluations for spring Chinook salmon and until the following criterion is achieved; (1) travel time from Priest Rapids Dam to Rock Island Dam is <356 hours for 90% of the fish that are detected at Priest Rapids Dam and at Rock Island Dam (2) conversion rate from Priest Rapids Dam to Rock Island Dam is greater than 80%, and (3) observed criteria of <5% instantaneous mortality is observed at the Wanapum Dam FWEPS. Grant PUD is providing weekly updates to the PRCC and other external stakeholders via the joint PRCC-HCP coordination meeting.
CRIFTC	4/15/2014	Sockeye	In 2013, the first sockeye was counted on May 29 and the run was a lot smaller than forecast this year.	Comment Noted.
CRIFTC	4/15/2014	Sockeye	They need to be clear about what they will use for criteria for trap and haul vs in-river passage. What conversion rate standards? What fall back standards? What passage timing standards will be in place? If they can develop standards for spring chinook they can do so for the other species.	Travel time and uncorrected conversion rate information related specifically to adult sockeye salmon is currently in development.
CRIFTC	4/15/2014	Sockeye	What are the historical standards? Whose standards are they?	Grant PUD intends to use the same approach as was used to develop travel time and conversion rate standards for adult spring Chinook. This includes reviewing the best available information was PIT tag detections between Priest Rapids Dam and Rock Island to determine travel time and uncorrected conversion rates over a period of time.
CRIFTC	4/15/2014	Wanapum Fishway Exit passage Systems	How will they be able to "refine" the infrastructure changes without de-watering the ladder or do they mean that they would only implement whatever "refinements" they think are needed if they can do so without de-watering the ladders?	If changes and/or refine in infrastructure become necessary to pass adult salmonids, steelhead, bull trout and lamprey though the Wanapum Fishway Exit Passage Systems, Grant PUD anticipates that the fishways will need to be dewatered and changes made. If this becomes necessary, Grant PUD will consult with NOAA-Fisheries, USFWS and PRCC to develop options and necessary plans.
CRIFTC	4/15/2014	Wanapum Fishway Exit passage Systems	What is the time frame for this request and if they suggest something how is it going to be installed if the ladders are up and running?	See Comment Above.
CRIFTC	4/15/2014	Pacific Lamprey	When? Shouldn't this also go along with setting some standards for lamprey passage?	Grant PUD is currently developing a Pacific lamprey passage plan.

CCT	4/15/204	Fish anesthetic /marking	Why pelvic fin punch? Other (WDFW) marking as a result of MS-222 is accomplished using a punch in the upper lobe of the caudal fin. For ease of anglers identifying fish to be released due to exposure of MS-222, suggest using the upper lobe caudal-punch rather than the pelvic fin punch.	Due to concerns raised by tribal representatives over the potential consumption of fish sedated with MS-222, Grant PUD switched to the use of Aqui-S on April 23, 2014. Only 14 fish were sedated with MS-222 and they were externally marked with a caudal fin punch for future identification if captured in the tribal harvest. A total of 41 spring salmon were marked with a PIT-tag (pelvic-girdle) and 50 were marked with both a PIT-tag and a surgically implanted hydroacoustic tag was employed.
CCT	4/15/204	Passage standards and criteria	At what point in time do we make the conversion assessment/decision (week 1, week 2, week 3)? If we talked about this issue this morning I missed it. If the travel time criteria is 356 hours based on highest 90% percentile travel time observed since 2003 when ladders were operating under normal conditions, would it make sense to make a decision when 356 hours have elapsed after the last tag was applied? Real-time monitoring of PIT tag conversions can occur more frequently, but determining whether or not the criteria has been met may necessarily be at least 356 hours after the last tag application (unless we get 80%-90% conversion prior to 356 hours from the last tag application), correct?	Grant PUD with the support of NOAA Fisheries and a majority of the PRCC members will implement that plan as proposed. During the initial passage evaluations for spring Chinook salmon and until the following criterion is achieved; (1) travel time from Priest Rapids Dam to Rock Island Dam is <356 hours for 90% of the fish that are detected at Priest Rapids Dam and at Rock Island Dam (2) conversion rate from Priest Rapids Dam to Rock Island Dam is greater than 80%, and (3) observed criteria of <5% instantaneous mortality is observed at the Wanapum Dam FWEPS. Grant PUD is providing weekly updates to the PRCC and other external stakeholders via the joint PRCC-HCP coordination meeting. A key component of this is adaptive management, which needs to be employed on a daily/weekly basis to determine if and when criteria are met.
CCT	4/15/204	Passage standards and criteria	Tried to capture today's conversations regarding conversion rate assessment and next-steps should conversions be between 80% and 90%.	Comment Noted. Based on the need to implement the plan immediately and a majority level of support from the PRCC, Grant PUD began implement the plan using the criteria of a >80% conversion rate from Priest Rapids Dam to Rock Island Dam. Grant PUD will convene the PRCC to further discuss if conversion rates are between 80% and 90%.
CCT	4/15/204	Instantaneous Mortality <5%	Real-time monitoring and adaptive management.	Grant PUD will implement that plan as proposed and supported by a majority of the Priest Rapids Coordinating Committee Members. An observed criteria of <5% instantaneous mortality would be implemented at the Wanapum Dam FWEPS. Should estimates of instantaneous mortality approach 5%, Grant PUD would immediately notify NOAA-Fisheries and the PRCC to determine next steps. Grant PUD is providing weekly updates to the PRCC and other external stakeholders via the joint PRCC-HCP coordination meeting.
CCT	4/15/204	Trap and Transport Protocol	I think that this is what Russell indicated in today's call.	Grant PUD has developed a trap and transport protocol for adult spring Chinook in coordination with WDFW. The trap and transport protocol was included with Grant PUD's filing of the Interim Fish Passage Operations Plan to FERC on March 21, 2014. A revised and updated trap and transport protocol for adult spring Chinook is included in Appendix A of this status update. A total of 200 hatchery origin (HOR) adult spring Chinook will be PIT tagged and an additional 50 HOR spring Chinook adults will be tagged with acoustic tags plus PIT tags for a total of 250 fish. These fish will be allowed to migrate up through the Priest Rapids Reservoir, Wanapum Fishway Exit Passage Systems and past Rock Island and provide information on travel time and conversion rates between Priest Rapids, Wanapum and Rock Island. An additional 10-20 acoustically tagged HOR adult spring Chinook will be trap and transported. All other fish will be trap and transported to a release location in Wanapum Reservoir (Rocky Coulee).
CCT	4/15/204	Passage standards and criteria	Lowest of the recent 6-year record (i.e. those years not involving hatchery transportation studies). 2011 was a very high flow year with much forced spill. Conversion may have been influenced by high discharge, TDG levels, fall-back etc. 2014 is unlikely to see flows as in 2011, hence my aversion to the 80% criteria and suggestion to re-evaluate the volitional and trap and haul conversions at the 80% - 90% levels to determine the best path forward for the remainder of the spring Chinook migration period.	Grant PUD with the support of NOAA Fisheries and a majority of the PRCC members will implement that plan as proposed. During the initial passage evaluations for spring Chinook salmon and until the following criterion is achieved; (1) travel time from Priest Rapids Dam to Rock Island Dam is <356 hours for 90% of the fish that are detected at Priest Rapids Dam and at Rock Island Dam (2) conversion rate from Priest Rapids Dam to Rock Island Dam is greater than 80%, and (3) observed criteria of <5% instantaneous mortality is observed at the Wanapum Dam FWEPS. Grant PUD is providing weekly updates to the PRCC and other external stakeholders

				via the joint PRCC-HCP coordination meeting. A key component of this is adaptive management, which needs to be employed on a daily/weekly basis to determine if and when criteria are met.
CCT	4/15/204	Trap and Transport Protocol	Based on today's conference call, include 10-15 acoustic tags in the trap and haul component. Also, rather than "Natural-origin" reference in the April 15th transported fish, use "adipose-present" rather than "Natural-origin" as decision to transport during the tagging period for volitional migration analysis will be based on presence or absence of the adipose fin (i.e. all natural-origin fish will be adipose-present but not all hatchery-origin fish will be adipose-clipped).	Grant PUD has developed a trap and transport protocol for adult spring Chinook in coordination with WDFW. The trap and transport protocol was included with Grant PUD's filing of the Interim Fish Passage Operations Plan to FERC on March 21, 2014. A revised and updated trap and transport protocol for adult spring Chinook is included in Appendix A of this status update. A total of 200 hatchery origin (HOR) adult spring Chinook will be PIT tagged and an additional 50 HOR spring Chinook adults will be tagged with acoustic tags plus PIT tags for a total of 250 fish. These fish will be allowed to migrate up through the Priest Rapids Reservoir, Wanapum Fishway Exit Passage Systems and past Rock Island and provide information on travel time and conversion rates between Priest Rapids, Wanapum and Rock Island. An additional 10-20 acoustically tagged HOR adult spring Chinook will be trap and transported. All other fish will be trap and transported to a release location in Wanapum Reservoir (Rocky Coulee).
Yakama Nation	4/15/204	General Comment	First, we believe that Grant PUD is doing a good job in developing and implementing the emergency responses necessary for this situation. Your efforts are very much recognized and appreciated.	Comment Noted.
Yakama Nation	4/15/204	Passage Criteria	The Yakama Nation is in agreement that the use of (1) conversion rates, (2) passage timing and (3) mortality are appropriate criteria which we can measure and from which management recommendations can be provided. The numeric values for these criteria can be debated for days, but at this time, we do not have a better "number" than those provided in this document. We are also in agreement with the overall strategy to first tag hatchery origin chinook and observe their performance while at the same time trucking all natural origin fish around Wanapum Dam while these tests are being conducted and until information confirms that passage from Priest Rapids through Rock Island dams is reasonably safe and efficient. We understand that there will be a substantial emphasis on adaptive management during this run season and will be ready to participate within these discussions as needed.	Comment Noted.
Yakama Nation	4/15/204	Tagging Activities	With regards to tagging the appropriate number of spring chinook in Stage 1, we are in agreement with the Grant PUD proposal, initially. In this case, less is probably better as we share concerns about handling too many fish if it is not needed. We also agree that by blocking (or better put, discouraging) passage on the Priest Rapids right bank for the initial part of the run is the correct approach such that tags can be placed in the earliest returning fish to provide the information needed for the majority of the fish returning at a later time. We do expect that if the initial number of tagged fish are not providing adequate information from which to draw management conclusions, in a timely manner, that additional tags and taggers will be on hand to continue this important work.	Comment Noted
Yakama Nation	4/15/204	Fish anesthetic	As has been discussed, the Yakama Nation is concerned about the use of MS 222 as an anesthetic for these spring chinook. We appreciate the efforts by Grant PUD for notification to our fishers, and for placing a mark on the fish (pelvic fin punch) indicating which fish have been exposed to this anesthetic. However, we strongly recommend that Grant consider the use of other anesthetics, such as clove oil, or that have been approved by the FDA for human consumption. These products should be used initially, prior to the use of MS 222. We note that tribal harvest of these fish will commence on May 1 (at Icicle Creek). As such, there are other issues that should be considered to conduct these preliminary tests evaluating conversion rates and travel time. If, for whatever reasons the anesthetics are not preforming as needed, the use of MS 222 (with pelvic fin marks and appropriate information to our fishers) to conduct these evaluations is warranted.	Due to concerns raised by tribal representatives over the potential consumption of fish sedated with MS-222, Grant PUD switched to the use of Aqui-S on April 23, 2014. Only 14 fish were sedated with MS-222 and they were externally marked with a caudal fin punch for future identification if captured in the tribal harvest. A total of 41 spring salmon were marked with a PIT-tag (pelvic-girdle) and 50 were marked with both a PIT-tag and a surgically implanted hydroacoustic tag was employed.
Yakama Nation	4/15/204	Video Recording	With regards to fish passage at the false weir at Wanapum Dam fishways, we suggest that a sufficient effort to video and characterize fish behavior moving over the false weir exceeds 100 individual fish	Grant PUD will implement that plan as proposed and supported by a majority of the Priest Rapids Coordinating Committee Members. It includes collecting represented

			jumping over the weir and onto the slotted exit flume. We believe that characterizing the information in a manner that is sufficient and simple so that it can be conveyed in a timely manner to the PRCC is essential.	video recordings throughout the fish passage season and represents directly observed and documented fish behavior, which includes fish behavior on the flume, exiting the flume, entry into the forebay and behavior after entry. Section 2.2 of the status update includes details on the fish behavior exhibited to date.
Yakama Nation	4/15/204	Passage standards for steelhead, summer Chinook and sockeye	With regards to Stage 2a, the information contained in the said document should also be developed for steelhead, summer/fall chinook and sockeye. We understand that dam operations may return to a more normal use of the fishways, or that lessons learned in Stage 1 may be sufficient to comfortably pass these migrants. However – we also believe that tagging some portion of these fish may be warranted, and adequate and timely preparations for this event is required.	Grant PUD intends to use the same approach as was used to develop travel time and conversion rate standards for adult spring Chinook. This includes reviewing the best available information was PIT tag detections between Priest Rapids Dam and Rock Island to determine travel time and uncorrected conversion rates over a period of time.
Yakama Nation	4/15/204	Pacific lamprey	With regards to Stage 2b, lamprey passage, we do not have a high level of comfort that the Off Ladder Trap or the false weir will sufficiently pass lamprey. We believe that there may, in the end be a need to trap and haul lamprey where ever we can in both Priest Rapids and Wanapum fishways. We urge Grant PUD to take this potential method very seriously, and adequately prepare in a timely manner as it may well be our best method for passing as many fish as is possible.	Grant PUD will develop a lamprey passage monitoring and evaluation and passage plan in collaboration with the Priest Rapids Fish Forum.
NOAA-Fisheries	4/18/2014	Wanapum Fishway Exit Passage Systems	I talked with Russ and others about getting that chunk of concrete with a (apparently broken) rebar loop removed from the plunge pool. Although this is not an obvious problem, it could be that some fish may strike it when falling from or swimming away from their plunge. I heard that GPUD had plans to remove that chunk, and sooner is better than later.	Grant PUD had these concrete chunks removed on 4/19/2014.
NOAA-Fisheries	4/18/2014	Wanapum Fishway Exit Passage Systems	I saw that you had Blue Leaf vigilantly staffing the exit weir - good deal. I'd also suggest that you keep an eye out for fish accumulating in the ladder - maybe you all are planning on doing that as well. If this is an issue, it won't manifest itself for awhile until fish numbers increase. I compared the 2013 and 2014 counts for Wanapum on April 15&16 - only 1 chinook, 3 steelhead last year versus 31,102 this year.	Comment Noted
NOAA-Fisheries	4/18/2014	Wanapum Fishway Exit Passage Systems	Can I get a status on the right bank exit weir and the pool slide install? Maybe Tom can include that detail in his PRCC briefing call next Monday.	At the 4/21/2014 joint PRCC-HCP briefing meeting, Grant PUD reported that the Wanapum Fishway Exit Passage System would be operational on April 23, 2014. Soon after that update, the schedule was modified to April 28, 2014, with support from NOAA-Fisheries so an approach ramp could be installed. The Wanapum Fishway Exit Passage System was actually put into operation on April 25, 2014.
NOAA-Fisheries	4/18/2014	Priest Rapids Fishway Operations	From what I saw on Wednesday, I would sure like to get the right bank at Priest Rapids open sooner rather than later. I understand that hands-on-fish is required for the tagging. But, I have to admit that I gulped when I thought about the entire UCR run being funneled through that denil and routed into the truck for trap/haul. Trap/haul always has passage effects (delay and handling). Expect my support for this on the call this Monday.	Comment Noted.
NOAA-Fisheries	4/18/2014	Wanapum Fishway Exit Passage Systems – Right-Bank Approach Ramp	Bryan Nordlund and I discussed the importance of the approach ramp this morning and the potential for delaying the operation of the right bank ladder for up to 5 days (weather permitting). He recommended delaying the operation of the right bank ladder in order to install the approach ramp even if it meant a delay in the operation of the right bank ladder. He also recommended that there be at least 36-50% opening in the material (e.g. grating) for the approach ramp (.25” opening with .25” wide bar grating would work).	Grant PUD has incorporated the approach ramp into the Wanapum Right-Bank Fishway Exit Passage System and will evaluate fish approach and behavior via direct observations and representative video documentation. Information will be provided to the PRCC to determine if the approach ramp is necessary at the Wanapum Left-Bank Fishway Exit Passage System

Appendix E
Statement of Agreement Agreed by the Priest Rapids Coordinating Committee regarding the Juvenile Steelhead and Yearling Chinook Survival Evaluation to the Wanapum Reservoir Drawdown and Priest Rapids Reservoir and Top-Spill Fish Bypass

Priest Rapids Coordinating Committee
Statement of Agreement on Evaluations
To be implemented in 2014 as part of existing requirements or as a result of the Wanapum Spillway Fracture and Wanapum Reservoir Drawdown.

Submitted to the Priest Rapids Coordinating Committee: April 4, 2014
Approved by the Priest Rapids Coordinating Committee: April 11, 2014

Statement: The Priest Rapids Coordinating Committee (PRCC) recognizes and agrees to the following evaluations and actions to be implemented in 2014 as part of the Public Utility District No.2 of Grant County's (Grant PUD) existing requirements or as a result of the Wanapum Spillway Fracture and Wanapum Reservoir Drawdown.

(1) The PRCC agrees that a Wanapum Reservoir juvenile acoustic tag survival evaluation (presence/absence) is necessary to inform NOAA Fisheries, PRCC and Grant PUD on the potential impacts on the juvenile salmonid and steelhead run at large as it relates to the necessary drawdown of Wanapum Reservoir and stabilization of Wanapum Spillway Monolith #4.

a. The juvenile salmonid and steelhead acoustic tag survival evaluation conducted within the Wanapum Reservoir will include 2 species (steelhead and yearling Chinook). Releases will occur in the tailrace of Rock Island Dam with presence/absence detections occurring at transects located at various location within Wanapum Reservoir (e.g. Crescent Bar, Sunland Estates and in the Wanapum Forebay).

b. An effort will be made to collect route-specific information related to the Wanapum Spillway, Wanapum Fish Bypass and Wanapum Powerhouse. However, the PRCC understands that both upstream (forebay) and downstream (tailrace) areas of Wanapum Dam will need to remain clear to facilitate repair activities.

c. Release groups will be appropriately sized to achieve at least a Standard Error (SE) of ±5%, with a 95% Confidence Interval within the Wanapum Reservoir and Wanapum Project.

d. The PRCC agrees that results from the Wanapum acoustic tag survival evaluation will be used to inform ESA consultations and will not be used in current NNI-Fund calculations as defined in Priest Rapids Salmon and Steelhead Settlement Agreement (SSSA). If additional mitigation is determined to be necessary, the PRCC and PRCC Policy Committees will determine the most appropriate means and methods.

e. NNI Funds in a total amount not to exceed $225,000 will be used to facilitate implementation of the Wanapum Reservoir juvenile steelhead and yearling Chinook acoustic tag survival evaluation. Data collected through this effort would be used to facilitate the PRCC's decision making process during the juvenile salmonid and steelhead outmigration.

(2) The PRCC agrees that juvenile acoustic tag survival evaluations for other covered species (e.g. sockeye, summer Chinook sub-yearlings) per the SSSA, within the Wanapum Reservoir, may not be feasible during 2014.

(3) The PRCC agrees that if the Wanapum Reservoir acoustic tag survival evaluation for juvenile steelhead and yearling Chinook is conducted, the need to apply additional Passive Integrated Transponders (PIT -tags) in migrating juvenile salmonids and steelhead (at other upstream locations and conduct additional analysis) would be considered a secondary priority and may not be feasible.

(4) The PRCC agrees that the Priest Rapids Reservoir survival and Priest Rapids Top-spill Bypass survival and behavior evaluations (if valid) will be counted as progress towards meeting performance standards in the Priest Rapids Project for juvenile steelhead and yearling Chinook. The PRCC will determine how valid results would be incorporated into future performance standards calculations.

(5) If through implementation of the HRFCPA; the Priest Rapids Reservoir survival and Priest Rapids Top-spill Bypass survival and behavior evaluations are invalidated (e.g. SE falls outside 2.5%); the PRCC will examine the root cause and extent of the invalidation. Based on this assessment, the PRCC may determine that study results could be included in survival standard calculations.

(6) The PRCC agrees that an adult salmonid evaluation using active tags is necessary to inform NOAA-Fisheries, PRCC and Grant PUD on the Wanapum fishway exit modifications.

(7) The PRCC agrees that an adult salmonid observational evaluation needs to occur at both the Wanapum left and right bank ladder exit modifications. Observers would be stationed at each modified exit of Wanapum Dam and would collect information during peak passage times. Information on adult salmonid passage over the false weir, through the flume and entry into the forebay would be documented via direct observations and video sampling.

(8) The PRCC agrees that in addition to an adult salmonid evaluation using active tags, PIT-tags will also be applied to further inform NOAA Fisheries, PRCC and Grant PUD on the Wanapum fishway exit modifications and travel time through the Priest Rapids Project (Priest Rapids Dam to Rock Island Dam). Application of PIT-tags at

the Priest Rapids Off Ladder Adult Fish Trap would be given priority over PIT tagging at other locations.

(9) If this SOA is approved, each PRCC member agrees that they will inform and facilitate communication within their respective agency and will support the actions identified within this SOA. The PRCC also agrees to support/advocate on behalf of Grant PUD to secure the necessary tags, equipment and permits, if necessary.

(10) Nothing in this SOA is intended to nor shall in any way abridge, limit, diminish, abrogate, adjudicate, or resolve any Indian or Tribal right reserved or protected in any treaty, executive order, statute or court decree under Federal or state law, including but not limited to the rights of the Wanapum to its subsistence and ceremonial fisheries pursuant to RCW 77.12.453.

EVALUATIONS/AGREEMENTS THAT GRANT PUD WOULD BE SUPPORTING AS A RESULT OF THIS SOA

- Juvenile steelhead and yearling Chinook acoustic tag survival evaluation through Wanapum Reservoir (preference/absence).
- Juvenile steelhead and yearling Chinook acoustic tag route specific survival evaluation through Wanapum Dam (if possible).
- Juvenile steelhead and yearling Chinook acoustic tag survival evaluation through Priest Rapids Reservoir.
- Juvenile steelhead and yearling Chinook acoustic tag survival and behavior evaluation through the Priest Rapids Top-spill Bypass
- Adult spring Chinook active tag evaluation (acoustic tag) from Priest Rapids Off-Ladder Adult Fish Trap to Rock Island Fish Ladder Exit.
- Adult salmonid passage observational evaluation at both the Wanapum left and right bank ladder exit modifications.
- Adult spring Chinook passive tag evaluation from Priest Rapids Off Ladder Adult Trap to Rock Island.
- If through implementation of the HRFCPA; the Priest Rapids Reservoir Survival and Priest Rapids Top-spill Bypass survival and behavior evaluations are invalidated (e.g. SE falls outside 2.5%); the PRCC will examine the root cause and extent on the invalidation. Based on this assessment, the PRCC may determine that study results could be included into survival standard calculations.

Appendix F
Joint Briefing on the Progress and Implementation on the Wanapum and Rock Island Fish Passage Plans

ANCHOR QEA

720 Olive Way, Suite 1900
Seattle, Washington 98101
Phone 206.287.9130
Fax 206.287.9131
www.anchorqea.com

MEMORANDUM

To:	Wells, Rocky Reach, and Rock Island HCPs Committees, and Priest Rapids Coordinating Committee	**Date:**	March 14, 2014
From:	Michael Schiewe, HCP Coordinating and Hatchery Committees Chair		
Cc:	Kristi Geris		
Re:	Meeting Summary of the March 6, 2014 HCP-PRCC Wanapum Conference Call		

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Committees and the Priest Rapids Coordinating Committee (PRCC) met by conference call on Thursday, March 6, 2014, from 1:00 pm to 2:30 pm. Organizations in attendance are listed in Attachment A of this meeting summary.

ACTION ITEM SUMMARY

- Consider juvenile fish passage efficiency monitoring at the lowered river elevations at the three passage routes at Wanapum Dam, including the Future Unit Bypass, turbines, and spillway (Item III-B).
- Consider potential effects of the lowered river elevations on total dissolved gas (TDG) in Rock Island Reservoir (Item III-B).
- Consider additional stranding and entrapment monitoring if water levels fluctuate outside the flow band (Item III-C).
- Further consider collecting survival data at the lowered Rocky Reach operating levels to compare to data under typical operating levels (Item IV-B).
- Further discuss rescue efforts for entrapped resident fish in the Wanapum Pool (Item VI).
- Further discuss a framework for monitoring biological impacts of the situation at Wanapum Dam, including possible flights over the reservoirs, using LiDAR technology, and developing sampling strategies to obtain an inventory of stranded and dead biota (Item-VI).
- Further consider the existing committees and forums to include in these discussions (e.g., PRCC, HCP Coordinating Committees, Rocky Reach Fish Forum [RRFF], Priest

Rapids Fish Forum [PRFF], and Washington Department of Fish and Wildlife [WDFW]) (Item VI).

I. Welcome and Introductions

Denny Rohr (DRohr and Associates), PRCC Chair, welcomed those in attendance. He introduced himself and Mike Schiewe (Anchor QEA), HCP Coordinating and Hatchery Committees Chair, and said they will be co-Chairs for this conference call. He said today is a joint meeting of the HCP Committees and the PRCC to discuss impacts to Endangered Species Act (ESA)-listed salmonids and other threatened fish due to the situation at Wanapum Dam. He asked that non-fish-related questions be emailed to him at drohr5@aol.com. He noted that Grant PUD is open to arranging another conference call, if needed, to discuss other issues related to the situation at Wanapum Dam.

II. Wanapum Spillway Status Update

Tom Dresser (Grant PUD) reviewed the timeline of events regarding the situation at Wanapum Dam, including a summary of preliminary actions, as follows:

February 25, 2014

- Wanapum Dam Operators noticed movement had occurred in the area of Wanapum Spillway Pier #4.

February 26, 2014

- Engineering inspections discovered a 65-foot-long by 2-inch-wide horizontal crack on Wanapum Spillway Pier #4, at an elevation of approximately 485 feet (Wanapum normal operations are at an elevation of 571.5 feet).
- The Federal Energy Regulatory Commission (FERC) was notified immediately (since FERC was notified, FERC Washington D.C. staff and FERC Portland staff have arrived on-site).
- Grant PUD convened an independent Board of Consultants (BOC), which includes expertise in engineering geology, geotechnical engineering (rock mechanics), and structural engineering.

Summary of Preliminary Actions

February 26, 2014

- Grant PUD activated the Emergency Action Plan (EAP) at a Level B, which indicates there is a potential developing failure situation.
- Grant PUD established a Working Plan forward, guided by seven key goals: 1) stabilize the structure to prevent failure; 2) determine root cause of failure (still ongoing); 3) bring forebay elevation back up to 562 feet; 4) determine restoration process; 5) achieve management and mitigation support of spillway; 6) maintain generation; and 7) prioritize the work (all other ongoing work is now second to this issue).

March 4, 2014

- Modeling efforts conducted by FERC, BOC, and Grant PUD indicated that 545 feet is the reservoir water elevation that needs to be reached to stabilize the Wanapum spillway monolith at Pier #4. Based on these results, the Wanapum forebay was steadily drawn down and an operating range of 543 feet to 545 feet was achieved at 8:00 am on March 4, 2014 (fulfilling Goal #1 of the Working Plan).
- With the operating range at 543 feet to 545 feet, alignment surveys indicated that the Wanapum spillway monolith has stabilized and rebounded approximately 1.50 to 1.75 inches back upstream, and the 2-inch crack is now almost closed. Based on these surveys, the EAP was downgraded to a Level C, which indicates a "non-failure emergency."

Dresser said he believes that the Wanapum spillway monolith is now stabilized, and further draw-downs are not anticipated. He added that FERC has not issued orders requiring a particular range of water elevations. He said boat launches in the Wanapum Reservoir are closed due to the low water elevation, and the Wanapum Heritage Center and day-use park at Wanapum Dam are also closed at this time. He cautioned that the low water elevation has created serious safety hazards, and added that additional rangers are on patrol.

III. Priest Rapids Project Priority Item(s)

Tom Dresser said that Grant PUD's top priorities with regard to Wanapum Dam are anadromous fish passage and protecting Hanford Reach spawning and early rearing of juveniles.

A. Adult Fish Passage

Tom Dresser said that Priest Rapids (PR) Dam adult fish ladders should be in operation by April 1, 2014. He said that Wanapum Dam has two adult fishways, which are not operational at this time. He said the bottom of the Wanapum fish ladder exits at 554 feet and the forebay elevation needs to be at 562 feet to operate the Wanapum fish ladders within criteria.

Options Under Development

Dresser reviewed the following options:

- Option #1 (Wanapum Forebay): Preferred option. Raise Wanapum forebay to 562 feet. Probability of this occurring prior to fish passage season is low.
- Option #2 (Wanapum Left Bank Ladder): Bring Wanapum left bank ladder back online. Left ladder was chosen because historical data indicate that about 80% of fish passage is through the left ladder. Install three large diesel pumps along the left bank that would provide about 70 cubic feet per second (cfs) of water. Install a jump-over weir at the top of the ladder with a spiral slide that would transfer adults into the forebay. If this works, install same technology on the Wanapum right bank ladder. Target dates: 1) April 15, 2014 (aggressive date, very difficult to meet); and 2) May 2, 2014 (more realistic, still very aggressive).
- Option #3 (Trap and Haul): Would be implemented in conjunction with Option #2. Not a preferred option, but may be necessary. Close right bank ladder at PR Dam (only left bank ladder operational). Collect adult salmonids, steelhead, bull trout, and Pacific lamprey from off-ladder trap, and transport above Rock Island Dam. Allow resident native and non-native fish to migrate upstream into the PR Reservoir. Grant PUD Engineering Staff is working on a design to modify the off-ladder trap to allow for direct diversion into transport vessels, including installation of an air-operated gate located at the top of the steep pass and an adjustable chute. Target date: April 15,

2014 (also very aggressive). Dresser recognized the target completion date means missing a portion of the upstream migration. He noted, however, that historical data indicate that passage this early in the season is minimal (about 1 to 2 fish per day). A list is being compiled of contacts that may have adult fish transport trucks or vessels and drivers to assist with this effort.

Questions

Bob Rose (Yakama Nation) asked why fish will be transported above Rock Island Dam (and not just above Wanapum Dam), and how many transport vessels will be needed. Dresser indicated that the plan to trap and haul fish above Rock Island Dam is because there could be no or limited passage at Wanapum and/or Rock Island dams. Dresser added that it is his understanding—based on technical discussions between the National Marine Fisheries Service (NMFS), WDFW, and Grant PUD staff—that 5 to 7 trucks should be able to accommodate the peak spring migration run for spring Chinook salmon. He said, however, that Grant PUD is compiling a list of as many contacts as possible in case they are needed.

B. Juvenile Fish Passage

Tom Dresser reviewed juvenile fish passage as follows:

PR Dam

Juvenile fish passage routes at PR Dam include passage via the PR top-spill bulkhead, PR top-spill bypass, PR turbines, and PR spillway. No issues with juvenile fish passage at PR Dam are anticipated.

Wanapum Dam

Wanapum Future Unit Bypass operation is down to 540 feet (about 5,000 cfs [kcfs] spill). Seven turbine units are available at Wanapum, which can pass about 107 kcfs at an elevation of 543 feet. Seven of 12 spillway gates are also available, which pass about 65 kcfs each (the ogee crest on these gates is at 505 feet). Five spillway gates are out pending clearance due to issues with Spillway #4.

Questions

Steve Parker (Yakama Nation) asked if enough water is passing over the Wanapum Future Unit Bypass for juveniles to locate the opening. He also asked if Grant PUD plans to monitor juvenile passage efficiency during this time of lowered water elevation. Tom Dresser said that models indicate that juvenile fish passage will be successful at these levels. He said he is uncertain, however, whether collection efficiency will be the same as under normal conditions. He added that Grant PUD does not plan to monitor passage efficiency at Wanapum Dam, and also added that he is uncertain what level of effort monitoring juvenile fish passage efficiency would involve (e.g., installing equipment, etc.). He said there are three passage routes at Wanapum Dam, via the Future Unit Bypass, turbines, and spillway. He added that, unfortunately, there are no data on passage efficiencies for these routes at the lowered river elevation levels. Parker recommended flagging this item for further discussion.

Bob Rose asked about the possible effect of lowered water levels on TDG in the Rock Island Reservoir. Tom Dresser said that with regard to system operations, if Wanapum Dam remains in the present condition, there is potential to have higher TDG levels if Rock Island returns to operation. He said with regard to travel time, there is potential that fish could move through Wanapum Dam more quickly. Denny Rohr recommended flagging this item for further discussion.

C. Hanford Reach

Tom Dresser said that the Hanford Reach Chinook salmon population is currently in the critical post-hatch stage. He said that protection flows are being maintained at 68 kcfs at the U.S. Geological Survey gage, and that the Bonneville Power Administration has been extremely supportive in helping maintain the flow levels during this critical time. Emergence is expected by around March 22, 2014, when daily delta constraints will begin. He said there will be concerns once the anti-stranding phase begins, and added that a lot of flexibility will be lost due to the situation at Wanapum Dam. He noted, however, that he believes these constraints on the Hanford Reach can be maintained (will not worsen).

Questions

Bob Rose asked what type of monitoring is planned if water levels fluctuate outside the flow band, and Steve Parker asked if there is a model that can predict stranding at various flow levels. Russell Langshaw (Grant PUD) said that data have been collected over the past 10 years that can be used to confidently predict the level of stranding and entrapment to expect at various flow levels. He added that he does not expect the daily deltas to be outside of the normal operating range, but recommended flagging this item for further discussion.

Tom Kahler (Douglas PUD) asked if an increase in spillway guidance efficiency is expected in the lower forebay, and if this has been evaluated at other projects in the hydrosystem. Dresser said that Grant PUD has not conducted any such evaluation, and was unaware of any evaluations at other projects.

IV. Rock Island/Rocky Reach Priority Item(s)

Keith Truscott (Chelan PUD) said that Chelan PUD has been in close coordination with Grant PUD to address impacts of the Wanapum drawdown. He said that Chelan PUD's priorities are focused on human health and safety, anadromous fish, and also on infrastructure and machinery.

A. Rock Island Dam

Lance Keller (Chelan PUD) said that, currently, Powerhouse 1 and 2 at Rock Island Dam are not generating power, and water is being moved past Rock Island Dam via spill routes.

Adult Passage

Lance Keller said that all three adult ladders at Rock Island Dam (right bank, center, and left bank ladders) are watered up, but the current tailrace level is below all three ladder entrances; all fishway sills are at an elevation of 559 feet. He added that information on the Data Access in Real Time (DART) website indicates that there may be issues with the tailwater monitors. With regard to TDG, the water level has dropped below the monitoring equipment, but the equipment will be relocated downstream to obtain accurate readings.

Questions

Jim Craig (U.S. Fish and Wildlife Service [USFWS]) asked why the sill elevation at Rock Island Dam is not lower, given that Rock Island Dam was constructed before Wanapum Dam. Keller said it was at one time, but concrete weirs were built in the left bank ladder at Rock Island to elevate the water at the entrance, which raised the sill elevation to 559 feet. He added that there was also a pool raise in the Rock Island Reservoir, so there is more head at the Rock Island Project, as well. He said engineers are currently onsite at Rock Island Dam looking at possibilities for restoring fish passage in the right bank fish ladder.

Steve Lewis (USFWS) asked if a timeline has been established for modifications, and Keller said it has not. He added that the engineers just arrived and started taking photos; however, Chelan PUD is expediting this process to complete needed activities as soon as possible. He noted that the fish ladder exit is at an elevation of 603 feet.

Bryan Nordlund (NMFS) asked if the modifications made to Rock Island fishway entrances when Wanapum was built could be undone and returned to original operations for the lowered pool. Steve Hays (Chelan PUD) added that perhaps a downstream ladder extension could be installed. He said if river flows are high enough, significant back-watering occurs; however, he noted that a lot of additional water would be needed to operate the right ladder again. Keller said that a minimum tailwater elevation of 554 feet is needed to get turbines back online.

Denny Rohr said there have been discussions on system operations, including Bureau of Reclamation releases from Grand Coulee Dam. He said if enough water is in the Columbia River, this adds considerable backwater at Rock Island Dam despite the situation at Wanapum Dam. He said those discussions are ongoing, but with the flows so low right now, there are constraints on both ends.

Juvenile Passage

Lance Keller said that juvenile fish pass Rock Island Dam either via turbine route or spill route. He said that data cannot be gathered if the turbine route is not working, so the capability of indexing the run at Rock Island Dam will be lost, but juvenile passage will still be open via spill.

Questions

Kirk Truscott (Colville Confederated Tribes) asked if water is spilling onto the bedrock. Keller said it does at times, if there are large enough volumes of water. Truscott wondered if this would potentially cause injury to passing fish.

B. Rocky Reach Dam

Adult Passage

Lance Keller said that the Rocky Reach adult ladder is still out of service for winter maintenance repairs on the attraction water system pumps. He said the repairs are going well, and the ladder is scheduled to come back online on March 14, 2014, as approved by the HCP Coordinating Committees. He said that sill elevations are at 600 feet, 603 feet, and 604 feet, for the right powerhouse, left powerhouse, and spillway, respectively. The tailwater elevation is currently at 610 feet. He said once repairs are complete, there will be adult passage at Rocky Reach Dam. Denny Rohr noted that Rocky Reach Dam was constructed prior to the pool raise in the Rock Island Reservoir, so the Rocky Reach fishway was built to operate at pool levels lower than current operations.

Juvenile Passage

Lance Keller said that engineers are investigating pool elevations in relation to juvenile bypass operations. He noted that the same lead engineer who developed the Rocky Reach Juvenile Bypass System is working on the modifications, so he already understands the system well.

Questions

Bob Rose asked if the forebay will be outside of the normal operating range, and Keller said that it is currently within the FERC operating range. He added that the Rocky Reach forebay elevation is currently at 704 feet, which is at the bottom of the normal operating range. He said as more river flows increase, the situation will improve. Steve Hays added that all units not under repair are in operation. He further clarified that Rocky Reach is typically operating in the upper level of the normal range—not the lower. Rose suggested considering collection of survival data at these lower operating levels to compare to data at typical operating levels.

Steve Lewis asked what the process is for dealing with non-salmonid species, as far as USFWS consultation. Tom Dresser said that Grant PUD plans to address these issues through the individual workgroups, including the Fall Chinook Work Group, PRFF, and the PRCC.

V. Coordination Process in Place

Tom Dresser said that coordination is occurring on several levels, including via press releases, Facebook, and Twitter. He said that Grant PUD Senior Management is briefed at least once daily. Internal coordination calls are occurring daily, and weekly calls are occurring between Chelan PUD and Grant PUD. Coordination calls are ongoing with key stakeholders, various policy staff, and tribal entities. Grant PUD Technical Staff are in close coordination with NMFS and WDFW. Dresser reiterated that Grant PUD is open to additional conference calls, as needed or requested.

VI. Questions and Next Steps

Kirk Truscott asked if impacts are anticipated to the PR Hatchery water supply, and Tom Dresser replied that no impacts are anticipated. He added that water levels may vary, but are expected to remain within operational range.

Jim Brown (WDFW) asked if inventory is being taken of stranded resident fish in the Wanapum Pool, and if there are plans for getting entrapped fish back into the connected part of the river. Dresser said there have been reports of stranding, and inventory work is underway. He said that two Grant PUD crews are planning rescue efforts for entrapped fish, and a boat launch is being constructed to provide boat access. Brown recommended flagging this item for further discussion.

Brown said that WDFW Aquatic Invasive Species Staff are interested in conducting evaluations while the river is at this lowered elevation, and he asked if there are any concerns with this. Dresser said that Grant PUD has no issues with this, and invited this type of coordination on other efforts. He added, however, that safety may be a concern. Brown agreed and noted that impacts to cultural resources are also a shared concern. Dresser recommended that Brown contact him to begin coordination of these efforts.

Lance Keller said that, in light of the situation at Wanapum, Chelan PUD deployed a boat for emergency purposes before the reservoir was dropped down. He said this boat is also being used for cultural resource, engineering, and stranding surveys. He said the boat is located at the day-use dock at the bottom of Orondo Street, and offered to arrange use of the boat, if needed.

Steve Lewis asked when the next check-in meeting will be to follow up on the progress of the engineering plans, and Denny Rohr said that is to be determined. He said the PRCC plans to continue discussions within that venue, and he recommended coordinating with Jim Craig for updates. He said, as far as this larger group, he is uncertain when the next meeting will be.

Bob Rose suggested convening a small group to discuss a framework for monitoring this situation. He suggested flights over the reservoirs, possibly employing LiDAR technology, and developing sampling strategies to obtain an inventory. Rohr recommended having those discussions within the PRCC, and Rose recommended that the PRFF and RRFF should also be involved in these discussions. Brown said that WDFW would also be available to participate in those discussions as they relate to land and cultural resource issues.

List of Attachments

Attachment A List of Participating Organizations

Attachment A
List of Participating Organizations

Organization
Anchor QEA
Battelle
BioAnalysts
Bonneville Power Administration
Chelan PUD
Columbia River Inter-Tribal Fisheries Commission
Colville Confederated Tribes
Douglas PUD
Golder Associates
Grant PUD
National Marine Fisheries Service
DRohr and Associates
U.S. Army Corp of Engineers
U.S. Fish and Wildlife Service
Wanapum Tribe
Washington Department of Fish and Wildlife
Washington State Department of Ecology
Washington State Governor's Office
Yakama Nation

ANCHOR QEA

720 Olive Way, Suite 1900
Seattle, Washington 98101
Phone 206.287.9130
Fax 206.287.9131
www.anchorqea.com

MEMORANDUM

To:	Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees, and Priest Rapids Coordinating Committee	**Date:**	March 24, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris, Tom Kahler		
Re:	Summary of the March 17, 2014 HCP-PRCC Wanapum Conference Call		

Members of the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Committees and the Priest Rapids Coordinating Committee (PRCC) participated in a joint briefing on proposed interim fish passage modifications at Rock Island and Wanapum dams on Monday, March 17, 2014, from 8:00 a.m. to 9:00 a.m. The briefing was held by conference call; organizations represented are list in Attachment A.

ACTION ITEM SUMMARY

- Grant PUD will consider additional approaches to improve lamprey passage efficiency in the event that lamprey attach to the chute (Item II-A).

I. Welcome and Introductions

Denny Rohr (DRohr and Associates), PRCC Chair, welcomed those in attendance. He said that Grant PUD and Chelan PUD both plan to briefly review their paths forward for achieving interim fish passage at their respective dams. Mike Schiewe (Anchor QEA, LLC), HCP Coordinating Committees Chair, said that the HCP Coordinating Committees will then convene a conference call following this discussion to formally consider Chelan PUD's Interim Rock Island Fish Passage Plan.

II. Grant PUD

A. Fish Passage at Wanapum Dam

Tom Dresser (Grant PUD) indicated that the PRCC is close to reaching agreement on the proposed fish passage plan for Wanapum Dam. Mike Nicholls reviewed the plan as follows:

- The Wanapum Dam forebay is currently drawn down to an operating range of about 541 to 545 feet, and the fish ladder exit is at 554 feet (approximately 9 to 13 feet height difference). No issues exist at the entrance—only at the exit end.
- A weir, approximately 7 feet tall, will be constructed at the upper end of both the left bank and right bank fish ladders to provide a 6-foot-tall wall of water going down the fish ladder.
- The lower section of Wanapum Dam includes both an overflow weir and lower orifice openings. Overflow sections are designed at 40 cubic feet per second (cfs) and lower orifices are designed at 30 cfs, for a total of 70 cfs. An adjustable plate will be installed to adjust flow, and fish will be guided over the weir and down a chute into the forebay.
- Four 90-horsepower pumps will be installed to feed the weir box (90% of flow would be downstream and 10% of flow upstream) to provide water on the chute. The chute is 16 feet wide at the top and reduces to about 4 feet wide at the base. There is some concern with creating a bottleneck, and these details will be discussed with Bryan Nordlund (National Marine Fisheries Service [NMFS]) before finalizing the plans. The chute is made of fiber-reinforced-plastic plywood, which is the same material used in construction of fish transport tanks. The end of the chute will be at an elevation of 554 feet.
- The fish ladders are 16 feet wide. Bar grating with a flat plate section for lamprey will be installed in a 1-foot-wide section on both sides of each ladder. Ramps will also be installed similar to what has been installed at other Mid-Columbia dams to aid in lamprey passage. The plan is for lamprey to travel up and over the weir into the forebay. Precautions are being taken to reduce possible injury to fish, including rounding all edges, filling in gaps, and applying a silicone lining to the ramp. Grant PUD is also considering reducing the slope of the ramp to 45 degrees.

Questions

Kirk Truscott (Colville Confederated Tribes) asked if there is potential that the fish will be able to turn around in the chute. Nicholls said that can be controlled by: 1) the slope of the chute; and 2) the amount of water moving down the chute. He said the system will be tested

prior to implementation to evaluate what amount of flow is needed to keep fish moving down the chute.

Kirk Truscott asked if the chute outlet is near a spillbay. Nicholls said that the chutes on both ladders will be installed quite a distance away from the spillbays, and suggested viewing satellite imagery online to obtain a better idea of relative distances. Kirk Truscott said that his concern is the risk of fallback.

Steve Lewis (U.S. Fish and Wildlife Service [USFWS]) asked how tall the sidewalls of the chute are, and if there may be a need for a cover. Nicholls said the sidewalls are 4 feet tall, which, combined with the slick surface of the chute, should be adequate to contain the fish.

Bob Rose (Yakama Nation) expressed concern that the lamprey may attach to the chute, and suggested developing backup options if this becomes a problem. Nicholls said that he will flag this for further consideration.

Jeff Korth (Washington Department of Fish and Wildlife) asked if there is a contingency plan in place if flows at the ladder entrances need to be increased. Nicholls explained that flows at the ladder entrances will remain the same as normal conditions, and the lowered flows will not be encountered until the fish are already in the ladder (about one-third of the way up the ladder), at which point the fish will likely continue through the ladder. He said the only change would be that one of the two lower orifices per wall would be blocked off in the upper part of the ladder.

Steve Lewis asked if there are plans to monitor the effectiveness of the interim passage system. Nicholls said that the system will be monitored to ensure that fish are using it as planned.

Kirk Truscott asked if the upper part of the ladder is orifice passage only (in contrast to orifice and overflow), and Nicholls replied that it is.

Korth asked if passive integrated transponder (PIT)-tag arrays are installed at Wanapum Dam. Tom Dresser said not currently, but that Grant PUD is currently working with Biomark to assess the possibility of installing temporary PIT-tag arrays at the dam.

Next Steps

Tom Dresser said that Grant PUD is initiating Endangered Species Act Emergency Consultation, and interim adult passage plans are due to the Federal Energy Regulatory Commission (FERC) by Friday, March 20, 2014. He said the target deadline to have the interim passage system in place is April 15, 2014.

B. Wanapum "Fix" Update

Tom Dresser said there are no recent updates on progress toward repairing the crack in Wanapum Dam. He said that drilling was scheduled to start last week but, due to high winds, drilling was postponed.

III. Chelan PUD

A. Interim Fish Passage Plan

Keith Truscott (Chelan PUD) said that Chelan PUD has been in close coordination with CH2M HILL, USFWS, and NMFS to develop an Interim Rock Island Fish Passage Plan. Chelan PUD's plan involves using denil structures to allow fish passage at lower tailwater elevations at two of the three ladder entrances (left bank and right bank). A portion of those entrances will be modified, while other entrances (high efficiency entrances) will remain at normal operating conditions (untreated). The denils will be composed of two 30-foot-long sections with a rest box in the middle. Implementation of the denil structures is based on the past 30 years of fish passage information, and Chelan PUD is confident that fish passage will be provided over a wide range of flows. Each ladder extension will also have a lamprey passage way, which will follow the same slope and contour as the denil.

Keith Truscott said that historical data indicate that fish prefer the right bank ladder for fish passage at Rock Island Dam; therefore, modifications will first be completed there with a target completion date of April 15, 2014. Modifications will then be completed on the left bank ladder. Historical river flow data suggest that the right bank fish ladder will be

operating within the normal range through at least July 2014, and then all modifications will be in place by late summer. Keith Truscott noted that the smolt monitoring station is located at the right powerhouse, which was another consideration while prioritizing the modifications.

Questions

Bryan Nordlund asked what the operating range is for normal conditions and for the denil structures. Steve Weist (Chelan PUD) said that ladder entrances at Rock Island Dam will operate normally when the river flow is at about 125 to 130 cfs. He said that those flows are expected over the majority of the fish passage season, and then later in the season when flows drop below 125 cfs, the denil structures will be needed.

Kirk Truscott asked how many entrances are located at the right ladder. Keith Truscott said there are four entrances—two of which will be modified, and one (highest efficiency entrance) will remain untreated. Kirk Truscott asked if modifications will impact passage at the unmodified side. Keith Truscott said he does not believe so because they are so far apart. He also noted that the target completion date for these modifications is before there will be a high incidence of fish.

Steve Lewis asked if information on how lamprey approach the project was considered in planning for setting up the denils. Lance Keller (Chelan PUD) said that count window and PIT-tag detection data were reviewed, and it was confirmed that lamprey prefer the right ladder for passage. He added that as far as entrance efficiency, however, that is still unknown. He said that criteria outlined by the Bonneville Power Administration were used to design the lamprey passage components.

Next Steps

Keith Truscott said that Chelan PUD needs to file an Interim Fish Passage Plan with FERC by Friday, March 21, 2014. He said he is confident they will make that deadline.

List of Attachments

Attachment A List of Attendee Organizations

Attachment A
List of Attendees

Organization
Anchor QEA, LLC
Chelan PUD
Columbia River Inter-Tribal Fisheries Commission
Colville Confederated Tribes
DRohr and Associates
Fish Passage Center
Grant PUD
National Marine Fisheries Service
U.S. Fish and Wildlife Service
Washington Department of Fish and Wildlife
Yakama Nation

ANCHOR QEA

720 Olive Way, Suite 1900
Seattle, Washington 98101
Phone 206.287.9130
Fax 206.287.9131
www.anchorqea.com

FINAL MEMORANDUM

To:	Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees, and Priest Rapids Coordinating Committee	**Date:**	March 28, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris Tom Kahler		
Re:	Final Summary of the March 24, 2014 HCP-PRCC Wanapum Briefing		

Members of the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Committees and the Priest Rapids Coordinating Committee (PRCC) participated in a joint briefing, held by conference call, to review progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans on Monday, March 24, 2014, from 8:00 a.m. to 8:30 a.m. Organizations represented are listed in Attachment A.

ACTION ITEM SUMMARY

- No action items were discussed during today's conference call.

I. Welcome and Introductions

Denny Rohr (DRohr and Associates), PRCC Chair, and Mike Schiewe (Anchor QEA, LLC), HCP Coordinating Committees Chair, welcomed those in attendance. Rohr said the purpose of today's briefing is to update the PRCC and HCP Coordinating Committees on progress made at Wanapum Dam and Rock Island Dam in response to the Wanapum Dam emergency spillway repair situation and reservoir drawdown.

II. Grant PUD

A. Wanapum Dam Update

Tom Dresser (Grant PUD) reviewed progress toward meeting six primary goals, as detailed below.

Goal 1: Stabilize the structure to prevent failure

Complete – Through coordination with the Federal Energy Regulatory Commission (FERC), an operating range of 543 feet to 545 feet was achieved at Wanapum Dam on March 4, 2014, which is the reservoir water elevation required to stabilize the fractured monolith.

Goal 2: Determine the root cause of failure

Ongoing – Three holes have been drilled in monolith No. 4, and ultrasound and ground penetrating radar technology are being used to determine the geometry of the fracture. Construction data and other historical records are being collected to help inform analyses (about 95% assembled to date). Forensics are also being performed on rebar and concrete obtained from monolith No. 4. Drilling was initially expected to require 9 days; however, due to weather conditions and other unanticipated events, drilling is expected to require an additional 2 to 3 weeks.

Goal 3: Intermediate pool raise

Pending completion of Goal 2 – The monoliths at Wanapum Dam are currently being assessed to evaluate whether they can withstand an intermediate pool raise; however, Goal 3 cannot be completed until more is known about the root cause of the failure. With regard to process, approximately 30 individuals—consisting of Grant PUD engineers and other staff, the independent Board of Consultants (BOC), other engineers, and the forensics team—are developing and reviewing plans, which need to be approved by the BOC prior to Grant PUD moving forward. This process ensures a close review; however, also requires time to complete.

Goal 4: Achieve management and mitigation support of spillway

Pending completion of Goals 2 and 3 – In parallel with efforts to achieve Goals 2 and 3, Grant PUD also has an independent contractor exploring potential solutions, so that when the root cause is determined, implementing a solution can be immediately underway. One solution being explored is drilling tendons through the spillway and into the bedrock. Certain elements of this potential solution are being staged now.

Goal 5: Fish and cultural resources

Ongoing – Grant PUD submitted an Interim Fish Passage Plan for Wanapum Dam to FERC, which includes the following sections:

- Section 1: Emergency modifications to the Wanapum Fishway (which Mike Nicholls reviewed during the Wanapum briefing on March 17, 2014)
- Section 2: Actions at the off-ladder trap
- Section 3: Adult salmonid passage (including passive integrated transponder [PIT]-tag infrastructure)
- Section 4: Monitoring and evaluation (including collecting realtime PIT-tag data)
- Section 5: Pacific lamprey passage (including detection and infrastructure)
- Section 6: Consultation
- Section 7: Adaptive management (same adaptive management as included in the Priest Rapids Salmonid Settlement Agreement)

The Interim Fish Passage Plan for Wanapum Dam will be modified, as needed, as new data become available. Updates and revisions as they pertain to salmonids will be addressed by the PRCC; lamprey will be addressed by the Priest Rapids Fish Forum; and Hanford Reach issues will be addressed within the Fall Chinook Working Group.

Goal 6: Plant maximization

Ongoing – Grant PUD, the Bonneville Power Administration (BPA), and other Mid-Columbia PUDs are meeting daily to address this.

B. Questions

Steve Lewis (U.S. Fish and Wildlife Service [USFWS]) asked if cameras will be installed near the false weir to evaluate passage efficiency. Tom Dresser said that Grant PUD is still considering this; however, it was not included in the Interim Fish Passage Plan for Wanapum Dam that was submitted to FERC. However, he said they did include installation of temporary PIT-tag arrays in both Wanapum fishways, which will aid in evaluating passage efficiency.

Scott Bettin (BPA) asked when the Interim Fish Passage Plan for Wanapum Dam was submitted to FERC, and if it will be publically available. Dresser said the plan was submitted

last week as part of the Endangered Species Act Emergency Consultation, and that it will be made publically available.

Scott Carlon (National Marine Fisheries Service [NMFS]) asked if Grant PUD is waiting for the results of the forensic analyses before installing the tendons. Dresser said that the tendons will not be installed until the root cause of the failure is determined. He added, however, that installation of the tendons is already being staged, so when the time comes, installation can begin immediately.

Bryan Nordlund (NMFS) asked if a timeline for completion is known, and Dresser said that a timeline is not known at this time.

Jim Craig (USFWS) asked if a slide will be installed connecting the overflow weir to the forebay, as discussed in the PRCC. Dresser said that installing a slide by April 15, 2014, is not feasible; however, a system will be developed and will be onsite for installation, if needed.

III. Chelan PUD

A. Rock Island Dam Update

Lance Keller (Chelan PUD) said that Chelan PUD filed the Rock Island Interim Fish Passage Plan with FERC, which outlines adult and juvenile fish passage measures, including minor modifications to juvenile spill shaping. A contract is in place to begin design and fabrication of the adult fishway extensions this week. Last weekend, a low flow test was conducted when water elevation was dropped 1 foot below normal operating conditions. The lowered water level allowed multiple items to be accomplished, including: 1) identifying where irrigators pumps are located; 2) assessing boat launch accessibility; 3) conducting cultural resources and stranding surveys; and 4) allowing access to the lower fishways in the Rock Island left ladder so contractors could begin site preparations for the modifications. Keller said that Chelan PUD is now in a holding pattern, waiting for contractors to begin work.

B. Questions

Scott Bettin asked what work will be performed on the left ladder. Lance Keller explained that two precast panels will be removed and a denil will be installed in the third entrance.

Bryan Nordlund asked what passage means were expected to be available at different flow and reservoir elevations. Keller said that during the low flow test, only 30,000 cubic feet per second (30 kcfs) was passing through Rock Island Dam, so engineers could observe what might be expected during times when the fishway entrances are perched. Nordlund asked if the entrances will be within criteria when flows are 125 kcfs, and Keller replied that they will not, but will be close. He said that the tailwater does rise up, and Chelan PUD will rely on the pumps to meet the 90 cfs flow targets at the entrance; the head differential will be slightly below criteria.

Nordlund asked about coordination to control river flows. Bettin said that coordination is occurring on a daily basis among BPA, the U.S. Army Corps of Engineers, and the PUDs to maintain flows at or above 125 kcfs. He said in June 2014, flows will likely be shaped differently, but will continue to be coordinated at that time.

Bettin asked about installing the denil structures now while river flows are still high and expected to get higher, and whether this might result in damage to the structures before they are needed later in the season. Keller said that the denils will be fully submerged for the majority of the season; however, they will be constructed to withstand high flows and will be anchored.

IV. Next Steps

Denny Rohr said that the next HCP-PRCC Wanapum Briefing is scheduled for Monday, March 31, 2014, to be held by conference call. He added that attendees can contact him or Mike Schiewe by email or phone with questions.

List of Attachments

Attachment A List of Attendee Organizations

Attachment A
List of Attendees

Organization
Anchor QEA, LLC
Chelan PUD
Columbia River Inter-Tribal Fisheries Commission
Colville Confederated Tribes
DRohr and Associates
Fish Passage Center
Grant PUD
National Marine Fisheries Service
U.S. Fish and Wildlife Service
Washington Department of Fish and Wildlife

ANCHOR QEA

720 Olive Way, Suite 1900
Seattle, Washington 98101
Phone 206.287.9130
Fax 206.287.9131
www.anchorqea.com

FINAL MEMORANDUM

To:	Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees, and Priest Rapids Coordinating Committee	**Date:**	April 4, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris Tom Kahler		
Re:	Final Summary of the March 31, 2014 HCP-PRCC Wanapum Briefing		

Members of the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Committees and the Priest Rapids Coordinating Committee (PRCC) met by conference call on Monday, March 31, 2014, from 8:00 a.m. to 8:45 a.m., to participate in a joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans (IFPPs) that were developed in response to the Wanapum Dam emergency spillway repair situation and reservoir drawdown. Organizations represented are listed in Attachment A.

ACTION ITEM SUMMARY

- Holly Harwood (Bonneville Power Administration [BPA]) will contact Kristi Geris (Anchor QEA) to obtain a copy of the Rock Island IFPP (Item III-B).

I. Welcome and Introductions

Denny Rohr (DRohr and Associates), PRCC Chair, and Mike Schiewe (Anchor QEA, LLC), HCP Coordinating Committees Chair, welcomed those in attendance.

II. Grant PUD

A. Wanapum IFPP Update (Tom Dresser)

Tom Dresser (Grant PUD) said that on March 21, 2014, Grant PUD filed their Wanapum Dam IFPP with the Federal Energy Regulatory Commission (FERC), and on March 26, 2014, FERC issued to Grant PUD the FERC Order approving the plan. This Order stipulated a

requirement for Grant PUD to file monthly reports with FERC that document progress toward implementing the Wanapum IFPP. The first monthly report is due May 1, 2014. Dresser reviewed progress toward meeting elements described in the Wanapum IFPP, as detailed in the following sections.

Emergency Modifications at the Wanapum Dam Fishways

On Task: Modifications to the left bank ladder, and likely right bank ladder, are on track to be completed by April 15, 2014. A boring was needed through the powerhouse, which is complete. Pumps, electrical equipment, and most other hardware needed for the modifications are now on site. The exit flumes will be delivered on April 9, 2014.

Flume versus Chute

The exit flumes deliver fish to a 13- to 15-foot drop above the water; whereas, the exit chutes deliver fish to about a 4-foot drop above the water. The chutes, however, require additional time to fabricate than the flumes, which is why the flumes will be installed initially. The chutes are in the process of being fabricated, and once they are on site, Grant PUD will assess whether to install them as replacements for the flumes.

Proposed Interim Action at the Priest Rapids Off-Ladder Adult Fish Trap (OLAFT)

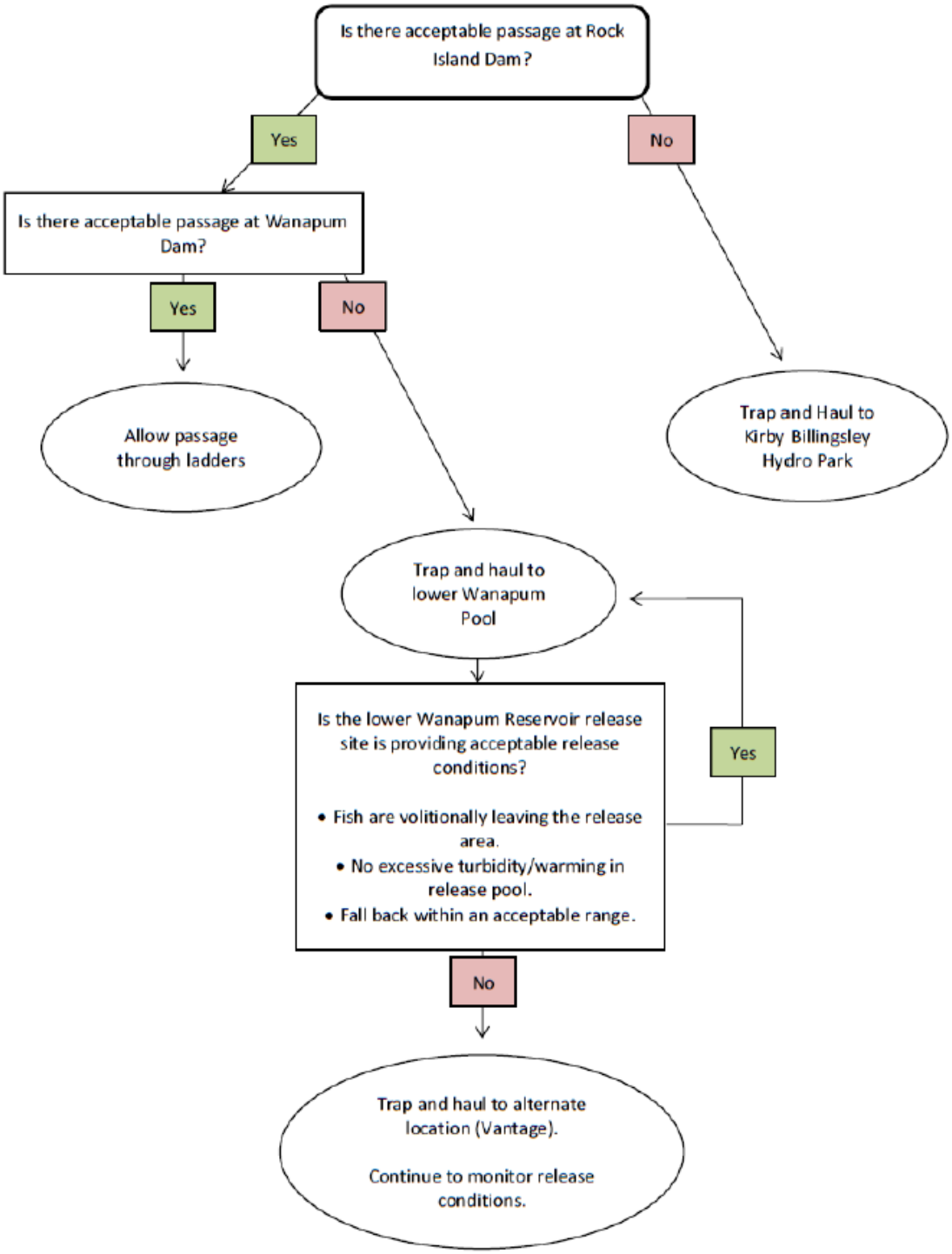
On Task: Modifications to the OLAFT are on track for completion by April 15, 2014. On March 28, 2104, the OLAFT was disassembled to install modifications, and it is now reassembled and can support water-to-water transfer. The Wanapum IFPP stipulated that a minimum of five trucks be used for regular daily use, with a sixth truck available as backup in the case of equipment failure. However, eight trucks are now available for the spring Chinook run, and the Yakama Nation (YN) has offered three or four trucks as additional backup, if needed.

June 1 to August 31, 2014 – OLAFT Phase II

Planning is underway on possible modifications needed to transport additional salmonids. Grant PUD is considering contracting an agency to perform logistics planning ("incidence planning"). Discussions are also underway with the National Guard.

Trap and Haul

In the Wanapum IFPP, Figure 1 (included below) shows a decision matrix that explains the logic path for implementing trap and haul measures from the Priest Rapids OLAFT to upstream release locations.



Adult Salmonid Passage Monitoring and Evaluation (M&E) or "Proof of Concept"

On Task: Installation of temporary passive integrated transponder (PIT)-tag infrastructure in the left and right fishways at Wanapum Dam is on track to be completed by April 15, 2014. PIT-tag infrastructure already exists at the Priest Rapids OLAFT and in all three fish ladders at Rock Island Dam. Detection at these locations coupled with fish counts at Priest Rapids Dam will provide passage and runtime data that will be compared to historical data. Grant PUD will compile these data and review them with the PRCC.

Columbia River Intertribal Fish Commission (CRITFC) staff members are PIT-tagging up to an additional 2,000 spring and summer Chinook at Bonneville Dam. Grant PUD is investigating the feasibility of deploying dip nets at the Priest Rapids OLAFT to conduct additional PIT-tagging at that location, which can be used to evaluate fallback concerns at Wanapum Dam.

Pacific Lamprey Passage PIT-Tag Detection Infrastructure

On Task: PIT-tag detection infrastructure is in place at both Priest Rapids Dam and Wanapum Dam. Plating is currently being installed at the weir boxes, and the exit flume is also under construction. Staff members are continuing discussion of the requirements for trap and haul of lamprey.

B. Wanapum Dam Fracture Update (Tom Dresser)

Tom Dresser said that Grant PUD is aggressively working towards an intermediate pool raise to an elevation of 562 feet. This elevation would allow Wanapum fishway exits to operate within criteria; however, achieving this will require approval by the Board of Commissioners (BOC) and FERC. Requirements for approval will require defining the causes of the failure (how and why). A decision matrix has been developed to evaluate possible design efficiencies, deterioration of rebar, abnormal loading, construction practices, and operational indicators of failure. Currently, 17 reports are being drafted.

Implementation of a Drill Plan is currently underway, which includes drilling up to twenty-four 4-inch wide and 15- to 45-foot deep borings into the monolith ogee crest to investigate the geometry of the fracture. As of March 28, 2014, six borings had been completed. If all 24 borings are needed, drilling efforts are anticipated to last into mid- to late April 2014.

Initially, drilling was anticipated to require 9 days to complete. Initial drilling was conducted by barge, which slowed progress during unfavorable weather conditions. Therefore, last weekend, construction began on a drilling platform, which will replace the barge. A temporary seal is also being installed at the top of the fracture, which should help stabilize the fracture.

One of the possible repair strategies for Wanapum Dam involves the installation of several tendons through the monolith and anchored into the bedrock. A number of reports and modeling efforts supporting the proposed "fix" are underway, as required by the BOC and FERC.

Currently, estimates are that the Wanapum Reservoir will be drawn down at an elevation of 541 to 545 feet until July 1, 2014. On March 27 and March 28, 2014, Grant PUD presented all of this information to the BOC; however, no comments have yet been received.

C. Questions (All)

Jeff Korth (Washington Department of Fish and Wildlife [WDFW]) asked if sorting fish at the OLAFT is possible. Tom Dresser said that sorting is being discussed, and it does appear to be a possibility.

Bryan Nordlund (National Marine Fisheries Service [NMFS]) asked when modifications will be installed in the right bank ladder at Wanapum Dam. Dresser said that components for both ladders will be delivered on April 9, 2014, and that modifications will first be installed in the left bank ladder. He said that modifications to the right bank ladder will follow about 1 to 2 days later; so both flumes and weir boxes should be in place by April 10 or April 11, 2014. He said that the left bank ladder will definitely be complete by April 15, 2014.

Bob Rose (YN) asked if the Wanapum IFPP was distributed to the PRCC. Denny Rohr said that the plan was distributed to the PRCC by Debbie Firestone on March 21, 2014.

Holly Harwood asked how juvenile fish passage will be addressed. Dresser explained that Wanapum Dam has three juvenile fish passage routes, via the Wanapum Future Unit Bypass (WFUB), turbines, and spillway. He noted that, ideally, the spillway gates will not be

needed for juvenile fish passage. He said that the WFUB, at an operating range of 541 to 545 feet, will be spilling about 5,000 to 10,000 cubic feet per second (5 to 10 kcfs), and modeling data indicate that juvenile fish passage will be successful at these levels. He added, however, that fish attraction efficiency is not known. He said that analyses of survival will be ongoing, and that an initial analysis indicates higher survival with lower pressures. He added that in lieu of a three-dimensional acoustic study, Grant PUD plans to monitor two separate release groups of PIT-tagged fish that are planned for release as part of an avian predation study downstream of Wanapum Dam.

Tom Skiles (CRITFC) asked if survival downstream of the WFUB has been modeled at 510 to 515 kcfs. Dresser replied that it has, which is within the normal operating range of the bypass. Bryan Nordlund clarified that it was hydraulic conditions downstream of the WFUB that lead to good tailrace egress that had been modeled at 5 to 20 kcfs.

III. Chelan PUD

A. Rock Island IFPP Update (Lance Keller)

Lance Keller (Chelan PUD) said that on March 21, 2014, Chelan PUD filed with FERC the Rock Island IFPP, and on March 26, 2014, FERC issued to Chelan PUD the FERC Order approving the plan. Since the last Wanapum briefing on March 24, 2014, contractors have arrived on site, and site preparations for the modifications are underway. Parts will be delivered to Rock Island Dam by April 4, 2014, and installation will begin the same day. Flows will be coordinated from April 4 to April 6, 2014, in order to install infrastructure in the right ladder. The right ladder extension will be completed by April 15, 2014, and then modifications will be installed in the left ladder, which will be completed by June 30, 2014. Keller noted that the spring Chinook migration will be underway while modifications are being installed in the left ladder, so work will only be conducted during nighttime hours in order to keep both the right and left ladders open for passage during daytime hours.

B. Questions (All)

Holly Harwood asked if the Rock Island IFPP is publically available. Lance Keller said that because the plan contains critical energy infrastructure information (CEII), the plan was not made available to the general public. He said, however, that Harwood can contact Kristi

Geris and she can supply the plan to Harwood, so long as the CEII contained within the plan is treated as respected.

Scott Carlon (NMFS) asked about the current pool elevation at Rock Island Dam. Keller said that the elevation is at 609 feet, which keeps the exits at the proper elevation and also keeps Rocky Reach Dam completely independent.

Bob Rose asked whether briefing materials would be available before the site visit planned for April 7, 2014; Tom Dresser said he was not sure but that Grant PUD would see if that would be possible.

IV. Next Steps

Denny Rohr said that the next HCP-PRCC Wanapum Briefing is scheduled for Monday, April 7, 2014, to be held by conference call. He added that attendees can contact him or Mike Schiewe by email or phone with questions.

List of Attachments

Attachment A List of Attendee Organizations

Attachment A
List of Attendees

Organization
Anchor QEA, LLC
Bonneville Power Administration
U.S. Bureau of Reclamation
Chelan PUD
Columbia River Inter-Tribal Fisheries Commission
Douglas PUD
DRohr and Associates
Fish Passage Center
Grant PUD
National Marine Fisheries Service
U.S. Fish and Wildlife Service
Washington Department of Fish and Wildlife
Washington State Department of Ecology
Yakama Nation

ANCHOR QEA

720 Olive Way, Suite 1900
Seattle, Washington 98101
Phone 206.287.9130
Fax 206.287.9131
www.anchorqea.com

FINAL MEMORANDUM

To:	Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees, and Priest Rapids Coordinating Committee	**Date:**	April 11, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris Tom Kahler		
Re:	Final Summary of the April 7, 2014 HCP-PRCC Wanapum Briefing		

Members of the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Committees and the Priest Rapids Coordinating Committee (PRCC) met by conference call on Monday, April 7, 2014, from 8:00 a.m. to 8:30 a.m., to participate in a joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans (IFPPs) that were developed in response to the Wanapum Dam emergency spillway repair situation and reservoir drawdown. Organizations represented are listed in Attachment A.

ACTION ITEM SUMMARY

- No action items were discussed during today's conference call.

I. Welcome and Introductions

Denny Rohr (DRohr and Associates), PRCC Chair, and Mike Schiewe (Anchor QEA, LLC), HCP Coordinating Committees Chair, welcomed those in attendance.

II. Grant PUD

A. Wanapum IFPP Update – Primary Goals (Curt Dodson)

Curt Dodson (Grant PUD) reviewed progress toward meeting primary goals, as detailed in the following sections.

Goal 1: Stabilize the structure to prevent failure

Complete: This goal was achieved on March 4, 2014.

Goal 2: Determine the root cause of failure

Ongoing: Six holes have been drilled in sections of the monolith ogee crest to investigate the geometry of the fracture. However, drilling has been temporarily suspended in order to construct a drilling platform to replace the use of a barge. Approximately 95 to 99% of the construction data and other historical records that were requested to help inform analyses have been received, and are currently being reviewed. These data include the original calculations used for constructing Wanapum Dam.

Goal 3: Intermediate pool raise

Pending completion of Goal 2: The Wanapum Reservoir is currently operating in a range of 541 to 545 feet. Discussions are ongoing regarding restoring the reservoir to a normal minimum operating level; however, no dates have been set.

Goal 4: Achieve management and mitigation support of spillway

Pending completion of Goals 2 and 3: A possible repair strategy for Wanapum Dam involves the installation of several tendons through the monolith and anchored into the bedrock. On April 3, 2014, a "Tendon Geotechnical Investigation" was presented to the Federal Energy Regulatory Commission (FERC) and the Board of Commissioners (BOC), and on April 4, 2014, drilling was underway for this investigation. An evaluation of seismic data is also underway to determine what load the tendons may experience, and also what size tendons may be needed. MWH, an engineering firm, is investigating designs for drain holes to reduce hydraulic uplifting that can occur at hydroprojects when there is water between the ground and the project. Modeling is ongoing.

Goal 5: Fish and cultural resources

Ongoing: The Grant County Cultural Resources Department is conducting cultural resource monitoring at all sites where work is taking place. Access to the reservoir is still closed to the public. There is only one active boat launch in the Wanapum Reservoir, located along the right bank, upstream of the Vantage Bridge near Gingko State Park. Grant County is

coordinating closely with local irrigators in efforts to streamline permitting processes to extend irrigation pipes, as needed, to obtain water from the reservoir.

B. Wanapum IFPP Update – Plan Elements (Curt Dodson)

Curt Dodson reviewed progress toward meeting elements described in the Wanapum IFPP, as detailed in the following sections.

Emergency Modifications at the Wanapum Dam Fishways

On Task: This element focuses on the left bank ladder, which passes about 80% of the adult migration. Four pumps have been delivered and are already installed. The false weir is being fabricated and will be delivered and installed this week. Efforts focused on the right bank ladder are also on task to be completed by April 15, 2014.

Proposed Interim Action at the Priest Rapids Off-Ladder Adult Fish Trap (OLAFT)

On Task: Preparations needed for trap and haul, including securing trucks, are ongoing in parallel with modifications at the Wanapum Dam fishways. Jeff Korth (Washington Department of Fish and Wildlife [WDFW]) indicated that this week, trap and haul from the Priest Rapids OLAFT will be tested using adult hatchery steelhead.

Adult Salmonid Passage Monitoring and Evaluation (M&E)

On Task: Several M&E efforts are underway in the Wanapum Reservoir, as follows:

- Biomark is assisting with installing a passive integrated transponder (PIT)-tag detection system in key locations near Wanapum Dam. The system should be in place by next week.
- Grant PUD plans to evaluate juvenile fish passage during the reservoir drawdown period using Juvenile Salmon Acoustic Telemetry System (JSATS)-tags. JSATS receivers will be installed, as logistically possible, in locations to best evaluate the different passage routes.
- Steelhead and yearling Chinook studies will be conducted.
- A study plan using acoustic-tagged adults is being developed to evaluate passage at the modified Wanapum Dam fish ladders.

- The Priest Rapids fish ladders will be evaluated using migrating adults PIT-tagged at Bonneville Dam. The Priest Rapids Bypass began operations on April 1, 2014, and evaluations have identified no issues or concerns.
- Freshwater mussel and clam evaluations will be conducted.
- Pacific lamprey evaluations will be conducted.
- Avian habitat evaluations will be conducted.

C. Questions (All)

Scott Carlon (National Marine Fisheries Service [NMFS]) asked if investigative drilling is being conducted on other monoliths at Wanapum Dam. Curt Dodson said that drilling is only being conducted on monolith No. 4. He said, however, that divers have conducted visual evaluations and ground penetrating radar technology has been used to evaluate other areas, and there have been no indications that other fractures exist.

III. Chelan PUD

A. Rock Island IFPP Update (Lance Keller)

Lance Keller (Chelan PUD) said that since the last Wanapum briefing on March 31, 2014, fabrication of the ladder extension for the right powerhouse has continued. Two 8-hour windows with reduced flows over the weekend were coordinated by river operators to help with installing infrastructure. The upper resting pool is now partly installed on powerhouse 2 in the tailrace entrance (TRE). The final parts for fabrication are expected to arrive today or tomorrow. Rock Island Dam is still operating at an elevation of 609 feet.

B. Questions (All)

Scott Bettin (Bonneville Power Administration [BPA]) asked if Chelan PUD will need additional work windows with reduced flows, and if there is any chance of delay in completing the needed modifications. Lance Keller said that, to his knowledge, no additional reduced flow periods have been requested and everything is on schedule.

Patrick Verhey (WDFW) asked about the possibility of dewatering redds at Chelan Falls. Keller said that by holding Rock Island Dam at an elevation of 609 feet, Rocky Reach Dam can be maintained within normal operating levels, and the head differential can also be kept

within the FERC operating license. He added that during the early days of the Wanapum drawdown, tests were performed at Chelan Falls, which determined that with the current 703-foot operations at Rocky Reach Dam and generation out of Chelan Falls, there was no danger to redds.

Jeff Korth asked if the low flow conditions at Rock Island Dam resulted in lower reservoir elevations. Keller said that the Rock Island forebay remained at an elevation of 609 feet during the flow reductions—there was no elevation reduction. He said that this 609-foot elevation keeps the exits operating, and he added that anything below that elevation affects Rocky Reach Dam and local irrigators.

IV. Next Steps

Denny Rohr said that the daily Wanapum Dam press releases provided by Grant PUD will now be provided on a weekly basis. He said that if anyone would like to be on his distribution list, they should contact him.

Rohr said that the next HCP-PRCC Wanapum Briefing is scheduled for Monday, April 14, 2014, to be held by conference call. He added that attendees can contact him or Mike Schiewe by email or phone with questions.

List of Attachments

Attachment A List of Attendee Organizations

Attachment A
List of Attendees

Organization
Anchor QEA, LLC
Bonneville Power Administration
Chelan PUD
Columbia River Inter-Tribal Fisheries Commission
DRohr and Associates
Fish Passage Center
Grant PUD
National Marine Fisheries Service
U.S. Army Corp of Engineers
U.S. Fish and Wildlife Service
Washington Department of Fish and Wildlife
Washington State Department of Ecology

ANCHOR QEA

720 Olive Way, Suite 1900
Seattle, Washington 98101
Phone 206.287.9130
Fax 206.287.9131
www.anchorqea.com

MEMORANDUM

To:	Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees, and Priest Rapids Coordinating Committee	**Date:**	March 24, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris, Tom Kahler		
Re:	Summary of the March 17, 2014 HCP-PRCC Wanapum Conference Call		

Members of the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Committees and the Priest Rapids Coordinating Committee (PRCC) participated in a joint briefing on proposed interim fish passage modifications at Rock Island and Wanapum dams on Monday, March 17, 2014, from 8:00 a.m. to 9:00 a.m. The briefing was held by conference call; organizations represented are list in Attachment A.

ACTION ITEM SUMMARY

- Grant PUD will consider additional approaches to improve lamprey passage efficiency in the event that lamprey attach to the chute (Item II-A).

I. Welcome and Introductions

Denny Rohr (DRohr and Associates), PRCC Chair, welcomed those in attendance. He said that Grant PUD and Chelan PUD both plan to briefly review their paths forward for achieving interim fish passage at their respective dams. Mike Schiewe (Anchor QEA, LLC), HCP Coordinating Committees Chair, said that the HCP Coordinating Committees will then convene a conference call following this discussion to formally consider Chelan PUD's Interim Rock Island Fish Passage Plan.

II. Grant PUD

A. Fish Passage at Wanapum Dam

Tom Dresser (Grant PUD) indicated that the PRCC is close to reaching agreement on the proposed fish passage plan for Wanapum Dam. Mike Nicholls reviewed the plan as follows:

- The Wanapum Dam forebay is currently drawn down to an operating range of about 541 to 545 feet, and the fish ladder exit is at 554 feet (approximately 9 to 13 feet height difference). No issues exist at the entrance—only at the exit end.
- A weir, approximately 7 feet tall, will be constructed at the upper end of both the left bank and right bank fish ladders to provide a 6-foot-tall wall of water going down the fish ladder.
- The lower section of Wanapum Dam includes both an overflow weir and lower orifice openings. Overflow sections are designed at 40 cubic feet per second (cfs) and lower orifices are designed at 30 cfs, for a total of 70 cfs. An adjustable plate will be installed to adjust flow, and fish will be guided over the weir and down a chute into the forebay.
- Four 90-horsepower pumps will be installed to feed the weir box (90% of flow would be downstream and 10% of flow upstream) to provide water on the chute. The chute is 16 feet wide at the top and reduces to about 4 feet wide at the base. There is some concern with creating a bottleneck, and these details will be discussed with Bryan Nordlund (National Marine Fisheries Service [NMFS]) before finalizing the plans. The chute is made of fiber-reinforced-plastic plywood, which is the same material used in construction of fish transport tanks. The end of the chute will be at an elevation of 554 feet.
- The fish ladders are 16 feet wide. Bar grating with a flat plate section for lamprey will be installed in a 1-foot-wide section on both sides of each ladder. Ramps will also be installed similar to what has been installed at other Mid-Columbia dams to aid in lamprey passage. The plan is for lamprey to travel up and over the weir into the forebay. Precautions are being taken to reduce possible injury to fish, including rounding all edges, filling in gaps, and applying a silicone lining to the ramp. Grant PUD is also considering reducing the slope of the ramp to 45 degrees.

Questions

Kirk Truscott (Colville Confederated Tribes) asked if there is potential that the fish will be able to turn around in the chute. Nicholls said that can be controlled by: 1) the slope of the chute; and 2) the amount of water moving down the chute. He said the system will be tested

prior to implementation to evaluate what amount of flow is needed to keep fish moving down the chute.

Kirk Truscott asked if the chute outlet is near a spillbay. Nicholls said that the chutes on both ladders will be installed quite a distance away from the spillbays, and suggested viewing satellite imagery online to obtain a better idea of relative distances. Kirk Truscott said that his concern is the risk of fallback.

Steve Lewis (U.S. Fish and Wildlife Service [USFWS]) asked how tall the sidewalls of the chute are, and if there may be a need for a cover. Nicholls said the sidewalls are 4 feet tall, which, combined with the slick surface of the chute, should be adequate to contain the fish.

Bob Rose (Yakama Nation) expressed concern that the lamprey may attach to the chute, and suggested developing backup options if this becomes a problem. Nicholls said that he will flag this for further consideration.

Jeff Korth (Washington Department of Fish and Wildlife) asked if there is a contingency plan in place if flows at the ladder entrances need to be increased. Nicholls explained that flows at the ladder entrances will remain the same as normal conditions, and the lowered flows will not be encountered until the fish are already in the ladder (about one-third of the way up the ladder), at which point the fish will likely continue through the ladder. He said the only change would be that one of the two lower orifices per wall would be blocked off in the upper part of the ladder.

Steve Lewis asked if there are plans to monitor the effectiveness of the interim passage system. Nicholls said that the system will be monitored to ensure that fish are using it as planned.

Kirk Truscott asked if the upper part of the ladder is orifice passage only (in contrast to orifice and overflow), and Nicholls replied that it is.

Korth asked if passive integrated transponder (PIT)-tag arrays are installed at Wanapum Dam. Tom Dresser said not currently, but that Grant PUD is currently working with Biomark to assess the possibility of installing temporary PIT-tag arrays at the dam.

Next Steps

Tom Dresser said that Grant PUD is initiating Endangered Species Act Emergency Consultation, and interim adult passage plans are due to the Federal Energy Regulatory Commission (FERC) by Friday, March 20, 2014. He said the target deadline to have the interim passage system in place is April 15, 2014.

B. Wanapum "Fix" Update

Tom Dresser said there are no recent updates on progress toward repairing the crack in Wanapum Dam. He said that drilling was scheduled to start last week but, due to high winds, drilling was postponed.

III. Chelan PUD

A. Interim Fish Passage Plan

Keith Truscott (Chelan PUD) said that Chelan PUD has been in close coordination with CH2M HILL, USFWS, and NMFS to develop an Interim Rock Island Fish Passage Plan. Chelan PUD's plan involves using denil structures to allow fish passage at lower tailwater elevations at two of the three ladder entrances (left bank and right bank). A portion of those entrances will be modified, while other entrances (high efficiency entrances) will remain at normal operating conditions (untreated). The denils will be composed of two 30-foot-long sections with a rest box in the middle. Implementation of the denil structures is based on the past 30 years of fish passage information, and Chelan PUD is confident that fish passage will be provided over a wide range of flows. Each ladder extension will also have a lamprey passage way, which will follow the same slope and contour as the denil.

Keith Truscott said that historical data indicate that fish prefer the right bank ladder for fish passage at Rock Island Dam; therefore, modifications will first be completed there with a target completion date of April 15, 2014. Modifications will then be completed on the left bank ladder. Historical river flow data suggest that the right bank fish ladder will be

operating within the normal range through at least July 2014, and then all modifications will be in place by late summer. Keith Truscott noted that the smolt monitoring station is located at the right powerhouse, which was another consideration while prioritizing the modifications.

Questions

Bryan Nordlund asked what the operating range is for normal conditions and for the denil structures. Steve Weist (Chelan PUD) said that ladder entrances at Rock Island Dam will operate normally when the river flow is at about 125 to 130 cfs. He said that those flows are expected over the majority of the fish passage season, and then later in the season when flows drop below 125 cfs, the denil structures will be needed.

Kirk Truscott asked how many entrances are located at the right ladder. Keith Truscott said there are four entrances—two of which will be modified, and one (highest efficiency entrance) will remain untreated. Kirk Truscott asked if modifications will impact passage at the unmodified side. Keith Truscott said he does not believe so because they are so far apart. He also noted that the target completion date for these modifications is before there will be a high incidence of fish.

Steve Lewis asked if information on how lamprey approach the project was considered in planning for setting up the denils. Lance Keller (Chelan PUD) said that count window and PIT-tag detection data were reviewed, and it was confirmed that lamprey prefer the right ladder for passage. He added that as far as entrance efficiency, however, that is still unknown. He said that criteria outlined by the Bonneville Power Administration were used to design the lamprey passage components.

Next Steps

Keith Truscott said that Chelan PUD needs to file an Interim Fish Passage Plan with FERC by Friday, March 21, 2014. He said he is confident they will make that deadline.

List of Attachments

Attachment A List of Attendee Organizations

Attachment A
List of Attendees

Organization
Anchor QEA, LLC
Chelan PUD
Columbia River Inter-Tribal Fisheries Commission
Colville Confederated Tribes
DRohr and Associates
Fish Passage Center
Grant PUD
National Marine Fisheries Service
U.S. Fish and Wildlife Service
Washington Department of Fish and Wildlife
Yakama Nation

ANCHOR QEA

720 Olive Way, Suite 1900
Seattle, Washington 98101
Phone 206.287.9130
Fax 206.287.9131
www.anchorqea.com

FINAL MEMORANDUM

To:	Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees, and Priest Rapids Coordinating Committee	**Date:**	March 28, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris Tom Kahler		
Re:	Final Summary of the March 24, 2014 HCP-PRCC Wanapum Briefing		

Members of the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Committees and the Priest Rapids Coordinating Committee (PRCC) participated in a joint briefing, held by conference call, to review progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans on Monday, March 24, 2014, from 8:00 a.m. to 8:30 a.m. Organizations represented are listed in Attachment A.

ACTION ITEM SUMMARY

- No action items were discussed during today's conference call.

I. Welcome and Introductions

Denny Rohr (DRohr and Associates), PRCC Chair, and Mike Schiewe (Anchor QEA, LLC), HCP Coordinating Committees Chair, welcomed those in attendance. Rohr said the purpose of today's briefing is to update the PRCC and HCP Coordinating Committees on progress made at Wanapum Dam and Rock Island Dam in response to the Wanapum Dam emergency spillway repair situation and reservoir drawdown.

II. Grant PUD

A. Wanapum Dam Update

Tom Dresser (Grant PUD) reviewed progress toward meeting six primary goals, as detailed below.

Goal 1: Stabilize the structure to prevent failure

Complete – Through coordination with the Federal Energy Regulatory Commission (FERC), an operating range of 543 feet to 545 feet was achieved at Wanapum Dam on March 4, 2014, which is the reservoir water elevation required to stabilize the fractured monolith.

Goal 2: Determine the root cause of failure

Ongoing – Three holes have been drilled in monolith No. 4, and ultrasound and ground penetrating radar technology are being used to determine the geometry of the fracture. Construction data and other historical records are being collected to help inform analyses (about 95% assembled to date). Forensics are also being performed on rebar and concrete obtained from monolith No. 4. Drilling was initially expected to require 9 days; however, due to weather conditions and other unanticipated events, drilling is expected to require an additional 2 to 3 weeks.

Goal 3: Intermediate pool raise

Pending completion of Goal 2 – The monoliths at Wanapum Dam are currently being assessed to evaluate whether they can withstand an intermediate pool raise; however, Goal 3 cannot be completed until more is known about the root cause of the failure. With regard to process, approximately 30 individuals—consisting of Grant PUD engineers and other staff, the independent Board of Consultants (BOC), other engineers, and the forensics team—are developing and reviewing plans, which need to be approved by the BOC prior to Grant PUD moving forward. This process ensures a close review; however, also requires time to complete.

Goal 4: Achieve management and mitigation support of spillway

Pending completion of Goals 2 and 3 – In parallel with efforts to achieve Goals 2 and 3, Grant PUD also has an independent contractor exploring potential solutions, so that when the root cause is determined, implementing a solution can be immediately underway. One solution being explored is drilling tendons through the spillway and into the bedrock. Certain elements of this potential solution are being staged now.

Goal 5: Fish and cultural resources

Ongoing – Grant PUD submitted an Interim Fish Passage Plan for Wanapum Dam to FERC, which includes the following sections:

- Section 1: Emergency modifications to the Wanapum Fishway (which Mike Nicholls reviewed during the Wanapum briefing on March 17, 2014)
- Section 2: Actions at the off-ladder trap
- Section 3: Adult salmonid passage (including passive integrated transponder [PIT]-tag infrastructure)
- Section 4: Monitoring and evaluation (including collecting realtime PIT-tag data)
- Section 5: Pacific lamprey passage (including detection and infrastructure)
- Section 6: Consultation
- Section 7: Adaptive management (same adaptive management as included in the Priest Rapids Salmonid Settlement Agreement)

The Interim Fish Passage Plan for Wanapum Dam will be modified, as needed, as new data become available. Updates and revisions as they pertain to salmonids will be addressed by the PRCC; lamprey will be addressed by the Priest Rapids Fish Forum; and Hanford Reach issues will be addressed within the Fall Chinook Working Group.

Goal 6: Plant maximization

Ongoing – Grant PUD, the Bonneville Power Administration (BPA), and other Mid-Columbia PUDs are meeting daily to address this.

B. Questions

Steve Lewis (U.S. Fish and Wildlife Service [USFWS]) asked if cameras will be installed near the false weir to evaluate passage efficiency. Tom Dresser said that Grant PUD is still considering this; however, it was not included in the Interim Fish Passage Plan for Wanapum Dam that was submitted to FERC. However, he said they did include installation of temporary PIT-tag arrays in both Wanapum fishways, which will aid in evaluating passage efficiency.

Scott Bettin (BPA) asked when the Interim Fish Passage Plan for Wanapum Dam was submitted to FERC, and if it will be publically available. Dresser said the plan was submitted

last week as part of the Endangered Species Act Emergency Consultation, and that it will be made publically available.

Scott Carlon (National Marine Fisheries Service [NMFS]) asked if Grant PUD is waiting for the results of the forensic analyses before installing the tendons. Dresser said that the tendons will not be installed until the root cause of the failure is determined. He added, however, that installation of the tendons is already being staged, so when the time comes, installation can begin immediately.

Bryan Nordlund (NMFS) asked if a timeline for completion is known, and Dresser said that a timeline is not known at this time.

Jim Craig (USFWS) asked if a slide will be installed connecting the overflow weir to the forebay, as discussed in the PRCC. Dresser said that installing a slide by April 15, 2014, is not feasible; however, a system will be developed and will be onsite for installation, if needed.

III. Chelan PUD

A. Rock Island Dam Update

Lance Keller (Chelan PUD) said that Chelan PUD filed the Rock Island Interim Fish Passage Plan with FERC, which outlines adult and juvenile fish passage measures, including minor modifications to juvenile spill shaping. A contract is in place to begin design and fabrication of the adult fishway extensions this week. Last weekend, a low flow test was conducted when water elevation was dropped 1 foot below normal operating conditions. The lowered water level allowed multiple items to be accomplished, including: 1) identifying where irrigators pumps are located; 2) assessing boat launch accessibility; 3) conducting cultural resources and stranding surveys; and 4) allowing access to the lower fishways in the Rock Island left ladder so contractors could begin site preparations for the modifications. Keller said that Chelan PUD is now in a holding pattern, waiting for contractors to begin work.

B. Questions

Scott Bettin asked what work will be performed on the left ladder. Lance Keller explained that two precast panels will be removed and a denil will be installed in the third entrance.

Bryan Nordlund asked what passage means were expected to be available at different flow and reservoir elevations. Keller said that during the low flow test, only 30,000 cubic feet per second (30 kcfs) was passing through Rock Island Dam, so engineers could observe what might be expected during times when the fishway entrances are perched. Nordlund asked if the entrances will be within criteria when flows are 125 kcfs, and Keller replied that they will not, but will be close. He said that the tailwater does rise up, and Chelan PUD will rely on the pumps to meet the 90 cfs flow targets at the entrance; the head differential will be slightly below criteria.

Nordlund asked about coordination to control river flows. Bettin said that coordination is occurring on a daily basis among BPA, the U.S. Army Corps of Engineers, and the PUDs to maintain flows at or above 125 kcfs. He said in June 2014, flows will likely be shaped differently, but will continue to be coordinated at that time.

Bettin asked about installing the denil structures now while river flows are still high and expected to get higher, and whether this might result in damage to the structures before they are needed later in the season. Keller said that the denils will be fully submerged for the majority of the season; however, they will be constructed to withstand high flows and will be anchored.

IV. Next Steps

Denny Rohr said that the next HCP-PRCC Wanapum Briefing is scheduled for Monday, March 31, 2014, to be held by conference call. He added that attendees can contact him or Mike Schiewe by email or phone with questions.

List of Attachments

Attachment A List of Attendee Organizations

Attachment A
List of Attendees

Organization
Anchor QEA, LLC
Chelan PUD
Columbia River Inter-Tribal Fisheries Commission
Colville Confederated Tribes
DRohr and Associates
Fish Passage Center
Grant PUD
National Marine Fisheries Service
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Washington Department of Fish and Wildlife

ANCHOR QEA

720 Olive Way, Suite 1900
Seattle, Washington 98101
Phone 206.287.9130
Fax 206.287.9131
www.anchorqea.com

FINAL MEMORANDUM

To:	Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees, and Priest Rapids Coordinating Committee	**Date:**	April 4, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris Tom Kahler		
Re:	Final Summary of the March 31, 2014 HCP-PRCC Wanapum Briefing		

Members of the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Committees and the Priest Rapids Coordinating Committee (PRCC) met by conference call on Monday, March 31, 2014, from 8:00 a.m. to 8:45 a.m., to participate in a joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans (IFPPs) that were developed in response to the Wanapum Dam emergency spillway repair situation and reservoir drawdown. Organizations represented are listed in Attachment A.

ACTION ITEM SUMMARY

- Holly Harwood (Bonneville Power Administration [BPA]) will contact Kristi Geris (Anchor QEA) to obtain a copy of the Rock Island IFPP (Item III-B).

I. Welcome and Introductions

Denny Rohr (DRohr and Associates), PRCC Chair, and Mike Schiewe (Anchor QEA, LLC), HCP Coordinating Committees Chair, welcomed those in attendance.

II. Grant PUD

A. Wanapum IFPP Update (Tom Dresser)

Tom Dresser (Grant PUD) said that on March 21, 2014, Grant PUD filed their Wanapum Dam IFPP with the Federal Energy Regulatory Commission (FERC), and on March 26, 2014, FERC issued to Grant PUD the FERC Order approving the plan. This Order stipulated a

requirement for Grant PUD to file monthly reports with FERC that document progress toward implementing the Wanapum IFPP. The first monthly report is due May 1, 2014. Dresser reviewed progress toward meeting elements described in the Wanapum IFPP, as detailed in the following sections.

Emergency Modifications at the Wanapum Dam Fishways

On Task: Modifications to the left bank ladder, and likely right bank ladder, are on track to be completed by April 15, 2014. A boring was needed through the powerhouse, which is complete. Pumps, electrical equipment, and most other hardware needed for the modifications are now on site. The exit flumes will be delivered on April 9, 2014.

Flume versus Chute

The exit flumes deliver fish to a 13- to 15-foot drop above the water; whereas, the exit chutes deliver fish to about a 4-foot drop above the water. The chutes, however, require additional time to fabricate than the flumes, which is why the flumes will be installed initially. The chutes are in the process of being fabricated, and once they are on site, Grant PUD will assess whether to install them as replacements for the flumes.

Proposed Interim Action at the Priest Rapids Off-Ladder Adult Fish Trap (OLAFT)

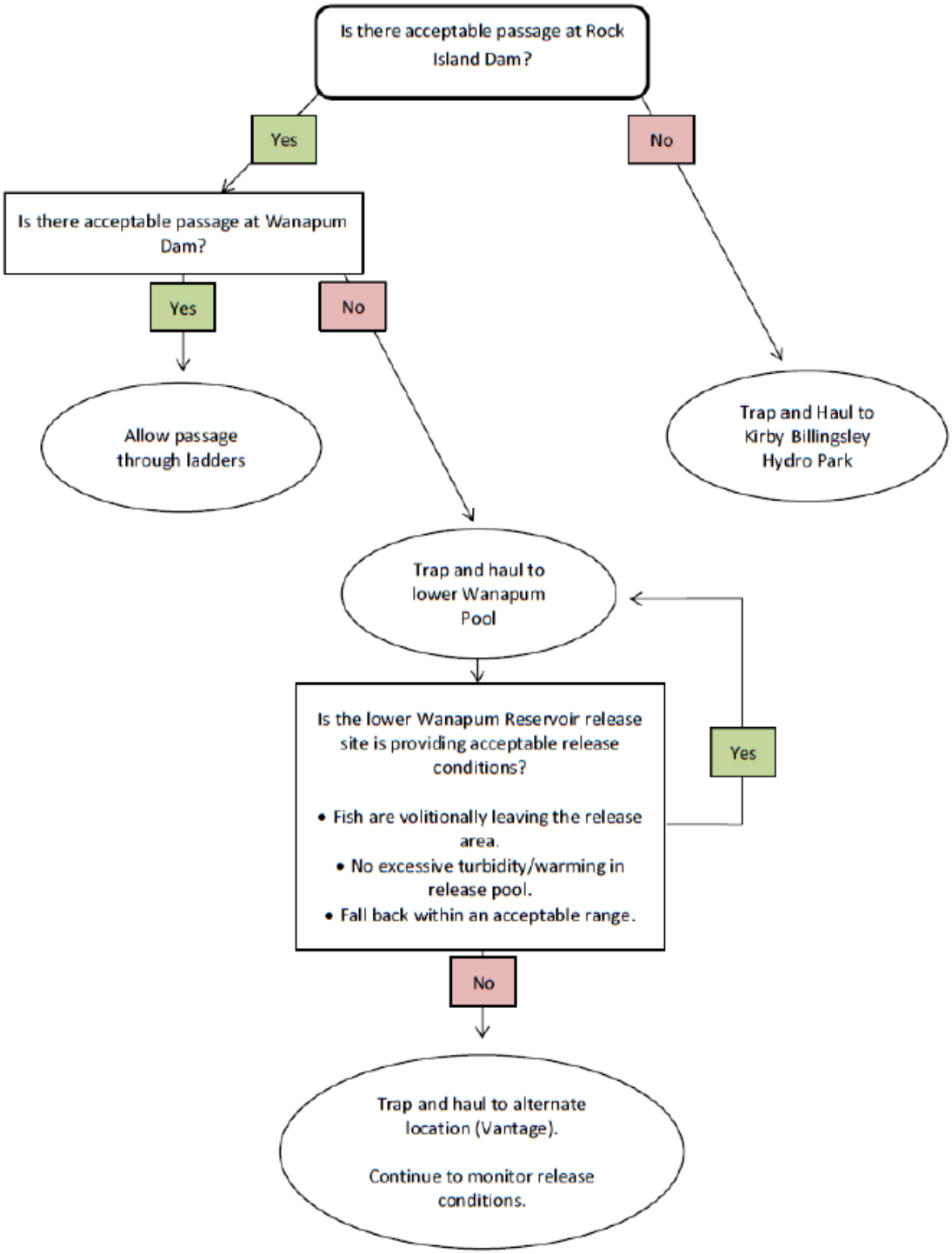
On Task: Modifications to the OLAFT are on track for completion by April 15, 2014. On March 28, 2104, the OLAFT was disassembled to install modifications, and it is now reassembled and can support water-to-water transfer. The Wanapum IFPP stipulated that a minimum of five trucks be used for regular daily use, with a sixth truck available as backup in the case of equipment failure. However, eight trucks are now available for the spring Chinook run, and the Yakama Nation (YN) has offered three or four trucks as additional backup, if needed.

June 1 to August 31, 2014 – OLAFT Phase II

Planning is underway on possible modifications needed to transport additional salmonids. Grant PUD is considering contracting an agency to perform logistics planning ("incidence planning"). Discussions are also underway with the National Guard.

Trap and Haul

In the Wanapum IFPP, Figure 1 (included below) shows a decision matrix that explains the logic path for implementing trap and haul measures from the Priest Rapids OLAFT to upstream release locations.



Adult Salmonid Passage Monitoring and Evaluation (M&E) or "Proof of Concept"

On Task: Installation of temporary passive integrated transponder (PIT)-tag infrastructure in the left and right fishways at Wanapum Dam is on track to be completed by April 15, 2014. PIT-tag infrastructure already exists at the Priest Rapids OLAFT and in all three fish ladders at Rock Island Dam. Detection at these locations coupled with fish counts at Priest Rapids Dam will provide passage and runtime data that will be compared to historical data. Grant PUD will compile these data and review them with the PRCC.

Columbia River Intertribal Fish Commission (CRITFC) staff members are PIT-tagging up to an additional 2,000 spring and summer Chinook at Bonneville Dam. Grant PUD is investigating the feasibility of deploying dip nets at the Priest Rapids OLAFT to conduct additional PIT-tagging at that location, which can be used to evaluate fallback concerns at Wanapum Dam.

Pacific Lamprey Passage PIT-Tag Detection Infrastructure

On Task: PIT-tag detection infrastructure is in place at both Priest Rapids Dam and Wanapum Dam. Plating is currently being installed at the weir boxes, and the exit flume is also under construction. Staff members are continuing discussion of the requirements for trap and haul of lamprey.

B. Wanapum Dam Fracture Update (Tom Dresser)

Tom Dresser said that Grant PUD is aggressively working towards an intermediate pool raise to an elevation of 562 feet. This elevation would allow Wanapum fishway exits to operate within criteria; however, achieving this will require approval by the Board of Commissioners (BOC) and FERC. Requirements for approval will require defining the causes of the failure (how and why). A decision matrix has been developed to evaluate possible design efficiencies, deterioration of rebar, abnormal loading, construction practices, and operational indicators of failure. Currently, 17 reports are being drafted.

Implementation of a Drill Plan is currently underway, which includes drilling up to twenty-four 4-inch wide and 15- to 45-foot deep borings into the monolith ogee crest to investigate the geometry of the fracture. As of March 28, 2014, six borings had been completed. If all 24 borings are needed, drilling efforts are anticipated to last into mid- to late April 2014.

Initially, drilling was anticipated to require 9 days to complete. Initial drilling was conducted by barge, which slowed progress during unfavorable weather conditions. Therefore, last weekend, construction began on a drilling platform, which will replace the barge. A temporary seal is also being installed at the top of the fracture, which should help stabilize the fracture.

One of the possible repair strategies for Wanapum Dam involves the installation of several tendons through the monolith and anchored into the bedrock. A number of reports and modeling efforts supporting the proposed "fix" are underway, as required by the BOC and FERC.

Currently, estimates are that the Wanapum Reservoir will be drawn down at an elevation of 541 to 545 feet until July 1, 2014. On March 27 and March 28, 2014, Grant PUD presented all of this information to the BOC; however, no comments have yet been received.

C. Questions (All)

Jeff Korth (Washington Department of Fish and Wildlife [WDFW]) asked if sorting fish at the OLAFT is possible. Tom Dresser said that sorting is being discussed, and it does appear to be a possibility.

Bryan Nordlund (National Marine Fisheries Service [NMFS]) asked when modifications will be installed in the right bank ladder at Wanapum Dam. Dresser said that components for both ladders will be delivered on April 9, 2014, and that modifications will first be installed in the left bank ladder. He said that modifications to the right bank ladder will follow about 1 to 2 days later; so both flumes and weir boxes should be in place by April 10 or April 11, 2014. He said that the left bank ladder will definitely be complete by April 15, 2014.

Bob Rose (YN) asked if the Wanapum IFPP was distributed to the PRCC. Denny Rohr said that the plan was distributed to the PRCC by Debbie Firestone on March 21, 2014.

Holly Harwood asked how juvenile fish passage will be addressed. Dresser explained that Wanapum Dam has three juvenile fish passage routes, via the Wanapum Future Unit Bypass (WFUB), turbines, and spillway. He noted that, ideally, the spillway gates will not be

needed for juvenile fish passage. He said that the WFUB, at an operating range of 541 to 545 feet, will be spilling about 5,000 to 10,000 cubic feet per second (5 to 10 kcfs), and modeling data indicate that juvenile fish passage will be successful at these levels. He added, however, that fish attraction efficiency is not known. He said that analyses of survival will be ongoing, and that an initial analysis indicates higher survival with lower pressures. He added that in lieu of a three-dimensional acoustic study, Grant PUD plans to monitor two separate release groups of PIT-tagged fish that are planned for release as part of an avian predation study downstream of Wanapum Dam.

Tom Skiles (CRITFC) asked if survival downstream of the WFUB has been modeled at 510 to 515 kcfs. Dresser replied that it has, which is within the normal operating range of the bypass. Bryan Nordlund clarified that it was hydraulic conditions downstream of the WFUB that lead to good tailrace egress that had been modeled at 5 to 20 kcfs.

III. Chelan PUD

A. Rock Island IFPP Update (Lance Keller)

Lance Keller (Chelan PUD) said that on March 21, 2014, Chelan PUD filed with FERC the Rock Island IFPP, and on March 26, 2014, FERC issued to Chelan PUD the FERC Order approving the plan. Since the last Wanapum briefing on March 24, 2014, contractors have arrived on site, and site preparations for the modifications are underway. Parts will be delivered to Rock Island Dam by April 4, 2014, and installation will begin the same day. Flows will be coordinated from April 4 to April 6, 2014, in order to install infrastructure in the right ladder. The right ladder extension will be completed by April 15, 2014, and then modifications will be installed in the left ladder, which will be completed by June 30, 2014. Keller noted that the spring Chinook migration will be underway while modifications are being installed in the left ladder, so work will only be conducted during nighttime hours in order to keep both the right and left ladders open for passage during daytime hours.

B. Questions (All)

Holly Harwood asked if the Rock Island IFPP is publically available. Lance Keller said that because the plan contains critical energy infrastructure information (CEII), the plan was not made available to the general public. He said, however, that Harwood can contact Kristi

Geris and she can supply the plan to Harwood, so long as the CEII contained within the plan is treated as respected.

Scott Carlon (NMFS) asked about the current pool elevation at Rock Island Dam. Keller said that the elevation is at 609 feet, which keeps the exits at the proper elevation and also keeps Rocky Reach Dam completely independent.

Bob Rose asked whether briefing materials would be available before the site visit planned for April 7, 2014; Tom Dresser said he was not sure but that Grant PUD would see if that would be possible.

IV. Next Steps

Denny Rohr said that the next HCP-PRCC Wanapum Briefing is scheduled for Monday, April 7, 2014, to be held by conference call. He added that attendees can contact him or Mike Schiewe by email or phone with questions.

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Attachment A List of Attendee Organizations

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Bonneville Power Administration
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Chelan PUD
Columbia River Inter-Tribal Fisheries Commission
Douglas PUD
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ANCHOR QEA

720 Olive Way, Suite 1900
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FINAL MEMORANDUM

To:	Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees, and Priest Rapids Coordinating Committee	**Date:**	April 11, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris Tom Kahler		
Re:	Final Summary of the April 7, 2014 HCP-PRCC Wanapum Briefing		

Members of the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Committees and the Priest Rapids Coordinating Committee (PRCC) met by conference call on Monday, April 7, 2014, from 8:00 a.m. to 8:30 a.m., to participate in a joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans (IFPPs) that were developed in response to the Wanapum Dam emergency spillway repair situation and reservoir drawdown. Organizations represented are listed in Attachment A.

ACTION ITEM SUMMARY

- No action items were discussed during today's conference call.

I. Welcome and Introductions

Denny Rohr (DRohr and Associates), PRCC Chair, and Mike Schiewe (Anchor QEA, LLC), HCP Coordinating Committees Chair, welcomed those in attendance.

II. Grant PUD

A. Wanapum IFPP Update – Primary Goals (Curt Dodson)

Curt Dodson (Grant PUD) reviewed progress toward meeting primary goals, as detailed in the following sections.

Goal 1: Stabilize the structure to prevent failure

Complete: This goal was achieved on March 4, 2014.

Goal 2: Determine the root cause of failure

Ongoing: Six holes have been drilled in sections of the monolith ogee crest to investigate the geometry of the fracture. However, drilling has been temporarily suspended in order to construct a drilling platform to replace the use of a barge. Approximately 95 to 99% of the construction data and other historical records that were requested to help inform analyses have been received, and are currently being reviewed. These data include the original calculations used for constructing Wanapum Dam.

Goal 3: Intermediate pool raise

Pending completion of Goal 2: The Wanapum Reservoir is currently operating in a range of 541 to 545 feet. Discussions are ongoing regarding restoring the reservoir to a normal minimum operating level; however, no dates have been set.

Goal 4: Achieve management and mitigation support of spillway

Pending completion of Goals 2 and 3: A possible repair strategy for Wanapum Dam involves the installation of several tendons through the monolith and anchored into the bedrock. On April 3, 2014, a "Tendon Geotechnical Investigation" was presented to the Federal Energy Regulatory Commission (FERC) and the Board of Commissioners (BOC), and on April 4, 2014, drilling was underway for this investigation. An evaluation of seismic data is also underway to determine what load the tendons may experience, and also what size tendons may be needed. MWH, an engineering firm, is investigating designs for drain holes to reduce hydraulic uplifting that can occur at hydroprojects when there is water between the ground and the project. Modeling is ongoing.

Goal 5: Fish and cultural resources

Ongoing: The Grant County Cultural Resources Department is conducting cultural resource monitoring at all sites where work is taking place. Access to the reservoir is still closed to the public. There is only one active boat launch in the Wanapum Reservoir, located along the right bank, upstream of the Vantage Bridge near Gingko State Park. Grant County is

coordinating closely with local irrigators in efforts to streamline permitting processes to extend irrigation pipes, as needed, to obtain water from the reservoir.

B. Wanapum IFPP Update – Plan Elements (Curt Dodson)

Curt Dodson reviewed progress toward meeting elements described in the Wanapum IFPP, as detailed in the following sections.

Emergency Modifications at the Wanapum Dam Fishways

On Task: This element focuses on the left bank ladder, which passes about 80% of the adult migration. Four pumps have been delivered and are already installed. The false weir is being fabricated and will be delivered and installed this week. Efforts focused on the right bank ladder are also on task to be completed by April 15, 2014.

Proposed Interim Action at the Priest Rapids Off-Ladder Adult Fish Trap (OLAFT)

On Task: Preparations needed for trap and haul, including securing trucks, are ongoing in parallel with modifications at the Wanapum Dam fishways. Jeff Korth (Washington Department of Fish and Wildlife [WDFW]) indicated that this week, trap and haul from the Priest Rapids OLAFT will be tested using adult hatchery steelhead.

Adult Salmonid Passage Monitoring and Evaluation (M&E)

On Task: Several M&E efforts are underway in the Wanapum Reservoir, as follows:

- Biomark is assisting with installing a passive integrated transponder (PIT)-tag detection system in key locations near Wanapum Dam. The system should be in place by next week.
- Grant PUD plans to evaluate juvenile fish passage during the reservoir drawdown period using Juvenile Salmon Acoustic Telemetry System (JSATS)-tags. JSATS receivers will be installed, as logistically possible, in locations to best evaluate the different passage routes.
- Steelhead and yearling Chinook studies will be conducted.
- A study plan using acoustic-tagged adults is being developed to evaluate passage at the modified Wanapum Dam fish ladders.

- The Priest Rapids fish ladders will be evaluated using migrating adults PIT-tagged at Bonneville Dam. The Priest Rapids Bypass began operations on April 1, 2014, and evaluations have identified no issues or concerns.
- Freshwater mussel and clam evaluations will be conducted.
- Pacific lamprey evaluations will be conducted.
- Avian habitat evaluations will be conducted.

C. Questions (All)

Scott Carlon (National Marine Fisheries Service [NMFS]) asked if investigative drilling is being conducted on other monoliths at Wanapum Dam. Curt Dodson said that drilling is only being conducted on monolith No. 4. He said, however, that divers have conducted visual evaluations and ground penetrating radar technology has been used to evaluate other areas, and there have been no indications that other fractures exist.

III. Chelan PUD

A. Rock Island IFPP Update (Lance Keller)

Lance Keller (Chelan PUD) said that since the last Wanapum briefing on March 31, 2014, fabrication of the ladder extension for the right powerhouse has continued. Two 8-hour windows with reduced flows over the weekend were coordinated by river operators to help with installing infrastructure. The upper resting pool is now partly installed on powerhouse 2 in the tailrace entrance (TRE). The final parts for fabrication are expected to arrive today or tomorrow. Rock Island Dam is still operating at an elevation of 609 feet.

B. Questions (All)

Scott Bettin (Bonneville Power Administration [BPA]) asked if Chelan PUD will need additional work windows with reduced flows, and if there is any chance of delay in completing the needed modifications. Lance Keller said that, to his knowledge, no additional reduced flow periods have been requested and everything is on schedule.

Patrick Verhey (WDFW) asked about the possibility of dewatering redds at Chelan Falls. Keller said that by holding Rock Island Dam at an elevation of 609 feet, Rocky Reach Dam can be maintained within normal operating levels, and the head differential can also be kept

within the FERC operating license. He added that during the early days of the Wanapum drawdown, tests were performed at Chelan Falls, which determined that with the current 703-foot operations at Rocky Reach Dam and generation out of Chelan Falls, there was no danger to redds.

Jeff Korth asked if the low flow conditions at Rock Island Dam resulted in lower reservoir elevations. Keller said that the Rock Island forebay remained at an elevation of 609 feet during the flow reductions—there was no elevation reduction. He said that this 609-foot elevation keeps the exits operating, and he added that anything below that elevation affects Rocky Reach Dam and local irrigators.

IV. Next Steps

Denny Rohr said that the daily Wanapum Dam press releases provided by Grant PUD will now be provided on a weekly basis. He said that if anyone would like to be on his distribution list, they should contact him.

Rohr said that the next HCP-PRCC Wanapum Briefing is scheduled for Monday, April 14, 2014, to be held by conference call. He added that attendees can contact him or Mike Schiewe by email or phone with questions.

List of Attachments

Attachment A List of Attendee Organizations

Attachment A
List of Attendees

Organization
Anchor QEA, LLC
Bonneville Power Administration
Chelan PUD
Columbia River Inter-Tribal Fisheries Commission
DRohr and Associates
Fish Passage Center
Grant PUD
National Marine Fisheries Service
U.S. Army Corp of Engineers
U.S. Fish and Wildlife Service
Washington Department of Fish and Wildlife
Washington State Department of Ecology

ANCHOR QEA

720 Olive Way, Suite 1900
Seattle, Washington 98101
Phone 206.287.9130
Fax 206.287.9131
www.anchorqea.com

FINAL MEMORANDUM

To:	Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees, and Priest Rapids Coordinating Committee	**Date:**	April 18, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris Tom Kahler		
Re:	Final Summary of the April 14, 2014 HCP-PRCC Wanapum Briefing		

Members of the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Committees and the Priest Rapids Coordinating Committee (PRCC) met by conference call on Monday, April 14, 2014, from 8:00 a.m. to 8:45 a.m., to participate in a joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans (IFPPs) that were developed in response to the Wanapum Dam emergency spillway repair and reservoir drawdown. Organizations represented are listed in Attachment A.

ACTION ITEM SUMMARY

- No action items were discussed during today's conference call.

I. Welcome and Introductions

Denny Rohr (DRohr and Associates), PRCC Chair, and Mike Schiewe (Anchor QEA, LLC), HCP Coordinating Committees Chair, welcomed those in attendance.

II. Grant PUD

A. Wanapum IFPP Update (Tom Dresser)

Tom Dresser (Grant PUD) reviewed the progress of work in seven key areas, as detailed in the following sections.

Wanapum Spillway Fracture Update

On April 9, 2014, a press release indicated that a team of engineers and analysts determined that the foundation below Wanapum Dam was not a factor in creating the fracture discovered on the dam's spillway pier monolith No. 4. The team ruled out four different areas that did not appear to cause the fracture, including: 1) seismic activity; 2) foundation settlement or uplift; 3) activities at the U.S. Army Yakima Training Center; or 4) operation of the spillway gates. Data indicate that a contributing factor to the fracture was tension from water pressure on the face of the spillway pier monolith. Grant PUD is continuing work to determine how the tension caused the fracture. Six holes have been drilled into the monolith to determine the geometry of the fracture. However, drilling has been temporarily suspended to assess the best way to complete the task. On April 11, 2014, Grant PUD submitted a Revised Drill Plan to the Federal Energy Regulatory Commission (FERC), and Grant PUD expects that they will be able to proceed with drilling by April 15, 2014.

Goal 2: Determine the root cause of failure

This work is ongoing. Modeling is still underway, including hydraulics and thermal analyses modeling. Approximately 99% of the historical records that were requested to help inform analyses have been received, and are currently being reviewed. Several studies are underway. The Revised Drill Plan will need to be finalized before repairs can be made to stabilize monolith No. 4. June 2014 has been set as a target date for several activities, including the expected completion of drilling and the date until Wanapum Reservoir will likely continue operating in a range of 541 to 545 feet.

Goal 3: Intermediate pool raise

The "Tendon Anchor Plan" is underway. Plans were submitted to the Board of Consultants (BOC) and FERC, some of which have already been approved by FERC. Grouting plans for the fracture are also underway. An evaluation is underway to determine preliminary sizing and tendon loads, which involves running several models (approximately 3 hours per model). Participants were directed to visit Grant PUD's website for more information.

Proposed Interim Action at the Priest Rapids Off-Ladder Adult Fish Trap (OLAFT)

Design changes and modifications have been installed to facilitate the transfer of fish to trucks. Polyvinyl chloride (PVC) pipe installed at a 150% angle will eliminate the need to

handle fish, and passive integrated transponder (PIT)-tags will be used to sort the fish. Grant PUD is coordinating with Washington Department of Fish and Wildlife (WDFW) to have the system ready to operate by April 15, 2014. The system will be operated 7 days a week until the "proof of concept" demonstrates that the Wanapum Dam fishways are functioning as planned, or until June 15, 2014 (Phase II). Details for Phase II are still under development.

Phase I OLAFT

The hours of operation for Phase I (OLAFT) will be from 5:00 a.m. to 10:00 p.m., which means trucks will be traveling to and from the area until about midnight. Grant PUD contracted WDFW to support this phase of work. Between Grant PUD, Douglas PUD, and Chelan PUD, there are eight transport vehicles available for hauling fish. There will be a minimum of four staff members at the OLAFT at all times, and additional staff will be present during peak times. In late April and early May 2014, additional contractors will also be on site for tagging fish as part of the adult monitoring effort. It is still undecided what to do with the right bank fish ladder (leave it open or close it). All fish will be transported to the Rocky Coulee Boat Launch, where all necessary infrastructure has already been installed and will be tested today using hatchery steelhead. Each release is expected to take about 30 to 45 minutes, and staff are estimating 6 hauls per truck per day. Backup release locations include the Wanapum Dam Upper Boat Launch and Kirby Billingsley Hydro Park.

Emergency Modifications at the Wanapum Dam Fishways

Last weekend, modifications at the Wanapum Dam fishways were tested. The upper pool above the weir box was at an elevation of 560 feet. The weir plate was adjusted to direct necessary flows upstream and downstream. Further adjustments may still be needed (the process is about 95% complete). Engineering and biology staff are investigating turbulence that was observed in the upper third portion of the fish ladder. The left bank is on schedule to be fully operational by the April 15, 2014, target date. The right bank, however, was delayed and will not be fully operational until April 23, 2014. Delays included: 1) an electrical accident that destroyed some electrical components; 2) a traffic accident on Interstate-90, which precluded obtaining equipment; and 3) high winds (the most significant issue). National Marine Fisheries Service (NMFS) and Fish Passage Center (FPC) staff will visit Wanapum Dam to observe the installation of a weir box. Adjusting the weir plate

involves about a 12-hour cycle. Hatchery steelhead will be used to test movement through the flume, and potentially how fish enter at certain heights.

Adult and Juvenile Salmonid Passage Monitoring and Evaluation (M&E)

Adult and juvenile salmonid passage M&E efforts include:

- Juvenile steelhead and yearling Chinook evaluations through the Wanapum Reservoir (specifically, evaluating passage routes at Wanapum Dam)
- Steelhead and yearling Chinook survival studies
- Adult active-tagging studies from the Priest Rapids OLAFT to the Rock Island tailrace
- Observational studies at the modified Wanapum right bank and left bank exits
- Adults spring Chinook PIT-tag evaluations from the Priest Rapids OLAFT

Criteria to Evaluate "Proof of Concept"

Grant PUD and the PRCC are working to develop criteria to evaluate when "proof of concept" has been demonstrated. Criteria will likely include: 1) travel time based on PIT-tag detection from Priest Rapids Dam to Rock Island Dam; 2) active-tagging efforts; 3) conversion rates of PIT-tags; and 4) observational studies at the fishway exits (e.g., instantaneous mortality rate). These criteria will be further developed this week.

Upcoming Meetings

Additional meetings to address the ongoing activities will continue on a daily basis.

B. Questions (All)

Kirk Truscott (Colville Confederated Tribes [CCT]) asked if the modifications to the Priest Rapids OLAFT allow adults to be passed upstream; Tom Dresser replied that the ladder continued to be open to passage.

Steve Lewis (U.S. Fish and Wildlife Service [USFWS]) asked if Grant PUD expects lamprey to pass Wanapum Dam to test the lamprey portion of the modifications. Tom Dresser said that based on historical counts, 4 to 6% of lamprey tend to overwinter in the Priest Rapids Reservoir and another 6% overwinter in the Hanford Reach, so those lamprey would be

expected to pass the dam. Dresser said that Grant PUD staff are also currently working with contractors on a Phase III Lamprey Passage Plan, if needed.

Lewis asked if, given the past electrical issues, a camera will be installed near the weir box. Dresser noted that because the electrical issues occurred, three backups have been installed on the electrical components; and he added that, at this stage, there are no plans to install video equipment in the weir pool downstream of the weir box. Dresser acknowledged the recommendation to do so; however, he explained that installing video equipment is not a priority. He said that the top priorities are to provide fish passage, and to evaluate "proof of concept." He noted that staff will be located at the exits collecting behavioral data, which will include some video of how the fish enter the flume and forebay, how lamprey pass, and so on; however, there will not be video taken 24 hours a day, 7 days a week, as some people have requested.

Bob Rose (Yakama Nation [YN]) asked for more information about what the observers located at the weir box will be monitoring. Dresser said that staff located at the weir box will be collecting behavioral data, such as: 1) do fish hold in any areas prior to entering the weir box; 2) how do fish react at the edge of the weir box; 3) once fish jump into the weir box, how do they enter the flume (head or tail first); 4) once fish are through the flume system, how do they behave; and 5) when fish enter the forebay, are they stunned or otherwise disoriented? Dresser said that lamprey behavioral data will also be collected. He said that these data will be used to evaluate whether the system needs to be modified. He also noted that PIT-tag data will be available for review, noting, for example, that if there are multiple detections at the array located at Wanapum Dam, then that would be considered to indicate that something is not working properly. He said that active tagging at Wanapum Dam will also indicate fallback, if any. Rose asked if HCP Coordinating Committees and PRCC members can watch the observers to see the process at work, and Dresser said that should not be an issue. He said that last week, 2 spring Chinook, 23 to 24 steelhead, and 1 sockeye were already detected passing Wanapum Dam. He asked that committee members contact him ahead of time if they are interested in visiting the facility modifications.

III. Chelan PUD

A. Rock Island IFPP Update (Lance Keller)

Lance Keller (Chelan PUD) said that last Saturday, April 12, 2014, installation of the denil structure at the tailrace entrance (TRE) at the right bank adult fishway was completed at Rock Island Dam. The TRE is fully submerged and available for fish access, and is functioning as expected. The construction crew is now working on the left powerhouse entrance (LPE) at the right bank adult fishway, which is also on schedule to be completed as planned. At the same time, crews are continuing to work on modifications to the third entrance slot at the left bank fishway. This week, additional fabricated parts are continuing to arrive at Rock Island Dam. Adult fish counts begin today, and will be available on Chelan PUD's external website.

B. Questions (All)

Kirk Truscott asked what the tailwater elevation is at Rock Island Dam. Lance Keller said that the tailwater elevation is currently at 563.5 feet. Truscott asked if that elevation allows normal access to the fish ladders, and Keller replied that it does. Keller added that the top of the upper rest box attached to the fishway entrance is level with the tailwater elevation, and that the fishway sills are at an elevation of 559 feet.

Tom Skiles (Columbia River Inter-Tribal Fisheries Commission [CRITFC]) asked if a lamprey passage system (LPS) has been installed at Rock Island Dam. Keller said that a LPS was installed on the TRE, and will also be installed at the other entrances. Skiles asked where the LPS deposits the lamprey, and Keller explained that the LPS deposits the lamprey into the fish ladders where they can migrate as usual.

Steve Lewis asked about the overall stability of the denil structures. Keller said that the structures were thoroughly evaluated prior to installation, and they are extremely sturdy. He added that the structures are anchored to I-beams that are anchored to bedrock, which will ensure that they remain in place.

IV. Next Steps

Denny Rohr said that both the PRCC and HCP Coordinating Committees have meetings scheduled to follow this briefing, and it was agreed to allow the HCP Coordinating Committees to hold their meeting first, and then the PRCC will convene afterwards.

Rohr said that the next HCP-PRCC Wanapum Briefing is scheduled for Monday, April 21, 2014, to be held by conference call. He added that attendees can contact him or Mike Schiewe by email or phone with questions.

List of Attachments

Attachment A List of Attendee Organizations

Attachment A
List of Attendees

Organization
Anchor QEA, LLC
Bonneville Power Administration
Chelan PUD
Columbia River Inter-Tribal Fisheries Commission
Colville Confederated Tribes
DRohr and Associates
Fish Passage Center
Grant PUD
National Marine Fisheries Service
U.S. Army Corp of Engineers
U.S. Bureau of Reclamation
U.S. Fish and Wildlife Service
Washington Department of Fish and Wildlife
Umatilla Tribes
Yakama Nation

ANCHOR QEA

720 Olive Way, Suite 1900
Seattle, Washington 98101
Phone 206.287.9130
Fax 206.287.9131
www.anchorqea.com

FINAL MEMORANDUM

To:	Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees, and Priest Rapids Coordinating Committee	**Date:**	April 25, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris Tom Kahler		
Re:	Final Summary of the April 21, 2014 HCP-PRCC Wanapum Briefing		

Members of the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Committees and the Priest Rapids Coordinating Committee (PRCC) met by conference call on Monday, April 21, 2014, from 8:00 a.m. to 8:45 a.m., to participate in a joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans (IFPPs) that were developed in response to the Wanapum Dam emergency spillway repair situation and reservoir drawdown. Organizations represented are listed in Attachment A.

ACTION ITEM SUMMARY

- Chelan PUD will contact the Fish Passage Center (FPC) to resolve the issue of adult fish counts at Rock Island Dam not being available on the FPC website (Item II-B).

I. Welcome and Introductions

Denny Rohr (DRohr and Associates), PRCC Chair, and Mike Schiewe (Anchor QEA, LLC), HCP Coordinating Committees Chair, welcomed those in attendance.

II. Chelan PUD

A. Rock Island IFPP Update (Lance Keller)

Lance Keller (Chelan PUD) said that as of last Friday, April 18, 2014, installation of the denil structure at the left powerhouse entrance (LPE) at the right bank adult fishway was completed at Rock Island Dam. Therefore, denil structures are now installed at both the

tailrace entrance (TRE) and LPE at the right bank adult fishway; and fish spill is back to the normal configuration. Work will continue on the left bank adult fishway at Rock Island Dam. This week, designs for the left bank denil structures are being finalized and fabrication will start. In addition, the denil structures are also expected to be delivered by the end of the week. Dry work will be completed in the left bank adult fishway and then the ladder will be brought back online on April 22, 2014.

B. Questions (All)

Kirk Truscott (Colville Confederated Tribes [CCT]) asked what the target completion date is for modifications to the left bank ladder, and Lance Keller said that it is June 30, 2014.

Mike Schiewe asked if Chelan PUD expects normal adult fish passage through June 30, 2014, when modifications are completed on the left bank ladder, and Keller said that they do. He said that the LPE was recently inspected for interim fish spill, and the denil structure was about 5 feet underwater at an elevation of 568 feet. Keller added that the elevation at Rock Island Dam is typically around 570 feet; and last weekend, the tailwater river flow was close to normal at a flow of about 180,000 cubic feet per second (180 kcfs).

Truscott noted that adult fish counts for Rock Island Dam are not available on the FPC website. Keller said that Chelan PUD has been providing the FPC with daily batch files, so the counts should be available. Keller said that he will contact the FPC to get this issue resolved. Bryan Nordlund (National Marine Fisheries Service [NMFS]) noted that adult fish counts at Rock Island Dam are also available on Chelan PUD's website.

III. Grant PUD

A. Wanapum IFPP Update (Tom Dresser)

Tom Dresser (Grant PUD) provided a presentation on activities at Wanapum Dam (Attachment B), as further described in the following sections.

Left and Right Bank Fish Ladder Exit Passage Systems

Thanks to extensive communication and coordination among PRCC members and other resource managers, the Wanapum left bank fish ladder (preferred passage option) was

operational on April 15, 2014. The ramp (Phase I) is in place, and design and fabrication of the spare flume (Phase II) is in progress. The spare flume design was sent to the fabrication shop as of April 21, 2014, and completion of the spare flume and associated parts is expected in about one month. The spare flume will reduce the slope of the currently installed ramp, and will allow fish to enter the water in a depth range of 2 to 5 feet.

The Wanapum right bank fish ladder is anticipated to be operational by April 23, 2014. The right bank fish ladder was originally expected to be operational by now; however, progress has been delayed due to high winds, which have been recently recorded at up to 60 miles per hour (mph) at Wanapum Dam, and 87 mph at Priest Rapids Dam. Currently, two pumps are installed at the Wanapum right bank fish ladder. A picture of the two pumps mounted on a steel I-beam is depicted in the upper left corner of slide 3 of Attachment B; and a picture of the flume system is depicted in the lower left corner of slide 3 of Attachment B.

A video clip was shared of the Wanapum Dam fishway exit passage system in operation on April 16, 2014. Fish typically pass over the bar grating nose first, and then turnaround once in the flume system (descending the system tail first); and the majority of fish are entering the flume system on the far left side (facing upstream). A few fish have turned around at the top of the ladder before entering the flume system; it is assumed that these fish enter the flume on a subsequent passage attempt. Several types of behavioral data are being collected at the Wanapum left bank fish ladder exit to characterize fish behavior when approaching, moving through, and exiting the flume system, as listed on slide 5 of Attachment B.

Fish passage results from April 15 to April 19, 2014, indicate that a total of 14 adult spring Chinook have successfully passed through the Wanapum Dam flume system (rather than 31 spring Chinook, a number incorrectly reported in a press release on April 16, 2014). Also, 187 steelhead have successfully passed through the Wanapum Dam flume system, and there have been no instantaneous mortalities. Species passing through the flume system have been mostly steelhead and white fish. Other behavioral data being tracked include weir success and entry, initial and swim orientation, and water exit and landing orientation, as summarized on slide 8 of Attachment B. These statistics are updated daily. Fish passage numbers have been slowly declining since passage first opened at Wanapum Dam on April 15, 2014.

Priest Rapids Trap and Transport

Thanks to extensive communication and coordination among PRCC members, Washington Department of Fish and Wildlife (WDFW), and other resource managers, the Priest Rapids Off-Ladder Adult Fish Trap (OLAFT) has been operational since April 11, 2014. Up to eight trucks are committed to daily transportation, which presumably can transfer up to 1,500 fish per day. Adaptive management is a key component for the trap and transport element. A diversion gate was installed in the flume system to support monitoring and evaluation (M&E) activities.

Priest Rapids OLAFT results from April 15 to April 19, 2014, indicate that three adult spring Chinook and two adult steelhead have been passive integrated transponder (PIT)-tagged and bypassed into the Priest Rapids Fishway for migration upstream; and one previously PIT-tagged adult steelhead was trapped and also bypassed into the Priest Rapids Fishway for migration upstream. A total of 13 adult steelhead have been successfully trapped and transported to the Rocky Coulee release location, which is located about 3.5 miles upstream of Wanapum Dam along the right bank of the river, above Vantage (the release location is depicted in the pictures on slide 11 of Attachment B). No handling, tagging, or transport mortalities have been reported.

Adult Passage and Monitoring Plan

PIT-tag detection arrays and hydroacoustic receiver arrays are in place at selected locations. Direct observations are being conducted, as well as fish counting. The PRCC approved a tagging and release schematic (slide 13 of Attachment B), which describes tagging and release efforts from the Priest Rapids OLAFT to Rock Island Dam. A total of 250 hatchery-origin adults (HORs) will be collected and tagged for M&E at the Priest Rapids OLAFT, including 200 PIT-tagged HORs and 50 juvenile salmon acoustic telemetry systems (JSATS)-tagged plus PIT-tagged HORs; and up to 600 previously PIT-tagged natural origin adults (NORs) and HORs will also be monitored. Since April 15, 2014, travel times between Wanapum Dam and Rock Island Dam for one spring Chinook and four steelhead have ranged from 1.7 days to 3.5 days.

Key Decisions

Last week, the PRCC developed criteria that will be used to halt trap and haul efforts, including a specific travel time, conversion rate, and instantaneous mortality rate (slide 15 of Attachment B). Other key decisions included maintaining the Priest Rapids right bank ladder at ladder flow, and PIT-tag and acoustic-tag sample sizes.

Ongoing Evaluations

There are a number of ongoing juvenile and adult evaluations in the Wanapum and Priest Rapids reservoirs (slide 17 of Attachment B).

Dresser distributed today's presentation (Attachment B) following the meeting, along with YouTube web links to video clips of fish passage and OLAFT activities.

B. Questions (All)

Bryan Nordlund asked about the 356-hour travel time criterion for ceasing trap and haul efforts, and Tom Dresser replied that the 356-hour travel time criterion applied to the river reach between Priest Rapids Dam and Rock Island Dam.

Jeff Korth (WDFW) asked if there are protective screens around the pumps at Wanapum Dam to prevent possible fish injuries. Dresser said that there is a pump basket surrounding the pumps, and Nordlund clarified that the basket is a screen around the pump intakes.

Kirk Truscott asked if the juvenile bypass systems at Wanapum Dam and Priest Rapids Dam are operating now, and Dresser indicated that they are. Dresser added that fish spill started at both dams last week.

Nordlund asked if there are any updates on the crack repair, and Dresser indicated that no further updates are available beyond those that were distributed last week.

IV. Next Steps

Denny Rohr said that the next HCP-PRCC Wanapum Briefing is scheduled for Monday, April 28, 2014, to be held by conference call. He added that attendees can contact him or Mike Schiewe by email or phone with questions.

List of Attachments

Attachment A	List of Attendee Organizations
Attachment B	Grant PUD Wanapum Dam Presentation

Attachment A
List of Attendees

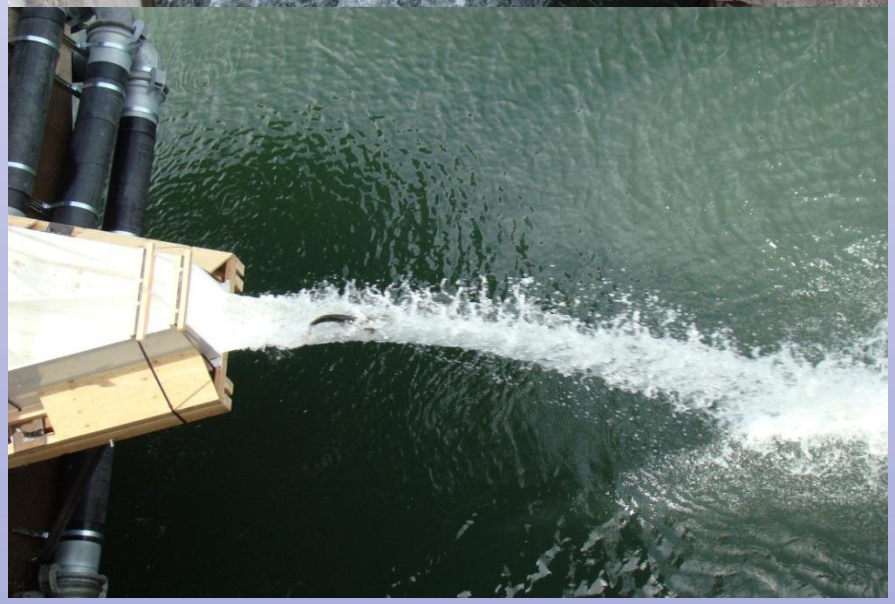
Organization
Anchor QEA, LLC
Bonneville Power Administration
Chelan PUD
Colville Confederated Tribes
DRohr and Associates
Fish Passage Center
Grant PUD
National Marine Fisheries Service
U.S. Army Corp of Engineers
U.S. Bureau of Reclamation
U.S. Fish and Wildlife Service
Washington Department of Fish and Wildlife
Washington State Department of Ecology
Yakama Nation

PRCC/HCP Briefing

April 28, 2014

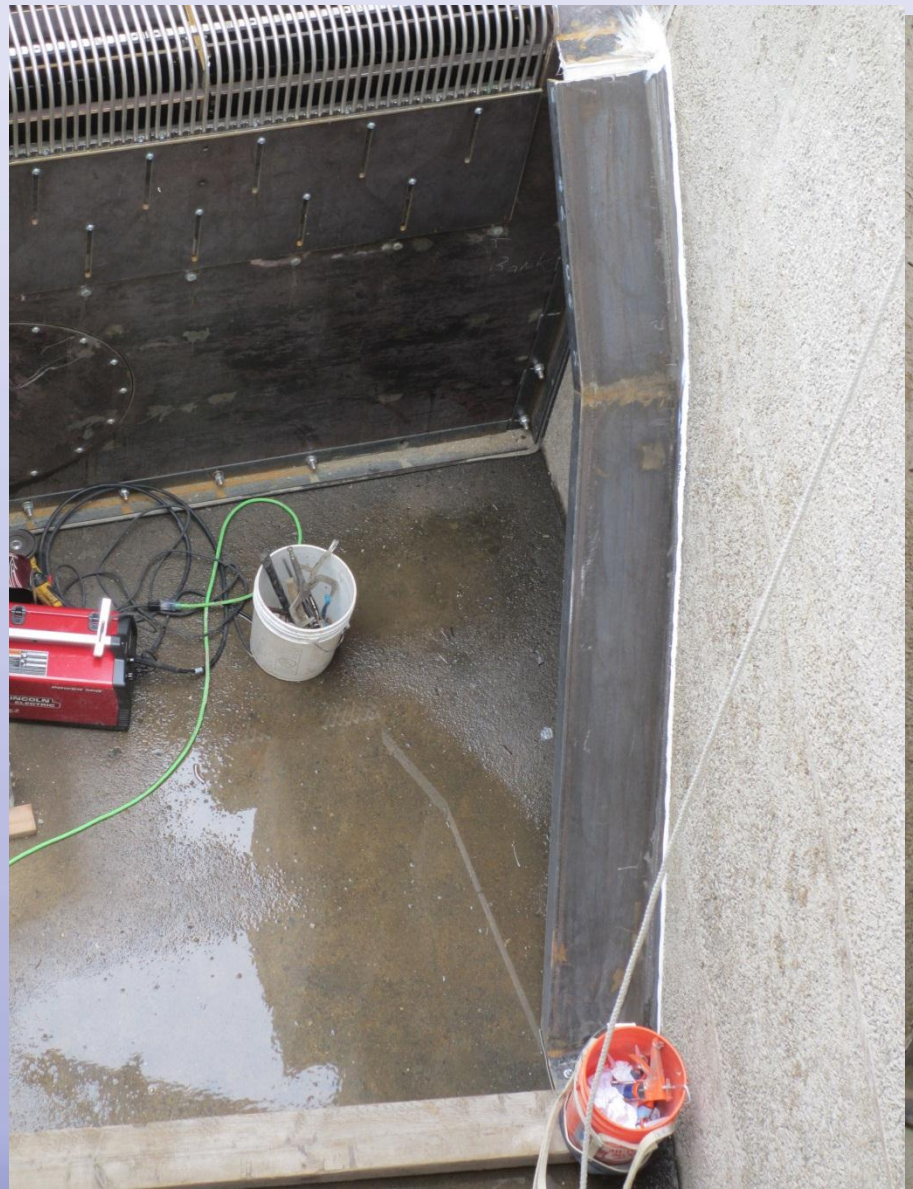
Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

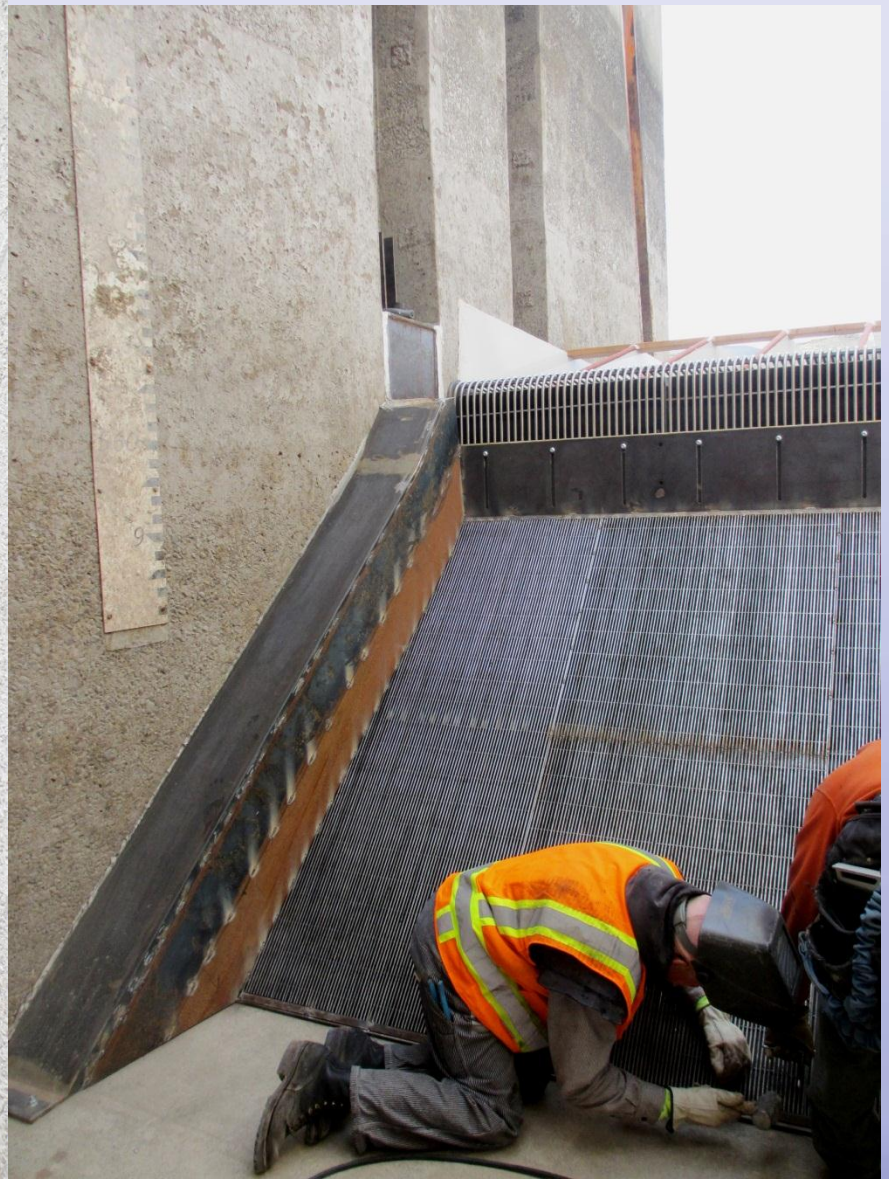
Wanapum Fishway Exit Passage System Left Bank



- Operational on April 15th
- Phase II (ramp + spiral flume)
  - In fabrication, delivery expected mid-May
- 31 adult spring Chinook have successfully passage the Wanapum Fishway Exit Passage System (April 23);
- 270 adult steelhead have successfully passage the Wanapum Fishway Exit Passage System (April 23);
- No Instantaneous Mortalities; No stunned fish;
- All fish passing through the Wanapum Fishway Exit Passage System swam away.

Wanapum Fishway Exit Passage System Right Bank





Wanapum Fishway Exit Passage System Right Bank

Wanapum Fishway Exit Passage System Right Bank

- **Operational on April 26th**
- **An approach ramp was installed on the downstream side of the weir box. Thought process here is that it would reducing adult sockeye salmon from jumping onto the flume.**
- **Phase II (ramp + spiral flume)**
  - **In fabrication, delivery expected mid-May**

Wanapum Fishway Exit Passage System Direct Observations

- Species;
- Entry time onto flume;
- Weir Entry Method: Jump/Swim;
- Weir Entry Success: Yes/No;
- Initial Orientation: Vertical/Horizontal;
- Orientation Down Flume: Start/Mid/End;
- Behavior on Flume: With Water/Holding;
- Swim Position Down Flume: Head/Tail;
- Movement Down Flume: Snake/Flop;
- Water Exit: With/Without;
- Landing Orientation: Head/Tail/Dorsal/Ventral/Lateral;
- Landing Behavior: Swim/Stunned/Mortality;
- Additional Notes/Comments;
- Representative Video Clips Collected Daily

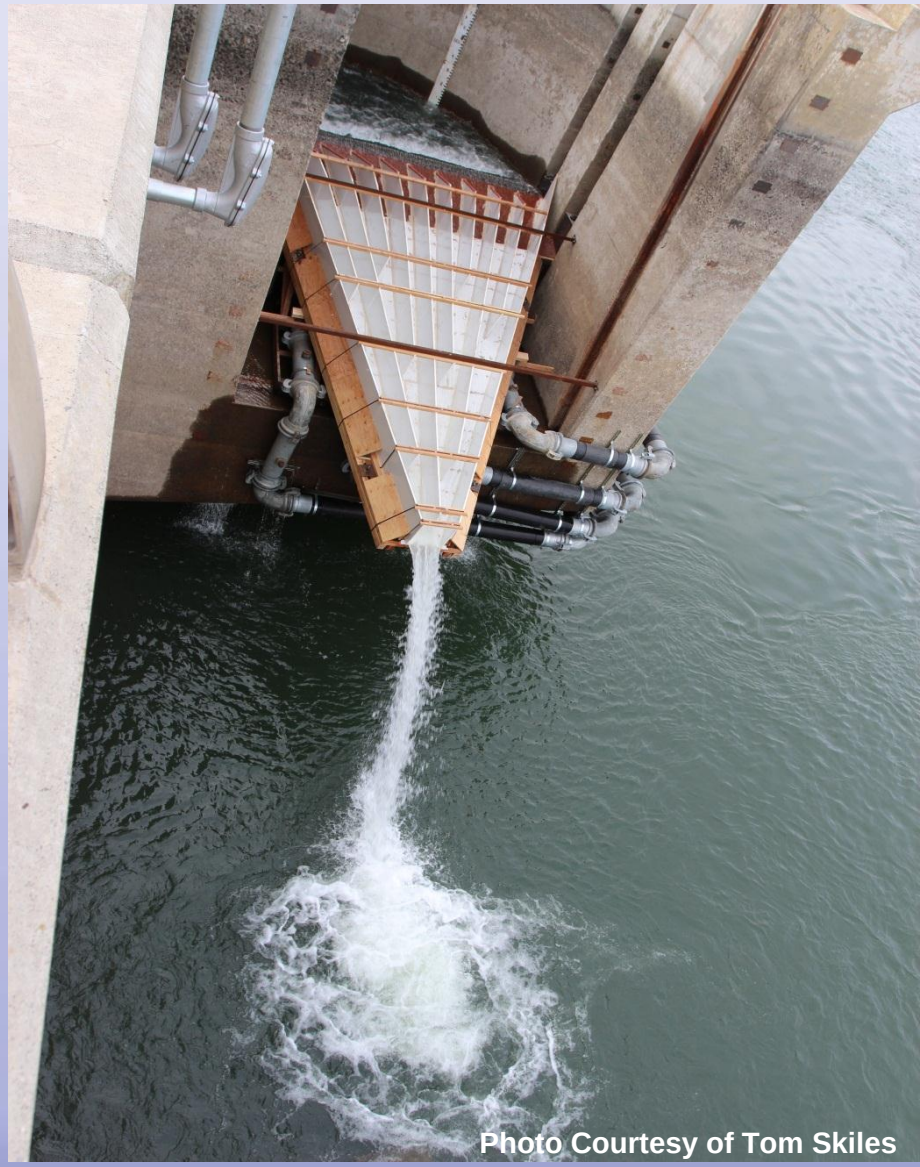


Photo Courtesy of Tom Skiles

Wanapum Fishway Exit Passage System Left-Bank Results (April 15 – April 23)

- Species Composition
  - Spring Chinook = 6%
  - Steelhead = 56%
  - Most Whitefish = 39%
- Weir Success
  - 73% first attempt
- Weir Entry
  - 96% Swim
- Initial Orientation
  - 97.5% vertically (on bellies)
- Movement Down Weir
  - 91.0% snaked
- Swim Orientation
  - 84% head first at top
  - 79% tail orientation at bottom
- Water Exit
  - 99.4% within water column
- Landing Orientation
  - 59.4% tail first
  - 26.0% head first
  - 9.6% Ventral
- Slide Rate
  - 78.5% held off/fought slide
  - 21.5% Moved with water

No Instantaneous Mortalities or Stunned Fish

Priest Rapids Dam
Off-Ladder Adult Fish Trap

- Trap and Transport Protocol Implemented April 15, 2014

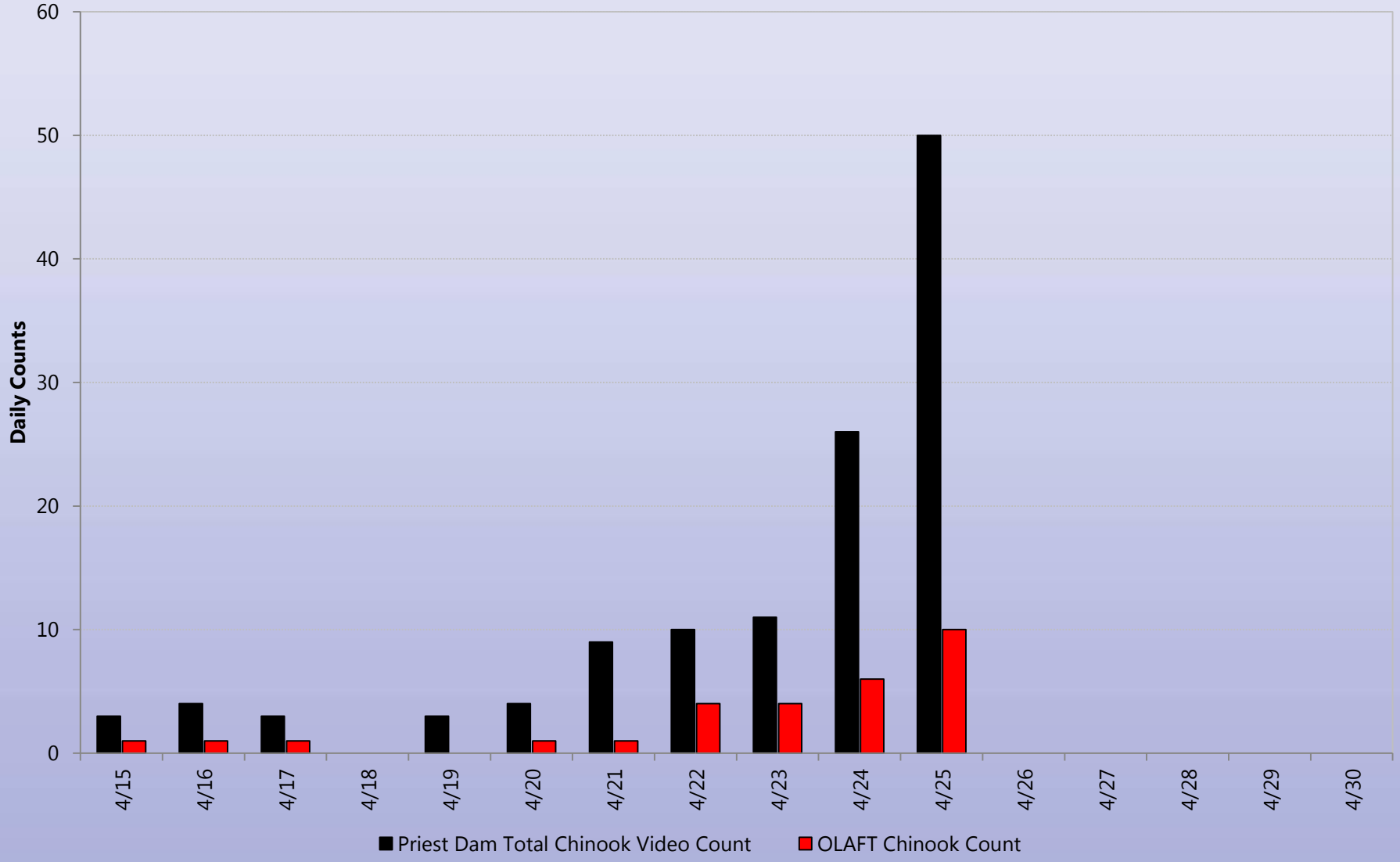
- Number Trap and Transported (4/27)
  - **Spring Chinook = 74**
  - **Steelhead = 27**
  - **Bull trout = 0**

- Number PIT Tagged and Released (4/27)
  - **Spring Chinook = 41**
  - **Steelhead = 3**
  - **Bull trout = 0**

- Number Acoustic Tagged & PIT Tagged & Released from OLAFT (4/27)
  - **Spring Chinook = 29**

TOTAL OF 70 SPRING CHINOOK TRAP, TAGGED AND RELEASED AT OLAFT TO CONTINUE THEIR UPSTREAM MIGRATION (4/27/2014)

Priest Rapids
Video Fish vs OLAFT Counts



Spring Chinook PIT Tagged at OLAFT

- **41 spring Chinook PIT tagged and released from OLAFT (4/27)**

- **1 spring Chinook**
  - Priest Rapids to Rock Island (4/15– 4/20) = 112.4 hrs

- **1 spring Chinook**
  - Priest Rapids to Wanapum (4/15– 4/25) = 93.6 hrs

- **1 spring Chinook**
  - Priest Rapids to Wanapum (4/23– 4/26) = 68.7 hrs

- **1 spring Chinook**
  - Priest Rapids to Wanapum (4/25– 4/27) = 31.6 hrs

Steelhead Previously PIT Tagged Priest Rapids to Rock Island Detections

- **1 steelhead**
  - Priest Rapids to Wanapum (3/21– 4/15) = 599.1 hrs
  - Wanapum to Rock Island (4/15-4/17) = 40.5 hrs
- **1 steelhead**
  - Priest Rapids to Wanapum (3/24-4/18) = 575.9 hrs
  - Wanapum to Rock Island (4/18-4/20) = 47.5 hrs
- **1 steelhead**
  - Priest Rapids to Wanapum (4/4-4/15) = 256 hrs
  - Wanapum to Rock Island (4/15-4/17) = 59.9 hrs
- **1 steelhead**
  - Priest Rapids to Wanapum (4/15-4/22 = 169.5 hrs
  - Wanapum to Rock Island (4/22-4/24) = 56.7 hrs

Average Wanapum to Rock Island Travel Time = 51.2 hrs

Steelhead
Previously PIT Tagged
Wanapum to Rock Island Detections

- 4/15-4/18 = 83.5 hrs
- 4/15-4/18 = 74.1 hrs
- 4/15-4/22 = 169.2 hrs
- 4/16-4/22 = 123.5 hrs
- 4/17-4/20 = 66.8 hrs
- 4/18-4/19 = 35.1 hrs
- 4/18-4/20 = 52.2 hrs
- 4/18-4/21 = 64.8 hrs
- 4/19-4/21 = 35.4 hrs
- 4/21-4/23 = 47.8 hrs

» **AVERAGE** **= 75.2 Hrs**

Questions?

Appendix G
Priest Rapids Coordinating Committee Meeting Minutes and Conference Calls

Grant County
PUBLIC UTILITY DISTRICT

Priest Rapids Coordinating Committee

Wednesday, March 26, 2014
9:00 – 2:00
Grant PUD SeaTac Office

PRCC Members

Scott Carlon/Bryan Nordlund, NMFS
Bob Rose, YN
Jeff Korth, C. Andonaegui, P. Verhey, WDFW
Tom Dresser/Curt Dotson, GCPUD
Jim Craig, USFWS
Kirk Truscott, CCT
Carl Merkle, CTUIR
Denny Rohr, Facilitator

Attendees

Scott Carlon/Bryan Nordlund, NMFS
Steve Parker, YN (Via phone)
Jeff Korth, WDFW
Jeremy Cram, WDFW (Via phone)
Debbie Williams, GCPUD (Via phone)
Jim Craig, USFWS
Kirk Truscott, CCT (Via phone)
Tom Skiles, CRITFC
Tom Dresser/Curt Dotson, GCPUD
Denny Rohr, Facilitator

Decision Summary:

1. PRCC members affirmed their March 14th approval of modifications made to the 2014 Survival Study Plan that was approved in November, 2013.
2. The PRCC approved funding 50% of $456,241 for the Lower Wenatchee Instream Flow Enhancement Project Phase II, from the NNI Fund.

Distributed Items:

1. Wanapum Dam Spillway Monolith 4, Interim Fish Passage Operation Plan & Reservoir Surveys
2. Biological Performance Assessment for Support of Turbine Designs Associated with the Priest Rapids Dam Turbine Upgrade Project
3. Priest Rapids Project NNI/Habitat Fund Request Support to Continue a Fish Screen Monitoring Program including Inspection and Maintenance, Construct new screening projects, and conduct a screen inventory
4. Lower Wenatchee Instream Flow Enhancement Project Phase II
5. PRCC Habitat Fund spreadsheet
6. FCWG and PRFF Briefing Reports

7. Emergency Action – Modification of Adult Fish Ladders at Wanapum Dam and Contingency Trapping and Transport of Adult Salmon, Steelhead and Migratory Bull Trout from Priest Rapids Off-Ladder Adult Fish Trap
8. Flume Plan Sect-Full Capture Rev 0, Flume Plan Set-Concept Sketch, Rev 0, OLAFT-Ray1

Action Items:

1. Dresser will provide a Grant PUD cultural resources contact to Tom Skiles, CRITFC.
2. Dresser will find out if the boat launch below Wanapum Dam will remain closed during fishing season.
3. Dotson will duplicate the graph he was working off and distribute to PRCC members (See Item 7, Bullet 3).
4. Dotson will send the Priest Rapids White Paper to Rohr for distribution. Friday, April 11 @ 1:30 p.m., PRCC members will hold a conference call to discuss this matter further.
5. PRCC members will review the Upper Columbia Fish Screen Monitoring Program proposal and discuss on the April 11th conference call.

Draft Meeting Minutes

I. Welcome and Introductions

II. Meeting Minutes Approval – January 29, 2014 -Approved, February 26, 2014 – Approval will be asked for by email.

III. Agenda Review – No additions were made to the agenda.

IV. Action Items Review – February 26, 2014 Meeting

1. Send Korth an email if you would like to participate in the New Zealand Mudsnail meeting. Complete – Korth said the meeting went very well and to contact him if you would like more information.
2. Dotson will send Priest Rapids Bypass pictures to PRCC members. Complete
3. Rose will check with Phil Rigdon, Yakama Nation, about attending the Priest Rapids Bypass celebration. Complete

V. AFFIRMATION: Modification of 2014 Survival Study – PRCC members affirmed their approval of modifications made to the 2014 Survival Study Plan that was approved in November 2013. Grant PUD agreed to look at juvenile PIT-tag data from out-migrating smolts, as well as from fish tagged for the avian study.

Dotson provided a brief summary of the survival study that will start towards the end of April. Blue Leaf Environmental will be the primary contractor. Tags have been ordered, receivers were installed at Priest Rapids (PR) last week, Teknalogic receivers will be installed by the first of April, and fish town is being put back together.

The study will consist of two releases, one in the Wanapum tailrace, and the other in the Priest Rapids tailrace. 1200 steelhead and 1200 Chinook, double tagged with PIT and JSAST tags,

will be released into the Wanapum tailrace (this includes the 650 fish that would have been released into the Rock Island tailrace), and 500 steelhead and 500 Chinook into the PR tailrace. Additionally, PIT-tagged fish (5000 steelhead and 5000 yearling Chinook) being released for the OSU avian study, as well as other fish tagged and released upriver of the Priest Rapids Project (PRP). Studies conducted this year at Wanapum Dam, will not be consider as one of the 3-years of studies required for Wanapum meeting steelhead performance standards.

VI. Review of Weekly Briefings for Wanapum Dam Activities – Rohr noted that this conference call is for briefings only, and that PRCC activities will not be discussed during the call.

VII. Wanapum Dam Spillway Pier No.4 – Status Update – Dresser presented a PowerPoint presentation "Wanapum Dam Spillway Monolith 4, Interim Fish Passage Operation Plan & Reservoir Surveys." An independent Board of Consultants will be the governing board for all decisions related to the repair. An independent Forensic Investigation Team has also been formed to identify the root cause of the fracture.

A drill team is currently drilling 4" investigative holes at varying depths into the Wanapum Dam Spillway Pier Monolith No. 4 as part of the examination of the fracture found at 485'. Water levels were lowered to 541'-545' in an effort to stabilize the monolith. The monolith has settled into a safe position with the crack essentially closed. A larger platform will be constructed on the monolith to support workers and their equipment. Drilling is expected to take about three to four weeks. The drilling will help determine the geometry of the fracture and how far it reaches into the monolith. Grant PUD hopes to reach a 562' forebay level by May. All piers will be investigated for structural integrity.

Temporary Mitigation- Subgroups have been developed for each of the five categories: Cultural Resources, FERC Communications, Fish Passage, Shoreline Closures, and Irrigators. Dresser will provide a **Grant PUD** cultural resources contact to Tom Skiles, CRITFC.

Modifications to the Wanapum Left Bank Fish Ladder are being made. Electric pumps are currently being installed in the fish ladder in order to pump 40 kcfs into the weir box that will be located at the opening to the forebay. A flume will be attached to the weir box in order to minimize the drop to the forebay. Modifications will also be made to accommodate lamprey passage. Engineers are confident that ladder modifications will be in place by April 15th, which is the start of the spring Chinook salmon run. Dresser received a call from FERC regarding the interim fish plan yesterday; he expects to see something from FERC next week. Downstream fish-passage features can operate under the low-reservoir conditions.

The Off Ladder Adult Fish Trap (OLAFT) will be used to trap and haul fish around Wanapum Dam. A flume system will be utilized for a water to water fish transfer to the truck. Engineers hope to have the ability to sort fish at the OLAFT by April 15th. Fish densities are based on a 14 pound fish. Nordlund suggested the truck be moved parallel to the OLAFT so fish are not damaged during the transfer. Plans call for six trucks to be used for trap and haul; WDFW offered two more if needed. PRCC members agreed that trap and haul be utilized while determining if spring Chinook are utilizing the ladder. In order to determine if the ladder is successful, proof of concept needs to be discussed and determined. The question of how much proof is needed in order to determine that the ladder is working and trap and haul isn't necessary? Fish would be off-loaded at either Rocky Ford Coulee or the Kirby Billingsley Hydro Park above Rock Island Dam. Korth said a backup plan is needed incase trap and haul has to be conducted exclusively.

Temporary PIT arrays are being installed at Wanapum. In an effort to gather passage information quickly, Grant PUD would like to PIT-tag 2000 fish at Bonneville Dam in order to get passage information proving that ladder modifications are working. Historic data points will be used for passage comparison purposes.

Hydro Operations will have 9 units available to run turbines between 8-15 kcfs by April 12th. Wanapum Dam fish mode upper limit is 15.7 kcfs. Modeling shows that as the net head on the turbine is decreased, the range for fish survival expands. Six spillways are expected to be available at Wanapum by April 1st. Turbine and spillway passage combined will pass between 340-360 kcfs (280 kcfs spillway passage) of river flow.

Grant PUD will continue to prioritize work as well as continue to meet the requirements contained within the FERC License, NOAA & USFW Biological Opinions, 401 Certification, Hanford Reach Fall Chinook Protection Plan and Priest Rapids Salmon and Steelhead Settlement Agreement, without interruption.

Sampling of stranded Benthic Fauna and other organisms started last Tuesday by Blue Leaf Environmental. WDFW and the Pacific Freshwater Society also participated in sampling efforts. The Wanapum Reservoir was divided into 40 transects for sampling. SCUBA sampling has also been conducted in wet areas.

Water Quality is being monitored at 12 temporary locations, as well as at Fixed Monitoring sites.

Questions:

- Which PRP boat launches will be open during fishing season? Desert Air and Huntzinger in the Priest Rapids Pool are open. Dresser will find out if the boat launch below Wanapum Dam will remain closed during fishing season.
- When will the analysis showing the best estimate of survival by passage route at Wanapum Dam, be complete? PIT-tag analysis from the OSU/RTR study will occur in August when tags can be detected in nesting areas.
- Under normal turbine operations, project survival rates for Chinook and sockeye are in the 95% range. Where do you expect it to be under projected forebay elevations? Dotson said it should be close. Efficiently curves overlaid with survival estimates showed that as net head decreases, survival ranges expanded out. If you take that same trend with this lower head, Dotson expects turbine survival will be as good as, or better than normal operations. Dotson will duplicate the graph he was working off of and distribute.

VIII. Interim Fish Passage Operation Plan – Status Update – See item above

IX. Priest Rapids Turbine – White Paper – Grant PUD proposes the use of the BioPA Scores to be used to evaluate the new turbine designs as they relate to fish passage performance, in lieu of a balloon-tag study, and acceptance by the PRCC as the initial biological performance testing of the new turbine design selected for the Priest Raids Turbine Upgrade Project. Dotson will send the white paper to Rohr for distribution. On Friday, April 11 @ 1:30 p.m., PRCC members will hold a conference call to discuss this matter further.

X. Review of DRAFT Proposal for the "Upper Columbia Fish Screen Monitoring Program" – WDFW requested $681,562.21 from the No Net Impact Fund (NNI) to continue the program the PRCC approved a couple of years ago. Funds would cover inspection, maintenance, which includes upgrading existing facilities, construction, which includes completing new screening

projects, and screen inventory and project prioritization. This proposal doesn't cover any work covered in the extension approved by the PRCC last month. PRCC members will review the proposal and discuss on the April 11th conference call. PRCC members are concerned that this program is becoming an entitlement program with no responsibility to the owner/operator. Korth will find out what the protocols are of discussions with owner/operators.

XI. NNI Funding Request from Habitat SC – Lower Wenatchee Instream Flow Enhancement Project Phase II – Jeremy Cram, WDFW, Habitat Subcommittee meeting representative joined today's meeting to request $456,241 from NNI. Phase I was changing Pioneer Water Users Association from a gravity fed earthen channel system to a pressurized system. 38 cfs of water was protected Instream in the lower Wenatchee River. Phase II will remove the Jones-Shotwell Ditch Company's earthen system and replace it with a pressurized system, at a minimum this project will protect 4 cfs continuously instream. The 4 cfs will be put into trust in order to convey water. The new on demand pressurized pump system will provide instream flow benefit throughout the irrigation season, compounding the 4 cfs baseline by anywhere from 0-12 cfs of additional instream benefit, depending on demand. The Irrigation District will cover O&M cost.

The HSC felt this project qualified for NNI because the additional water volume to the system has benefits to survival, capacity, quality and growth that affect the number of fish that can be supported in the Wenatchee. The PRCC discussed whether this will indeed provide benefit to the mainstem Columbia, or if this project is just a habitat project. Cumulative effects of these small water projects will eventually benefit the mainstem Columbia. PRCC members agree that this is a good project but question how to fund it. Nordlund proposed that the PRCC provide a specified amount of NNI dollars that the PRCC HSC can use to fund whichever projects they feel fit NNI. The PRCC approved funding 50% of $456,241 from the NNI Fund.

Cram was told by Trout Unlimited, that Cascadia Conservation District is interested in funding this project, and that they are awaiting word on the funding. Cram will get an update.

XII. Updates

A. Inland Avian Predation Work Group (IAPWG) Activities – Proceeding. Goose island dissuasion has been set up. Last week a lot of gulls were observed, but no nesting. Only 12 terns were observed at Goose Island. Additional ropes are being added to the dissuasion grid. It was questioned if terns will move to islands in the Wanapum Reservoir that have no vegetation on them. Grant PUD staff is being told to take note of areas of birds when they are on the river. ACOE and BOR visited the Edwards Wildlife Refuge in San Francisco two weeks ago. The location could possibly be the "new home" for the Goose Island terns.

B. Priest Rapids Bypass – April Ceremony – The ceremony has been postponed to a later date. Construction is complete. Operation testing will be conducted on April 1st @ 10:00 a.m.

C. Priest Rapids Turbine Installation – No update

D. Hatchery Construction Activities -

    a. Carlton Acclimation Facility – Summer Chinook are on station.

    b. Nason Creek Acclimation Facility – The facility is expected to up and running by June. Fish are due in October.

c. PR Hatchery Modifications – Grant PUD is working with WDFW regarding operations, additional staffing, and modifications to the finger weir at the volunteer trap.

E. Hatchery Permits (Section 10 for Summer Chinook and Section 7 Consultation for Bull Trout. – Ongoing – potential revisit of spring Chinook permit, which doesn't affect Grant PUD.

F. NNI Funded Projects

a. Upper Columbia Fish Screen Monitoring Program Phase I - Ongoing

b. "Mid-Columbia River Intake Screen and Diversion Assessment" – Ongoing – contract is in place. A lot of intake structures are being extended and screened because of water levels in the Wanapum Reservoir.

G. Committee Reports – Distributed electronically by Rohr.

H. NNI and Habitat Funds Report – Waiting for an update from Grant PUD Accounting.

I. Other

XIII. Review of Next Month's Agenda Topics – None

XIV. Next Meeting – April 22, 2014, 1:30 p.m., conference call/WebEx; June meeting will be held in the PRP area.

Grant County
PUBLIC UTILITY DISTRICT

Priest Rapids Coordinating Committee

Friday, April 04, 2014
2:00 – 5:00
Conference Call

PRCC Members

Scott Carlon/Bryan Nordlund, NMFS
Bob Rose, YN
Jeff Korth, C. Andonaegui, P. Verhey, WDFW
Tom Dresser/Curt Dotson, GCPUD
Jim Craig, USFWS
Kirk Truscott, CCT
Tom Skiles, representing CTUIR
Denny Rohr, Facilitator

Attendees

Scott Carlon/Bryan Nordlund, NMFS
Bob Rose, YN
Jeff Korth, WDFW
Tom Skiles, representing CTUIR
Russell Langshaw, GCPUD
Denny Rohr, Facilitator
Jim Craig, USFWS
Kirk Truscott, CCT
Tom Lorz, CRITFC
Tom Dresser/Curt Dotson, GCPUD
Debbie Williams, GCPUD

Decision Summary:

1. See approval under each numbered item.

Distributed Items:

1. SOA 2014-02 – Draft Statement of Agreement on Evaluations to be Implemented in 2014 as Part of Existing Requirements or as a Result of the Wanapum Spillway Fracture and Wanapum Reservoir Drawdown.

Action Items:

1. Item 1d - Rose will notify Rohr of the Yakama Nation's decision by April 8th. Rohr will notify the PRCC of that decision.
2. Item 1e - Dresser will notify Rohr by April 8th if Grant PUD will accept NNI Funds as a loan.
3. Trap and Haul - Korth will send the WDFW passage evaluation metrics to Dresser, so that it can be incorporated into Grant PUD's study plans.

Draft Meeting Minutes

I. Welcome and Introductions

II. SOA 2014-02 DRAFT State of Agreement on Evaluations to be Implemented in 2014 as Part of Existing Requirements or as a Result of the Wanapum Spillway Fracture and

Wanapum Reservoir Drawdown – Rohr reminded PRCC members that on three separate occasions (March 6th, March 14th, and March 26th) subsequent to the Wanapum Spillway Fracture, the PRCC met to discuss how the fracture would affect the 2014 Survival Study Plan that was approved by the PRCC in November 2013. On March 14th, the PRCC agreed to conduct only the Priest Rapids Reservoir survival study and also the Priest Rapids Bypass Behavior portion of the study. Carlon asked that the record reflect that Wanapum passage was discussed during the meeting. On March 26th, Rohr affirmed the PRCC's March 14th vote, thus, an approved Survival and Behavior Study Plan does exist right now. To address concerns brought up after the March 14th vote, Grant PUD drafted "SOA 2014-02 - Statement of Agreement on Evaluations to be Implemented in 2014 as Part of Existing Requirements or as a Result of the Wanapum Spillway Fracture and Wanapum Reservoir Drawdown," (distributed on 04-04-14) to all PRCC members. Rohr asked if anyone disagreed with his summary. No one did.

Discussion of SOA 2014-02 was opened by Dresser, who thanked PRCC members for all of the conversations and feedback he had received in the last few days while drafting this document. Dresser explained that the Statement of Agreement (SOA) is consistent with what FERC has asked of and required from Grant PUD, in order to document that consultation is taking place. PRCC members agreed that each item of the SOA would be discussed and approved or modified prior to moving to the next topic. The following is a summary of item:

(1) PRCC approved with the following edits: remove 3D, correct spelling of presence.

   (a) PRCC approved with the following edits: remove 3D, after juvenile, add salmonid and steelhead, add will cover two species.

   (b) PRCC approved with the following edits: Grant PUD will make an effort to collect route specific information related to the Wanapum spillway, Wanapum Fish Bypass and Wanapum turbines. PRCC understands that due to repairs to Pier Monolith #4, there will be no access to install equipment in the forebay or tailrace of Wanapum Dam.

   (c) PRCC approved with the following edits: Standard error is +5% within the Wanapum Reservoir and at Wanapum Dam.

   (d) PRCC approved with the exception of the Yakama Nation and Colville Confederated Tribe. Dresser explained that survival studies will be conducted as outlined in the Salmon Steelhead Settlement Agreement (SSSA), and if additional mitigation is deemed necessary after the fracture is repaired, the PRCC will determine that mitigation. Rose said that the SSSA has a tribal sovereignty clause and asked that a line be added to the SOA stating that tribes need not seek PRCC approval prior to decision making. Dresser noted that Section 8.1 of the SSSA relates to "Reservation of Tribal Rights" and that all tribes would be covered under this language. Before approving Item (d), Rose will discuss internally. Rose will notify Rohr of the Yakama Nation's decision by April 8th. Rohr will notify the PRCC of that decision.

   (e) PRCC members did not agree that Grant PUD use $225,000 from the NNI Fund for implementation of the of the Wanapum Reservoir acoustic tag evaluation. Grant PUD stressed that data collected from this evaluation will provide important information to regional co-managers on potential impacts to the run-at-large, and that this is work that the PRCC previously said Grant PUD didn't need to do. All PRCC members except Grant PUD agreed that $225,000 from the NNI Fund could be used as a loan to

Grant PUD. Dresser will notify Rohr by April 8th if Grant PUD will accept NNI Funds as a loan.

(2) PRCC approved with the following edits: remove 3D, add juvenile sockeye to list of species that may not be feasible to evaluate via acoustic tags in 2014.

(3) PRCC approved with the following edits: remove 3D, it isn't necessary to apply additional PIT-tags at other upstream locations and to conduct additional analysis.

(4) PRCC approved

(5) PRCC approved with the following edits: Combine Item 5 and 5(a), add the PRCC will examine the root cause and extent on the invalidation. Based on this assessment, the PRCC may determine that study results could be included into survival standard calculations.

(6) PRCC approved with the following edits: add Rock Island Dam modifications.

(7) PRCC approved with the following edits: add observers will be stationed at peak passage times and that passage will be documented via direct observations and video sampling.

(8) PRCC approved

(9) PRCC approved: Dresser asked that all PRCC members communicate within their organizations what was decided by the PRCC today.

(10) Evaluation - PRCC approved

III. Trap & Haul

PRCC members agreed that, starting April 15th, as long as normal ladder entrances at Rock Island Dam (RI) are available, trucking fish to the Rocky Coulee release site in Wanapum Reservoir would be the their first preference. Trap and haul will run in parallel to fish ladder operations until there is confidence that the ladders at Wanapum Dam (WD), are working.

Two hundred adult hatchery fish will be PIT-tagged and 50 adult hatchery fish will be doubled tagged with JSATS and PIT-tags at the Off-ladder Adult Fist Trap (OLAFT). They will then be released back into the ladder to migrate through the Priest Rapids Reservoir, and through the ladders at WD. WDFW and CCT, requested that all natural origin fish be trucked past WD. Grant PUD noted that all fish will be directed through the Priest Rapids Left Bank Ladder, and that if there is no passage at WD or RI, then all fish will be trapped and hauled. Korth will send the WDFW passage evaluation metrics to Dresser, so that it can be incorporated into Grant PUD's study plans.

IV. Next Meeting – April 11, 2014, 1:30 p.m., Conference Call.

Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

Priest Rapids Coordinating Committee

Conference Call

Audio: 1-800-977-8002, Bridge: 45582544

PRCC Members

Scott Carlon, Bryan Nordlund, NMFS
Kirk Truscott, CCT
Bob Rose, YN
Tom Dresser, Curt Dotson, GCPUD
Jim Craig, USFWS
Jeff Korth, C. Andonaegui, P. Verhey WDFW
Jeff Skiles (CRITFC) representing CTUIR
Denny Rohr, Facilitator

Attendees

Curt Dotson, GCPUD
Jim Craig, USFWS
Tom Skiles, CTUIR
Jeff Korth, WDFW
Scott Carlon, NMFS
Kirk Truscott, CCT
Bob Rose, YN
Denny Rohr, Facilitator

DRAFT MEETING MINUTES

I. **Welcome and Agenda Review** - Rohr welcomed participants to the conference call. Rohr outlined the purpose of today's call and the subjects to be addressed. Accordingly, the meeting agenda and subsequent decisions by PRCC members are outlined below.

II. **Continued discussion regarding PR Turbine Installation and "use of BioPA scores in lieu of balloon tag study"** – The document distributed at the March 26, 2014 PRCC meeting titled "Biological Performance Assessment for Support of Turbine Designs Associated with the Priest Rapids Dam Turbine Upgrade Project" was again referenced and discussed. Rohr explained that the question before the committee is whether the BioPA scores can be used in lieu of doing a balloon tag study. **After extended discussion, PRCC members approved the use of the BioPA scores in lieu of doing a balloon tag study. Skiles abstained.**

III. **Continued discussion of the "Upper Columbia Fish Screen Monitoring Program – Phase II** - This proposal and use of NNI funding for this program was presented at the March 26, 2014 PRCC meeting. At that time, committee members raised some questions and also requested additional time to review the proposal more thoroughly. Subsequent to the March 26th meeting,

Korth provided additional information relative to the questions raised by committee members. Accordingly, after thorough discussion of the proposal and the additional information provided by Korth, committee members approved use of NNI funding for this proposal. Skiles abstained.

IV. Continued discussion of Statement of Agreement (SOA) 2014-02 on Evaluations to be implemented in 2014 as part of existing requirements or as a result of the Wanapum Spillway Fracture and Wanapum Reservoir Drawdown – This SOA was first introduced to the committee on April 4, 2014. Extensive discussion was held at that time and approval of the SOA was given by several committee members. After continued discussion during today's meeting, committee members gave final approval to SOA 2014-02. Skiles abstained.

V. Continued discussion of NNI Funding Request from PRCC Habitat Sub Committee – Lower Wenatchee Instream Flow Enhancement Project Phase II – This project was first introduced at the March 26, 2014 PRCC meeting. Jeremy Cram, WDFW Habitat SC member, participated in that meeting to provide an explanation and answer questions regarding the details of the project, and to also request NNI funding in the amount of $456,241. During the March 26th meeting, committee members concluded their discussion by approving to fund 50% of the requested amount for this project from NNI funds. Subsequent to the March 26th PRCC meeting, Craig learned of additional information relative to the funding being requested, and he shared that information at today's meeting. Specifically, Craig outlined that the funding amount now being requested was approximately half of the initial funding expectation. Accordingly, after extended discussion, committee members approved funding the project in total from the NNI Fund in the amount of $456,241. Skiles abstained.

VI. Next Meeting – Rohr reminded the committee that the next conference call would be held on Monday, April 14, 2014 at the conclusion of the Monday morning Wanapum Briefing call. Rohr will distribute call in information for the meeting.

Grant County
PUBLIC UTILITY DISTRICT

Priest Rapids Coordinating Committee

Conference Call
Wednesday, April 14, 2014
9:30 – 1:00

PRCC Members

Scott Carlon/Bryan Nordlund, NMFS
Bob Rose, YN
Jeff Korth, C. Andonaegui, P. Verhey, WDFW
Tom Dresser/Curt Dotson, GCPUD
Jim Craig, USFWS
Kirk Truscott, CCT
Tom Skiles (CRIFTC) representing CTUIR
Denny Rohr, Facilitator

Attendees

Scott Carlon, Bryan Nordlund NMFS
Bob Rose, YN
Jeff Korth, WDFW
Tom Dresser/Curt Dotson, GCPUD
Debbie Williams, GCPUD
Jim Craig/Kate Terrell, USFWS
Kirk Truscott, CCT
Tom Skiles, CRITFC
Russell Langshaw/Peter Graf, GCPUD
Denny Rohr, Facilitator

Decision Summary:

1. PRCC members agreed to turn off attraction flow water for the Priest Rapids Right Bank Ladder (PRRBL), and let the ladder operate strictly by gravity flow. If fish are seen using the PRRBL and not the Priest Rapids Left Bank Ladder (PRLBL) and OLAFT, the PRRBL will be totally closed off until study fish tagging is complete and/or ladder fixes are deemed successful.
2. PRCC members approved - If travel time for 90% of the salmonids is within 356 hours from Priest Rapids to Rock Island PIT detectors, ladder fixes are considered successful and trap/haul will cease.
3. PRCC agreed to a mortality rate for salmonids of less than 5% at the Wanapum exit, (as calculated daily on a cumulative basis) to consider the ladder fix successful and cease trap/haul. The PRCC will reconvene if the mortality rate approaches 3%.
4. PRCC members decided that the PIT-tag sample size will remain the same (200 PIT tags). If it looks like additional tagging is needed, Grant PUD will notify the PRCC, who will make that decision. 10-20 fish will also be tagged with an acoustic tag, and be released back into the river to collect additional data regarding the trap and transport program.

Distributed Items:

1. Monitoring and Evaluation of Adults in Response to Modifications to Wanapum Dam Adult Ladder.
2. Wanapum Dam Adult Passage and Monitoring Plan 2014 PowerPoint presentation.

Action Items:

1. Grant PUD committed to provide weekly updates to the PRCC and will review additional conversion rate information (80%-90%.

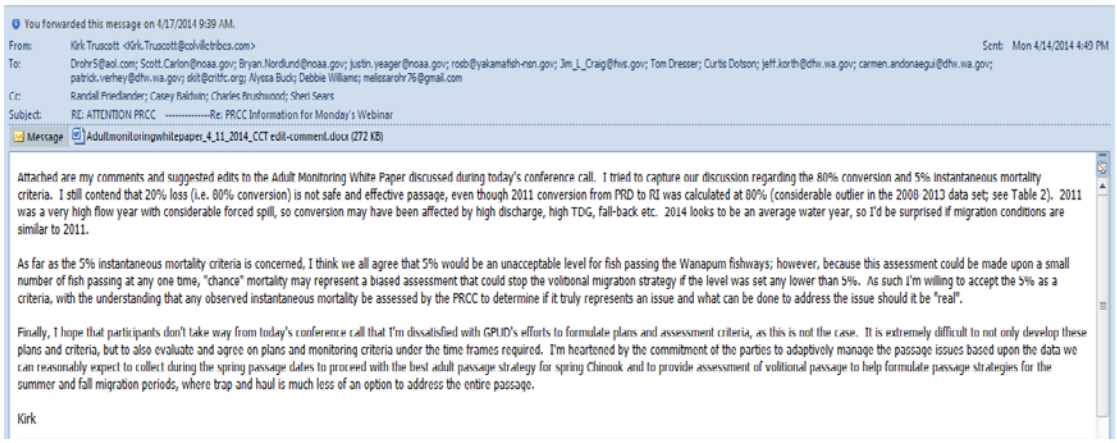
Draft Meeting Minutes

I. Welcome and Introductions

II. Wanapum Dam Adult Passage and Monitoring Plan 2014 – Russell Langshaw, Grant PUD, presented a PowerPoint presentation on 2014 Wanapum Dam Adult Passage and Monitoring Plan. He explained that the following key decisions need to be made during today's call:

- Will the Priest Rapids Right Bank Ladder remain open during trapping at the Off-Ladder Adult Fish Trap (OLAFT):
- PRCC members agreed to turn off attraction flow water for the Priest Rapids Right Bank Ladder (PRRBL), and let the ladder operate strictly by gravity flow. If fish are seen using the PRRBL and not the Priest Rapids Left Bank Ladder (PRLBL) and OLAFT, the PRRBL will be totally closed off until study fish tagging is complete and/or ladder fixes are deemed successful. Criteria needed to decide if trap and transport can be terminated:
  - Travel time 90% within 356 hours (from Priest Rapids to Rock Island PIT detectors) – PRCC members approved - If travel time for 90% of the salmonids is within 356 hours from Priest Rapids to Rock Island PIT detectors, ladder fixes are considered successful and trap/haul will cease.
  - Conversion rate >80% - A majority of the PRCC members decided that if an 80% conversion rate (from Priest Rapids to Rock Island PIT detectors) is achieved in conjunction with the other criteria, trap and transport can be terminated. Consensus was not reached on this item. Grant PUD, based on a majority decision and the need to begin implementation of the plan, moved forward with the 80% conversion rate. Grant PUD committed to provide weekly updates to the PRCC and will review additional conversion rate information (80%-90%). The CCT proposed a conversion rate of >90%, but consensus was not reached on this conversion rate either (Subsequent to the meeting, Kirk Truscott supplied his comments in support of his 90% recommendation).
  - Instantaneous mortality rate <5% - PRCC agreed to a mortality rate for salmonids of less than 5% at the Wanapum exit, (as calculated daily on a cumulative basis) to consider the ladder fix successful and cease trap/haul. The PRCC will reconvene if the mortality rate approaches 3%.

- PIT-tag sample size
  - Stage I
    - 200 at OLAFT - PRCC members decided that the PIT-tag sample size will remain the same (200 PIT tags). If it looks like additional tagging is needed, Grant PUD will notify the PRCC, who will then make that decision. 10-20 fish will also be tagged with an acoustic tag, in order to collect additional data regarding the trap and transport program.
    - Up to 600 previously tagged (in river run-at-large)
  - Stage II
    - Up to 1000 previously tagged (in river run-at-large)
    - Lamprey monitoring to be developed in PRFF



You forwarded this message on 4/17/2014 9:39 AM.

From: Kirk Truscott <Kirk.Truscott@colvilletribes.com> Sent: Mon 4/14/2014 4:49 PM

To: Drohr5@aol.com; Scott.Carlon@noaa.gov; Bryan.Nordlund@noaa.gov; justin.yeager@noaa.gov; rosb@yakamafish-nsn.gov; Jim_L_Craig@fws.gov; Tom Dresser; Curtis Dotson; jeff.korth@dfw.wa.gov; carmen.andonaegui@dfw.wa.gov; patrick.verhey@dfw.wa.gov; skit@critfc.org; Alyssa Buck; Debbie Williams; melissarohr76@gmail.com

Cc: Randall Friedlander; Casey Baldwin; Charles Brushwood; Sheri Sears

Subject: RE: ATTENTION PRCC ----------Re: PRCC Information for Monday's Webinar

Message AdultmonitoringwhitepaperJ_4_11_2014_CCT edit-comment.docx (272 KB)

Attached are my comments and suggested edits to the Adult Monitoring White Paper discussed during today's conference call. I tried to capture our discussion regarding the 80% conversion and 5% instantaneous mortality criteria. I still contend that 20% loss (i.e. 80% conversion) is not safe and effective passage, even though 2011 conversion from PRD to RI was calculated at 80% (considerable outlier in the 2008-2013 data set; see Table 2). 2011 was a very high flow year with considerable forced spill, so conversion may have been affected by high discharge, high TDG, fall-back etc. 2014 looks to be an average water year, so I'd be surprised if migration conditions are similar to 2011.

As far as the 5% instantaneous mortality criteria is concerned, I think we all agree that 5% would be an unacceptable level for fish passing the Wanapum fishways; however, because this assessment could be made upon a small number of fish passing at any one time, "chance" mortality may represent a biased assessment that could stop the volitional migration strategy if the level was set any lower than 5%. As such I'm willing to accept the 5% as a criteria, with the understanding that any observed instantaneous mortality be assessed by the PRCC to determine if it truly represents an issue and what can be done to address the issue should it be "real".

Finally, I hope that participants don't take way from today's conference call that I'm dissatisfied with GPUD's efforts to formulate plans and assessment criteria, as this is not the case. It is extremely difficult to not only develop these plans and criteria, but to also evaluate and agree on plans and monitoring criteria under the time frames required. I'm heartened by the commitment of the parties to adaptively manage the passage issues based upon the data we can reasonably expect to collect during the spring passage dates to proceed with the best adult passage strategy for spring Chinook and to provide assessment of volitional passage to help formulate passage strategies for the summer and fall migration periods, where trap and haul is much less of an option to address the entire passage.

Kirk

III. Next (regular) Meeting – April 22, 2014, 1:30 p.m., conference call/WebEx.

Grant County
PUBLIC UTILITY DISTRICT

Priest Rapids Coordinating Committee

Tuesday, April 22, 2014
1:30 pm
Webinar Conference

PRCC Members

Scott Carlon/Bryan Nordlund, NMFS
Bob Rose, YN
Jeff Korth, C. Andonaegui, P. Verhey, WDFW
Tom Dresser/Curt Dotson, GCPUD
Jim Craig, USFWS
Kirk Truscott, CCT
Tom Skiles, CTUIR
Denny Rohr, Facilitator

Attendees

Scott Carlon/Bryan Nordlund, NMFS
Kirk Truscott, CCT
Tom Skiles, CRITFC
Tom Dresser/Curt Dotson, GCPUD
Denny Rohr, Facilitator
Jim Craig, USFWS
Jeff Korth, WDFW
Bob Rose, YN
Debbie Williams, GCPUD

Decision Summary:

1. PRCC affirmed their April 11, 2014 vote of approval of the SOA 2014-02, Modification of 2014 Survival Study.
2. PRCC affirmed their April 11, 2014 vote of approval of the "Upper Columbia Fish Screen Monitoring Program Phase II".
3. PRCC affirmed their April 11, 2014 vote of approval of the PR Turbine Upgrade – Biological Performance Assessment.
4. PRCC affirmed their April 11, 2014 vote of approval of the Lower Wenatchee Instream Flow Enhancement Project Phase II.
5. PRCC affirmed their April 14, 2014 vote of approval of the Wanapum Dam Adult Passage and Monitoring Plan.
6. PRCC agreed that the first 50 ad-clipped hatchery fish encountered at the OLAFT will be tagged with acoustic tags and released back into the Priest Rapids Left Bank Ladder to continue migration through the Priest Rapids Reservoir. An additional 20 ad-clipped hatchery fish will be tagged with acoustic tags and transported around Wanapum Dam.
7. 2014 Spill Representatives will be Scott Carlon, Jim Craig, and Curt Dotson.

Distributed Items:

1. Fish-Spill PowerPoint
2. Priest Rapids Bypass Video Clip
3. Link to "NetBlaster" in Action on Goose Island
4. FCWG & PRFF Briefing Report

Action Items:

1. Rohr will request an email vote for the following meeting minutes: April 4, April 11, and April 14, 2014.
2. Dresser will find out if the boat launch below Wanapum Dam will remain closed during fishing season.
3. Weekend fish counts at McNary Dam will be compared to those at Priest Rapids Dam because of concern that the Priest Rapids Right Bank Ladder may be holding fish back. The PRCC will discuss fish counts during a conference call on Monday, April 28th, directly following the Wanapum briefing call. Rohr will send out the call-in number.
4. Dotson will send the Fish Spill PowerPoint presentation to Williams for distribution.
5. Dotson will get video of the Wanapum Fish Bypass operating at 5 kcfs.
6. Rohr will distribute the FCWG and PRFF briefing reports.
7. Williams will set up a WebEx for the Wanapum Briefing calls on Mondays.
8. Williams will send PRCC members information on reduced rates at the Radisson Hotel for the May 28th meeting.

Draft Meeting Minutes

I. Welcome and Introductions

II. Meeting Minutes Approval – February 26, 2014, Approved. March 26, 2014, Approved. April 04, April 11, and April 14, 2014 – additional review time was requested. Rohr will request an email vote for all meeting minutes. Send comments to Debbie.

III. Agenda Review – No additions were made to the agenda.

IV. Action Items Review – March 26, 2014 Meeting

1. Dresser will provide a Grant PUD cultural resources contact to Tom Skiles, CRITFC. - Complete
2. Dresser will find out if the boat launch below Wanapum Dam will remain closed during fishing season. – Ongoing
3. Dotson will duplicate the graph he was working off and distribute to PRCC members (See Item 7, Bullet 3). - Complete
4. Dotson will send the Priest Rapids White Paper to Rohr for distribution. Friday, April 11 @ 1:30 p.m., PRCC members will hold a conference call to discuss this matter further. - Complete
5. PRCC members will review the Upper Columbia Fish Screen Monitoring Program Phase II proposal and discuss on the April 11th conference call. - Complete

V. AFFIRMATION: (April 11th) Approval of SOA 2014-02, Modification of 2014 Survival Study – T. Skiles abstained. Jim Craig approved via email. – PRCC affirmed their April 11, 2014 vote of approval.

VI. AFFIRMATION: (April 11th) Approval of Proposal for the "Upper Columbia Fish Screen Monitoring Program Phase II" – T. Skiles abstained. Jim Craig approved via email. - PRCC affirmed their April 11, 2014 vote of approval.

VII. AFFIRMATION: (April 11th) Approval PR Turbine Upgrade – Biological Performance Assessment – T. Skiles abstained. Jim Craig approved via email. - PRCC affirmed their April 11, 2014 vote of approval.

VIII. AFFIRMATION: (April 11th) Approval Lower Wenatchee Instream Flow Enhancement Project Phase II – T. Skiles abstained. Jim Craig approved via email. - PRCC affirmed their April 11, 2014 vote of approval.

IX. AFFIRMATION: (April 14th) Approval Wanapum Dam Adult Passage and Monitoring Plan – T. Skiles abstained – T. Skiles abstained. - PRCC affirmed their April 14, 2014 vote of approval.

X. Update of Wanapum Dam Activities – Dresser provided an update on Wanapum Monolith Pier 4. No firm date has been selected for an intermediate pool raise; July 1st is an arbitrary date. On April 18th, Grant PUD presented a grout repair sequencing plan to the independent Board of Consultants, that includes tendon pining; their response is expected within a couple of days. If approved, the plan will be sent to FERC for approval. Three tendons will be pinned through the pier, and one on either side of the ogee; seismic loading will determine the size of tendons to be used. All other monoliths at Wanapum Dam may require the same repairs. No estimate as to how much time repairs will take was provided. Modeling exercises to raise the pool to 562' have been discussed but no decisions have been made. It was unknown if tendons may have to be installed on all other monoliths before an intermediate pool raise occurs.

Due to a lack of fish accessing the OLAFT, Battelle's ability to tag fish with acoustic tags has been moved from Wednesday to Friday of this week. In an effort to get Wanapum passage results quickly, so that trap and transport can be discontinued as soon as possible, the PRCC agreed that the first 50 ad-clipped hatchery fish encountered at the OLAFT will be tagged with acoustic tags and released back into the Priest Rapids Left Bank Ladder to continue migration through the Priest Rapids Reservoir. An additional 20 ad-clipped hatchery fish will be tagged with acoustic tags and transported around Wanapum Dam.

Because of concern that the Priest Rapids Right Bank Ladder may be holding fish back, weekend fish counts at McNary Dam will be compared to those at Priest Rapids Dam. The PRCC will discuss fish counts during a conference call on Monday, April 28th, directly following the Wanapum briefing call. Rohr will send out the call-in number.

XI. Spill Representatives for 2014 – 2014 Spill Representatives will be Scott Carlon, Jim Craig, and Curt Dotson. Dotson presented a PowerPoint presentation on Fish Spill – 2014. Spill at Wanapum Dam started on April 17th with 16 kcfs passing through tainter gates 8-12. The Wanapum Fish Bypass is passing between 4 & 5 kcfs, based on a forebay elevation of 543' with the top of the bypass ogee at 527'. There is roughly 15' of water from the surface of the river to the top of the ogee. Spill at Priest Rapids Dam started on April 18th with 24 kcfs (8 kcfs per tainter gate 20, 21 and 22) passing through the Priest Rapids Fish Bypass. Some inadvertent spill is occurring.

Turbines at both dams are being operated in "Fish Mode," which was developed using efficiency curves from balloon tag studies conducted in 1996 and 2005. Fish Mode was determined by finding a range that had 95% or greater survival rate, for turbine passage, by using the net head (feet range between 70' to 80') at each turbine flow rate (between 9,000 and 17 kcfs). Everything greater than 95% survival was used to determine "Fish Mode." While operating in "Fish Mode" turbines aren't allowed to run higher than 15.7 or less than 10 kcfs. Less head equals greater survival. Turbines are presently operating at less than 60' of head for a maximum of 15.5 kcfs. Juvenile survival is expected to be unchanged with current operations. In order to collect route specific data, JSATS receivers which normally would have been attached to the dam, have been placed in the boat restriction zone, 200' out from the dam. Data retrieval will occur less frequently because of heavy spill. The first fish release will be April 30th. Dotson will send the Fish Spill PowerPoint presentation to Williams for distribution. Dotson will get video of the Wanapum Fish Bypass operating at 5kcfs.

XII. Updates

B. Inland Avian Predation Work Group (IAPWG) Activities – Dotson reported that dissuasion at Goose Island appears to be working as no tern nests have been spotted. Twenty-eight terns have been tagged during the NNI funded OSU study, with satellite tags powered by solar panels that feed data to the ARGOS satellite system. All tags are collecting data; tags cycle every 32 hours (6 hours on, 26 hours resting, 6 hours on). As part of the OSU study, yearling Chinook and steelhead are being tagged at Rock Island Dam.

C. Priest Rapids Bypass Operation – On April 1st, the Bypass was tested for 6 hours. See Item XI above.

D. Priest Rapids Turbine Installation - No update provided.

E. Hatchery Construction Activities

1. Carlton Acclimation Facility – Fish are on station.

2. Nason Creek Acclimation Facility – Facility will be operationally on June 1, with fish on station this fall.

3. PR Hatchery Modifications – Grant PUD is working with WDFW regarding modifications that need to take place before this fall. WDFW thanked Dresser for working through issues on PRH modifications.

F. Hatchery Permits (Section 10 for Summer Chinook and Section 7 Consultation for Bull Trout. – The JFP is slowly working through issues. Truscott reported that because the summer Chinook program hasn't changed much and will not require much consultation, it is NOAA's lowest priority.

G. NNI Funded Projects

1. Upper Columbia Fish Screen Monitoring Program Phase I Contract Extension – Because of discussions in the PRCC, Nordlund believes there is more of an effort to find long-term funding resolution as well as to make operators responsible for operations and maintenance.

2. "Mid-Columbia River Intake Screen and Diversion Assessment" - No update provided.

H. Committee Reports - Rohr will distribute the FCWG and PRFF briefing reports.

I. NNI and Habitat Funds Report – Due to staff changes in Grant PUD's Accounting department, reports will be delayed until next month.

J. Other - The Wanapum Right Bank Ladder (WRBL) opening will be delayed a few days in order to get the ramp in front of the exit weir installed. The ramp should alleviate some of the jumping that is occurring. Dresser said that materials for both ladders have been ordered and that the WRBL should be operational on April 28th, if not before. If it's determined that sockeye have a jumping problem, a ramp will be installed on the Wanapum Left Bank Ladder (WLBL) during a 2-3 day outage.

K. Wanapum Briefing Calls - Dresser will provide an update on fish travel time, conversion rate, instantaneous mortality, and how many fish have been tagged? Williams will set up a WebEx for the Wanapum Briefing calls on Mondays.

XIII. Review of Next Month's Agenda Topics – Rohr will provide a list.

XIV. Next Meeting – May 28, 2014, SeaTac - Dresser reported that Grant PUD has decommissioned their SeaTac office; future PRCC meetings will be held at the Radisson Hotel in SeaTac. The June 25th PRCC meeting will be held on the Project. Williams will send PRCC members information on reduced rates at the Radisson Hotel for the May 28th meeting.

Grant County
PUBLIC UTILITY DISTRICT

Priest Rapids Coordinating Committee

Monday, April 28, 2014
8:30 pm
Conference Call

PRCC Members

Scott Carlon/Bryan Nordlund, NMFS
Bob Rose, YN
Jeff Korth, C. Andonaegui, P. Verhey, WDFW
Tom Dresser/Curt Dotson, GCPUD
Jim Craig, USFWS
Kirk Truscott, CCT
Tom Skiles, CTUIR
Denny Rohr, Facilitator

Attendees

Bryan Nordlund, NMFS
Jeff Korth, WDFW
Tom Skiles, CRITFC
Tom Dresser/Curt Dotson, GCPUD
Denny Rohr, Facilitator
Jim Craig, USFWS
Patrick Verhey, WDFW
Kirk Truscott, CCT @ 9:00
Debbie Williams, GCPUD

Decision Summary:

1. PRCC members decided that the PRRBL will remain at gravity flow until all fish are tagged and enough data is collected to make the decision to cease, or to continue, trap and transport.
2. The PRCC decided that no changes would be made to the flume system at this time and requested that they be addressed when the spiral chute is installed.

Action Items:

1. Dresser will get a hard installation date for the spiral chute from Grant PUD Engineers.
2. PRCC members will meet via conference call on Thursday, May 1st at 3:30 p.m.

Draft Meeting Minutes

I. Welcome and Introductions

II. Agenda Review – No additions were made to the agenda.

III. Update of Wanapum Dam Activities – In order to determine if the Priest Rapids Right Bank Ladder (PRRBL) should be transitioned from gravity flow to attraction flow, PRCC members met via conference call to discuss fish counts at McNary Dam vs. those at Priest Rapids Dam (PRD). Average travel time between McNary Dam and PRD averages between 4 and 5 days.

As of April 26th, 165 spring Chinook passed the Priest Rapids Left Bank Video Fish Count Station (PRLBVFCS) and another 28 spring Chinook passed the Priest Rapids Right Bank Video Fish Count Station (PRRBVFCS). PRCC members were concerned with the number of fish counted at the PRLBVFCS vs. the number of fish counted at the Off-Ladder Adult Fish Trap (OLAFT); and the lag/holding time between the two locations.

Twenty-nine spring Chinook have been tagged with acoustic tags; an additional 21 are needed to meet the 50 acoustic tag quota agreed upon by the PRCC. Battelle has been tagging 10-11 fish per day, and hopes to have all acoustic tagging completed by the end of this week. Dresser will find out what limiting factors cause Battelle to only tag 10-11 fish with acoustic tags per day. If the PRRBL is opened, PRCC members were concerned that they will be unable to acquire the fish needed to complete acoustic tagging. PRCC members decided that the PRRBL will remain at gravity flow until all fish are tagged and enough data is collected to make the decision to cease, or to continue, trap and transport.

PRCC members will meet via conference call on Thursday, May 1st at 3:30 p.m. to review up-to-date passage information and whether attraction flow should be turned on at the PRRBL. Data that Dresser presented via PowerPoint during the April 28th Wanapum briefing call will be updated for Thursday's conference call. Dresser will address the following items:

a. Counts by species at the Wanapum Fishway Exit Passage Systems - right and left bank.
b. Behavior information at the Wanapum Fishway Exit Passage Systems - right and left bank.
c. Number of fish trapped and transported to the Rocky Coulee release site.
d. Total number of fish acoustically tagged and released to migrate upstream.
e. Total number of fish PIT-tagged and released to migrate upstream.
f. Up-to-date information on PIT-tag detections and travel times for fish (steelhead & Chinook) detected at Wanapum and Rock Island.
g. Up-to-date ladder counts at Priest Rapids Dam (right bank vs left bank).
h. Number of fish documented on left-bank video system versus what has been observed at OLAFT.
i. Any information that could be gleaned from acoustic receivers (Battelle will be downloading adult acoustic tag receivers on Wednesday, April 30th).
j. General schematics of where the video fish count stations are in relationship to PIT-arrays for all ladders and where the OLAFT is in relation to the video and PIT array in the PR left bank ladder.

Nordlund raised the issue of potentially making modifications to the flume system to reduce the amount of holding/swimming upstream, as well as fish entering the reservoir tail first. Possible ideas raised by Nordlund included adjusting the weir plate and drilling holes in the flume to reduce the amount of water. The PRCC decided that no changes would be made to the flume system at this time and requested that they be addressed when the spiral chute is installed. Dresser will get a hard installation date for the spiral chute from Grant PUD Engineers. Installation of the spiral chute is expected to be 2-3 days.

Dresser reported that the Wanapum Right Bank Ladder was watered up at 11:00 a.m., Saturday, April 26th.

IV. Next Meeting – May 28, 2014, SeaTac Radisson Hotel Boardroom

Appendix H
Recommended Conservation Measures by the USFWS and NOAA Fisheries Summary Response

#	Conservation Measure	Agency	Date	Meeting	Not Meeting	N/A	Comments
1	From the Service's perspective, the most important aspect of this emergency response is speed. The faster river levels are returned to normal, the sooner fish passage and normative habitat conditions will exist. In addition, hydrologic impacts to Northern Wormwood will be minimized as compared to this extreme drawdown of the Columbia River. As such, the Service would endorse a 24-hour daily work period if desired by FERC and Grant PUD. However, working at night and over a 24-hour period introduces safety hazards. The Service suggests that FERC and Grant PUD carefully balance these concerns but always air on the side of safety.	USFWS	3/28/2014	X			Grant PUD is working as fast as possible to identify both the root cause and potential repair for the monolith, and when safe is working 24 hours per day, 7 days per week.
2	One adult upstream fishway should remain open during trap and transport operations to facilitate volitional upstream passage.	USFWS	3/28/2014	X			Per a decision by the PRCC, which includes a representative from the USFWS, the right bank fish ladder at Priest Rapids is open and being operated at ladder flow. This means that no fish attraction flow is added to the fishway. The decision to operate the right bank at Priest Rapids at ladder flow was made by the PRCC in an attempt to facilitate fish passage at the left bank of Priest Rapids Dam. This effort is necessary to increase numbers of fish for tagging purposes necessary to evaluate the Wanapum Fishway Exit Passage Systems and agreed upon by the PRCC. The PRCC has agreed to revisit on a weekly basis. This was discussed and agreed upon during the PRCC meeting on 4/4/2014 and 4/14/2014.
3	We recommend volitional passage as the primary method of conveying bull trout through the Project.	USFWS	3/28/2014	X			Grant PUD has installed Fishway Passage Systems at both the left and right bank at Wanapum Dam. To provide volitional passage through the Project. Until “proof of concept” evaluations are complete and/or the PRCC determines that safe and sufficient passage has been achieved through the modified ladders, the trap and transport procedure will be implemented.
4	If volitional upstream fish passage is not successful at Wanapum or Rock Island dams, bull trout incidentally encountered during trap and transport activities should be separated from other fish species at the OLAFT and transported in specialized coolers to minimize impacts during transport and release above the Rock Island Dam. Coolers should be equipped with appropriate temperature regulation (≤ 5°C), aeration, and transport of fish should not exceed 4 hours.	USFWS	3/28/2014		X		Per the trap and transport standard operating protocol (SOP) developed by the Washington Department of Fish and Wildlife and Grant PUD, a SOP has been included specifically related to bull trout (Appendix A; Section 5, Page 4). Once a bull trout is identified from the sorting flume, it would be placed within a self-contained perforated transport tube and placed with the loading fish transport truck. At the release location (Rocky Coulee), the bull trout would be released prior to other target species. This method would allow for isolation from other target species within the fish transport truck. A datasheet has been developed for each bull trout transported, which includes information on DO and water temperature prior to loading, after loading and at release.

5	Numerous bull trout occupy the upper Wanapum Reservoir within close proximity to the tailwater of the Rock Island Dam. For example, approximately 50-120 bull trout pass upstream through the fishways at Rock Island, primarily through the right bank fish ladder (RPE entrance). Please coordinate with Chelan PUD to ensure sufficient tailwater elevations that facilitate the operation of the adult upstream fishways (and their associated modifications) at the Rock Island Dam for bull trout as well as the other fish species contemplated herein.	USFWS	3/28/2014	X			Grant PUD is coordinating with Chelan PUD (minimum once/week); currently the Rock Island upstream fish passage facility is operational given Wanapum Dam's current operation range.
6	Please note condition, length, and life history stage of all bull trout encountered during the proposed modifications and their associated implementation.	USFWS	3/28/2014		X		Per the trap and transport standard operating protocol (SOP) developed by the Washington Department of Fish and Wildlife and Grant PUD, a SOP has been included specifically related to bull trout (Appendix A; Section 5, Page 4). Once a bull trout is identified from the sorting flume, it would be placed within a self-contained perforated transport tube and placed with the loading fish transport truck. At the release location (Rocky Coulee), the bull trout would be released prior to other target species. This method would allow for isolation from other target species within the fish transport truck. A datasheet has been developed for each bull trout transported, which includes information on DO and water temperature prior to loading, after loading and at release. Due to the volume of anticipated returning target species, it is unlikely that this specific data could be collected in a timely manner without disrupting the trap and transport process.
7	Due to the high level of noise emanating from the diesel pumps designed to supply the 40 cfs of water to the false weir, we recommend locating these pumps away from the exits of the adult upstream fishway to minimize auditory impacts to fish species, including bull trout	USFWS	3/28/2014	X			Grant PUD has installed 4 - 90hp electric pumps near each fishway exit. Diesel pumps are not being used.
8	Heavy equipment operating within or adjacent to surface water should replace hydraulic fluid with vegetable oil to minimize the consequence of spills and accidental releases.	USFWS	3/28/2014		X		Given the nature of the emergency, Grant PUD is not able to assess the feasibility of using vegetable oil in the heavy equipment working adjacent to surface water. Currently, the only heavy equipment operating adjacent to surface water are the transport trucks at the release site, and spill clean-up kits are available if needed.
9	All refueling should take place 100 feet away from surface water and wetlands. A spill prevention plan should be in place and all required materials should be on site for immediate deployment.	USFWS	3/28/2014	X			Grant PUD's existing Priest Rapids Dam SPCC Plan covers any potential spills on-site, and spill kits have been placed near re-fueling areas.
10	Utilize wash racks for vehicles entering and leaving the work area to minimize the spread of noxious weeds.	USFWS	3/28/2014			X	Access points are currently paved and thus need for wash racks is not applicable

11	Re-vegetation of the riparian and upland areas should be done to the degree possible to facilitate infiltration, reduce erosion, prevent the spread of noxious weeds, and aid in the restoration of the vegetative community.	USFWS	3/28/2014			X	To date no vegetation is being removed for this work.
12	While we understand that the designs for modifying the off ladder adult fish trap (OLAFT) are preliminary, and expect that you will continue to engage our fish passage engineers and the PRCC to the best of your ability as designs move forward, we suggest that you take care not to drop fish in the transport tanks such that they are slammed into the tank walls. The current design suggests that this may happen.	NOAA	3/18/2014	X			Weekly coordination with the PRCC and NOAA engineers is on-going.
13	We recommend that you limit the amount of time that fish are held in the transport tanks to 4 hours, i.e., 4 hours from the time the last fish is loaded to offloading upstream.	NOAA	3/18/2014	X			Currently, the total length of transport time from the OLAFT to Rocky Coulee release point in the Wanapum Reservoir has averaged less than 4 hrs.
14	The use of an average weight of 10 pounds for adult spring Chinook may be too small for calculation of load densities. We suggest using an average weight of 14 pounds for calculating load density.	NOAA	3/18/2014	X			To calculate fish loading densities, Grant PUD is using an average weight of 14 pounds for spring Chinook. Detailed information on fish loading densities be reviewed in the Section 9 (page 5) of the trap and transport standard operating protocol (SOP). The Trap and Transport SOP can be reviewed in full in Appendix A of the Interim Fish Passage Operation Plan – Status Update dated May 1, 2014.
15	We recommend that, if possible, collection of brood stock or test fish for research purposes be eliminated or limited as much as possible at the OLAFT. We are concerned that activities around the OLAFT could slow or stop adult fish from entering the trap and create significant delay.	NOAA	3/18/2014	X			Comment Noted. Currently activities at the Priest Rapids off-Ladder Adult Fish Trap are limited to the evaluation necessary for “proof of concept” of the Wanapum Fishway Passage Systems and Trap and Transport activities.
16	As previously mentioned, we expect you to continue to engage our fish passage engineers and the PRCC to the best of your ability as designs and plans for modifying the Wanapum Dam fish ladders move forward. We prefer that Grant PUD, as soon as practicable, design and install an extension to the flume leading from the ladder exits down to the Wanapum forebay. As currently designed, a free fall of 9 to 11 feet could result in injury. We suggest that the flume extend to a point where fish are limited to a maximum free fall of 4 feet. This flume should also be designed to handle large numbers of fish as could be expected during the sockeye salmon run.	NOAA	3/18/2014	X			Grant PUD has been communicating at least weekly with the NOAA Fisheries passage engineer assigned to this project. In addition, Grant PUD is conducting weekly briefing conference calls with external interested stakeholders, which has included PRCC members and the NOAA-Fisheries fish passage engineer. In regards to the spiral chute recommended by NOAA-Fisheries, Grant PUD is currently having that manufactured and expects it to be delivered on site approximately mid-May. Once it arrives, Grant PUD will consult with NOAA-Fisheries and the PRCC to determine if installation is still deemed necessary. At this time, no instantaneous mortalities or stunned fish have been observed as a result of exiting the existing flume at 9-13 ft.
17	As a conservative approach, we recommend that the OLAFT modifications remain in place until we are certain that the Wanapum fish ladder modifications are working as designed, and suggest that the trap and haul be conducted on alternate days until we know that fish are safely passing Wanapum Dam and Rock Island Dam.	NOAA	3/18/2014	X			Comment Noted. Currently WDFW and Grant PUD are conducting trap and transport activities on a daily base per the trap and transport SOP (Appendix A). Preliminary information presented to the PRCC on 4/21/2014 in a PowerPoint (Appendix B) indicates that the Fishway passage Systems at Wanapum and Rock Island are passing fish successfully.
18	When it is established that the fish ladders at Wanapum and Rock Island Dams are functioning properly, the trap and haul effort can cease and at that point all fish ladders should remain open.	NOAA	3/18/2014	X			Comment Noted

Appendix I
Agency, Tribal and Interested Stakeholder Communication and Consultation Record Related to Wanapum Fish Passage and Interim Fish Passage Operations Plan (March 17, 2014 through April 28, 2014)

Date	Communication Type	Topic	Stakeholders
3/17/2014	Conference Call	Joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans.	Anchor QEA, LLC (Anchor), Chelan PUD, Columbia River Intertribal Fish Commission (CRITFC), Confederated Tribes of the Colville Reservation (CCT) Fish Passage Center (FPC), NOAA-Fisheries, USFWS, WDFW, Yakama Nation, DRohr and Associates (DRohr), Grant PUD
3/18/2014	Meeting	Overview of fish passage issues at Wanapum Dam, Priest Rapids Off Ladder Trap and Transport.	Wanapum Band
3/18/2014	Conference Call	Overview of fish passage issues at Wanapum Dam, Priest Rapids Off Ladder Trap and Transport.	Bonneville Power Administrative (BPA)
3/21/2014	Meeting	Overview of fish passage issues at Wanapum Dam, Priest Rapids Off Ladder Trap and Transport.	Yakama Nation
3/24/2014	Conference Call	Joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans.	Anchor, Chelan PUD, CRITFC, CCT, Drohr, FPC, NOAA-Fisheries, USFWS, WDFW, and Grant PUD
3/26/2014	Meeting	Status update on progress and implementation of the Wanapum Interim Fish Passage Operations Plan. Discussion of conducting a survival evaluation on Wanapum reservoir to inform the emergency ESA consultation process.	PRCC
3/31/2014	Conference Call	Joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans.	Anchor, BPA, US Bureau of Reclamation (USBOR), Chelan PUD, Douglas PUD, CRITFC, Drohr, FPC, NOAA-Fisheries, USFWS, WDFW, Washington Department of Ecology (WADOE) and Grant PUD
4/1/2014	Meeting	Overview of fish passage issues at Wanapum Dam, Priest Rapids Off Ladder Trap and Transport.	Fall Chinook Working Group
4/1/2014	Meeting	Overview of fish passage issues at Wanapum Dam, Priest Rapids Off Ladder Trap and Transport.	CCY Tribal Council and Natural Resources Committee.

4/2/2014	Meeting	Overview of fish passage issues at Wanapum Dam, Priest Rapids Off Ladder Trap and Transport.	Priest Rapids Fish Forum[1]
4/3/2014	Conference Calls	Individual calls with members of the PRCC to discuss Statement of Agreement 2014-02 (SOA 2014-02). This SOA documented the evaluations that would be conducted in 2014.	PRCC
4/4/2014	Conference Call	Review, Discussion and Approval Statement of Agreement 2014-02 (SOA 2014-02). This SOA documented the evaluations that would be conducted in 2014.	PRCC
4/7/2014	PRCC-HCP Conference call	Joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans	Anchor, BPA, Chelan PUD, CRITFC, DRhor, FPC
4/7/2014	Tour	Site tour to view construction and implementation activities associated with the installation of the Wanapum Left-Bank Fishway Exit Passage System, Wanapum Future Unit Bypass, Priest Rapids Off-Ladder Adult Fish Trap modifications and Priest Rapids Top-spill Bypass.	External Stakeholder Groups from region.
4/10/2014	Meeting	Status update on progress and implementation of the Wanapum Interim Fish Passage Operations Plan.	Earth Justice, American Rivers, Association of Northwest Steelheaders
4/14/2014	PRCC-HCP Conference Call	Joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans.	Anchor, BPA, Chelan PUD, CCT, CRITFC, DRhor, FPC, NOAA-Fisheries, US Army Corps of Engineers (USCOE), USBOR, USFWS, WDFW, WADOE, YN, and Grant PUD
4/14/2014	Conference Call	Decision on operations of Priest Rapids right-bank ladder operations (ladder flow only) and approval by a majority vote on criteria used to evaluation "proof of concept" of Wanapum Fishway Exit Passage Systems (see Section 5 above and Appendices B, C & D).	PRCC
4/16/2014	Tour	Site tour to view passage of adult spring Chinook and steelhead at the Wanapum Left-Bank Fishway Exit Passage System.	NOAA-Fisheries and CRITFC
4/18/2014	Tour	Site tour to view passage of adult spring Chinook and steelhead at the Wanapum Left-Bank Fishway Exit Passage System.	Yakama Nation
4/21/2014	Conference Call/WebEx	Joint PRCC-HCP meeting to provide updates on the Wanapum Fishway Exit Passage System Operations, fish behavior data, travel time and conversion rates.	Anchor, BPA, Chelan PUD, CCT, CRITFC, DRhor, FPC, NOAA-Fisheries, US Army Corps of Engineers (USCOE), USBOR,

[1] Priest Rapids Fish Forum includes representatives from the Washington Department of Fish and Wildlife, Confederated tribes of the Colville reservation, Yakama Nation, USFWS, Wanapum,

			USFWS, WDFW, WADOE, YN, and Grant PUD
4/21/2014	Conference Call/Web-ex	Status update on progress and implementation of the Wanapum Interim Fish Passage Operations Plan.	PRCC
4/22/2014	Conference Call	Status update on Wanapum Spillway Monolith No. 4 fracture activities.	PRCC
4/23/2014	Meeting	Status update on passage of adult spring Chinook and steelhead at the Wanapum Left-Bank Fishway Exit Passage System and activities at Priest Rapids Off Ladder related to Trap and Transport.	Wanapum Band
4/24/2014	Conference Call	Status update on passage of adult spring Chinook and steelhead at the Wanapum Left-Bank Fishway Exit Passage System and activities at Priest Rapids Off Ladder related to Trap and Transport.	Upper Columbia River Salmon Recovery Board
4/24/2014	Tour	Tour of Wanapum Left-Bank Fishway Exit Passage System and activities at Priest Rapids Off Ladder related to Trap and Transport.	Yakama Nation Tribal Council
4/28/2014	PRCC-HCP Conference Call/WebEx	Joint PRCC-HCP meeting to provide updates on the Wanapum Fishway Exit Passage System Operations, fish behavior data, travel time and conversion rates.	Anchor, BPA, Chelan PUD, CCT, CRITFC, DRhor, FPC, NOAA-Fisheries, USBOR, USFWS, Save our Salmon, WDFW, WADOE, Confederate Tribes of the Umatilla Reservation (UCTIR) and Grant PUD
4/28/2014	Conference Call	Status update on progress and implementation of the Wanapum Interim Fish Passage Operations Plan. Discussion on ladder operations at Priest Rapids Dam.	PRCC