Grant County
PUBLIC UTILITY DISTRICT

Connecting Generations
Since 1938

VIA ELECTRONIC FILING

September 12, 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 Third 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) Third 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.*

Grant PUD filed its first and second monthly Interim Operation Reports on May 1 and June 6, 2014, respectively. In the June 6 report, Grant PUD proposed a reporting schedule other than monthly. FERC concluded in a letter dated July 3, 2014 that changing the due date of the next Interim Operation Report to September 12, 2014 was reasonable so Grant PUD could include complete summer fish passage information. This status update provides specific details on the following:

- Status of the Wanapum Dam fishways Modifications;
- Adult Salmonid Passage Status Update;
- Adult Pacific lamprey Plan – Status Update;

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

- Juvenile salmonid and steelhead monitoring and evaluation.

Grant PUD is proposing that the due date for the next status report be on November 21, 2014. The November 21, 2014 status report would allow Grant PUD the opportunity to provide a complete summary of passage information related to adult fall Chinook, coho, adult lamprey passage and final result of the juvenile salmonid survival evaluation associated with the drawdown of Wanapum reservoir. The post November 21, 2014 status report schedule will be dependent on the status of the Wanapum Spillway repair schedule and the expected length of time that the IFPOP will still be applicable, and if so any modifications to the IFPOP that will be needed during the spring passage season if applicable.

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

Sincerely,

R-7

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

September 12, 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 had been lowered to a safe operating elevation range between 545 feet and 541 feet. As a result of the drawdown, the fish ladder exits at Wanapum Dam were dewatered, preventing upstream migrating fish from passing Wanapum

Dam. Both fish ladders at Priest Rapids Dam are operational and were not impacted as a result of the Wanapum Reservoir drawdown.

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

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

Grant PUD filed its first and second monthly Interim Operation Reports on May 1 and June 6, 2014, respectively. In the June 6 report, Grant PUD proposed a reporting schedule other than monthly. FERC concluded in a letter dated July 3, 2014 that changing the due date of the next Interim Operation Report to September 12, 2014 was reasonable so Grant PUD could include complete summer fish passage information. This status update provides specific details on the following:

- Status of the Wanapum Dam fishways Modifications;
- Adult Salmonid Passage Status Update;
- Adult Pacific lamprey Plan – Status Update;
- Juvenile salmonid and steelhead monitoring and evaluation.

The Wanapum Fishway Exit Passage Systems have performed extremely well since installation in April 2014. As of this report, 706,802 (as of September 8, 2014) spring and summer Chinook, sockeye and steelhead have successfully migrated past the Wanapum Fishway Exit Passage Systems installed at Wanapum Dam to provide safe, efficient and effective passage (based on Rock Island fish counts). Adult sockeye salmon have accounted for more than 82% (n=580,050) of the adult salmonid migrating over Wanapum Dam. No mortalities, injuries or stunned adult salmonids or steelhead have been observed since the WFEPS were installed and in operation at Wanapum Dam.

A total of 6,121 adult Pacific lamprey have been documented passing the Priest Rapids Dam fishways via the video fish count stations (as of September 8, 2014). Grant PUD has been able to trap and transport 2,127 lamprey; approximately 35% of the lamprey migration observed passing through the video fish count stations at Priest Rapids Dam. In addition, another 2,310 adult lamprey have been documented volitionally passing through the Rock Island fishways; lamprey which have also passed through the WFEPS at Wanapum Dam. Based on this, it is estimated that approximately 72.5% of the lamprey observed at the Priest Rapids Dam video fish

count stations have either volitional migrated through the Priest Rapids Project or been transported upstream via the trap and transport program implemented by Grant PUD.

The downstream migration performance standard requirement for the Priest Rapids Project is 86.49% for both ESA-listed and non ESA-listed species per the 2008 NOAA-Fisheries Biological Opinion and Priest Rapids Salmon and Steelhead Settlement Agreement. Preliminary data presented to the PRCC (July 23, 2014) and at PRCC-HCP attendees on July 28, 2014 clearly indicates that passage survival through the Project exceeds the 86.49% project standard for both yearling Chinook and juvenile steelhead. The preliminary survival estimate for yearling Chinook is 90.5%, which is approximately 3.94% higher than what was observed during survival evaluation conducted in 2003, 2004 and 2005 (86.56% - three year consecutive average). The preliminary survival estimates for juvenile steelhead is 88.3%, a substantial increase from what had been observed during previous evaluations (2008-2010), in which the average of a three consecutive years of evaluation yielded a juvenile steelhead survival; rate of 81.05%.

Although more analysis is necessary to determine route specific survival at Wanapum and Priest Rapids Dam (bypasses, turbines and/or spillways), preliminary information indicates that survival at both dams for yearling Chinook and juvenile steelhead is greater than 95%. For example, yearling Chinook survival at Wanapum and Priest Rapids Dams was 96.9% and 95.3% respectively. Meanwhile preliminary survival estimates for juvenile steelhead at Wanapum and Priest Rapids Dam was also greater than 95% (96.8% and 95.2% respectively).

Table of Contents

List of Figures

List of Appendices

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.

Grant PUD operates the Project through the coordinated operation of the seven-dam system of the mid-Columbia River 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 (HRFCPPA), 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 on 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 4 at Wanapum Dam. A fracture opened on the upstream face of the structure approximately 2 inches high by 65 feet. 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 of Wanapum monolith 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 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 560-562 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 drawdown.

Grant PUD submitted an Interim Fish Passage Operations Plan (IFPOP) to the FERC on March 21, 2014 and FERC issued an order approving the IFPOP on March 26, 2014. Grant PUD filed its first and second monthly Interim Operation Reports on May 1 and June 6, 2014, respectively. In the June 6 report, Grant PUD proposed a reporting schedule other than monthly. FERC concluded in a letter dated July 3, 2014 that changing the due date of the next Interim Operation Report to September 12, 2014 was reasonable so Grant PUD could include complete summer fish passage information. This status update provides specific details on the following:

- Status of the Wanapum Dam Fishways Exit Passage Systems;
- Adult Salmonid Passage Status Update;
- Adult Pacific lamprey Plan – Status Update;
- Juvenile salmonid and steelhead monitoring and evaluation.

2.0 Status of Wanapum Dam Fishways Exit Passage Systems

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 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). The weir boxes were installed near the exit of each ladder and are supplied with approximately 40 cfs of water via four 90 horsepower (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 – 13 feet depending on current reservoir pool fluctuations.

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. No fish passage issues were documented for the spring Chinook.

After a large passage event of adult spring Chinook on May 7 and May 8 (~2000 fish), it was documented by observers stationed at the LB-WFEPS that 3-4 vanes within the flume system

had loosened and that lateral movement (1-1.5 inches) was occurring when a fish bumped into a vane. NOAA Fisheries staff was immediately notified of the situation and informed that fish passage was not being immediately impacted nor were fish being injured.

On a May 9, 2014 conference call with the Priest Rapids Coordinating Committee (PRCC), Grant PUD proposed repairs to all the vanes on the flume for both the LB and RB-WFEPS. This basically entailed installing angular steel on either side of each vane for ~6 feet. The angular steel was welded to the top of the weir box (all welds were ground smooth and covered with silicone) and attached to the vanes via hardware. Repairs were made completed at the LB-WFEPS on May 10, 2014. Repairs to the RB-WFEPS were completed on June 3, 2014.

Since submittal of the June 6, 2014 status report; Grant PUD per consultation and support of NOAA Fisheries, USFWS and PRCC has installed spiral chutes, protective jump curtains, and lamprey plating at both the LB and RB-WFEPS. Installation of the left and right bank spiral chutes were completed on June 12 and June 19, 2014, respectively. The spiral chutes were installed to deliver fish passing the WFEPS closer to the water surface of the forebay (approximately 2-5 feet; Figure 1).

Protective jump curtains were installed to prevent fish from jumping out of the WFEPS (mainly adult sockeye salmon). The protective jump curtain included the installation of a poly-vinyl-rubberized curtain attached to the concrete at the top end and to the vanes at the bottom end for approximately an 8 foot portion of the WFEPS. The curtain was also attached to the human access structure at the top of the handrail and the bottom of the walkway to create an area of fish jumping containment (Figure 2 and Figure 3). NOAA Fisheries, USFWS and the PRCC agreed and approved these modifications on May 19, 2014 (PRCC Meeting Minutes Dated May 19, 2014).

An approach ramp was installed at the LB-WFEPS to preclude potential jumping by adult salmonids (such as adult sockeye; Figure 4). The approach/anti-jump ramp is similar to the one that had been installed at the RB-WFEPS (June 12, 2014).

Figure 1 **Photograph of installed spiral chutes at the Left Bank and Right Bank Wanapum Fishway Exit Passage System. The spiral chutes were installed on the left and right bank fishway exit passage systems on June 12 and June 19, 2014, respectively.**

Figure 2 **Photograph of installation of jump curtain at the Left Bank Wanapum Fishway Exit Passage System.**

Figure 3 **Photograph of jump curtain installed at the Left Bank Wanapum Fishway Exit Passage System and the system in operation.**

Figure 4 **Approach ramp/anti jump ramp and lamprey ramp (upper right hand corner) installed at the Left bank Wanapum Fishway Exit Passage System. The approach ramp/anti jump ramp was installed on June, 12, 2014.**

To facilitate adult Pacific lamprey passage at both the Wanapum left and right bank ladders, perforated plating was added to the upper four foot section of the false weir floor and vein walls of the LB and RB WFEPS to preclude adult lamprey from attaching to the top of the false weir and/or vane walls and then returning back into the false weir pool (Figure 5). Small water pumps, hoses, and nozzles were also installed on the left and right banks to provide or a means to dislodge adult lamprey from attaching on to the ramp. For additional information on the adult lamprey passage plan, please refer to Section 3.0.

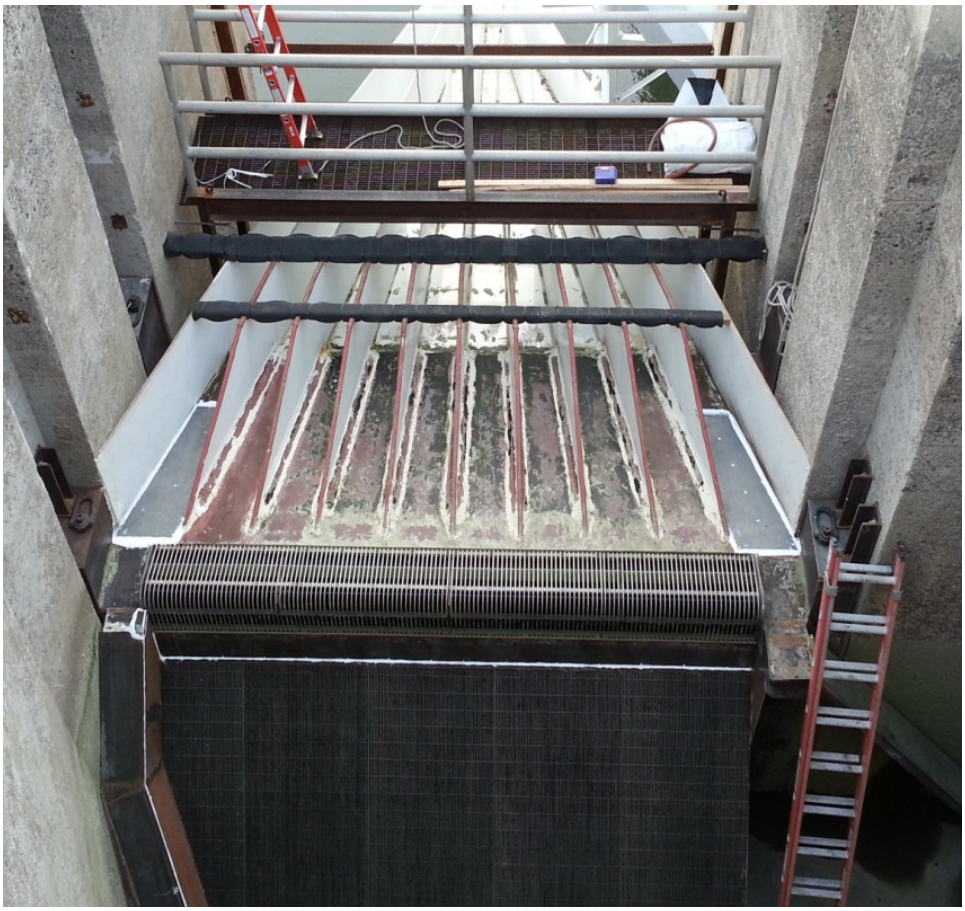


Figure 5 **Perforated plating added to the false weir floor and vane walls to preclude adult lamprey from re-ascending and reentering false weir pool. The perforated plating was installed on June, 12 (left bank) and June 19 (right bank), 2014.**

During this reporting timeframe, Grant PUD also had to replace one of the 90 Hp electrical pumps at the LB-WFEPS. On the evening of July 28, 2014 a single pump at the LB-WFEPS began tripping an electrical breaker. After inspecting and resetting, the pump and system was back on line and continued to operate. After a dive inspection and further inspection (on July 29), it was determined that the pump needed to be replaced. The pump was installed and the LB-WFEPS was brought back into operation on July 31, 2014. Total outage time was approximately 20 hours.

Aquatic vegetation has become an issue, resulting in the plugging of the intake screens on the four - 90 Hp pumps located at the LB-WFEPS (Figure 6). Since the last report submittal on June 6, 2014, the LB-WFEPS has had to be taken out of service on 15 separate occasions (July 9, August 5, 12, 14, 17, 21, 23 25, 27, 28, 29 and 31, and September 4, 6, and 8) for cleaning activities. In addition, the RB-WFEPS has been taken out of service for cleaning on 4 separate occasions (August 28 and September 2, 5 and 9, 2014).

Figure 6 Photograph of typical aquatic vegetation and debris that is removed from the pump intake screens or the auxiliary water supply system.

Typically, the outages last for <10 hours, which is the timeframe necessary from pump shutdown to the ladder being fully restored for fish passage. During the cleaning process, one fish ladder remains in operation and continues to provide fish passage. In additional to the pump intake screens becoming plugged, the auxiliary water supply (AWS) located at the left bank fish ladder of Wanapum needed to be cleaned (August 19, 2014). Cleaning of the AWS required a dive to a depth of 60' to clean the intake of debris and vegetation, which was causing a restriction of water flow to the left bank fish ladder. During cleaning of the AWS, the four 90 Hp pumps were maintained in operation to keep water flow through the fish ladder.

To address the continued buildup of aquatic vegetation and debris on pump screens, Grant PUD has implemented an aggressive cleaning schedule.. Currently, the LB-WFEPS pump screens are cleaned 3-4 times per week, while the RB-WFEPS pump screens are cleaned weekly. Grant PUD also conducts daily water level inspections and biological staff also conducts periodic underwater camera inspections to determine if debris buildup is occurring and if divers are necessary.

2.1 Wanapum Fishway Ladder Exit Passage System Inspections

Fishway ladder inspections of the Wanapum Fishway Exit Passage Systems (left and right bank) were conducted by Fish Passage Center and NOAA-Fisheries staff (separately or jointly) on April 15, May 7, May 15, May 21, June 4, June 15, June 18, July 2, July 23, and July 31, and August 20, 2014. On a single visit (June 18), the Wanapum Dam Right Bank fish ladder was found out of compliance, however it was due to a scheduled outage for the spiral chute installation. Fishways inspections have also occurred at the Priest Rapids fishways and no issues or concerns have been reported or documented.

2.2 Wanapum Dam Fishways Exit Passage System – Adult Summer Chinook, Sockeye, and Steelhead Monitoring

On May 19, 2014, NOAA Fisheries, USFWS, PRCC and Grant PUD agreed that Priest Rapids Fishways will be operated to fish passage criteria and sockeye, summer Chinook and steelhead will be allowed to migrate upstream volitionally (PRCC Meeting Minutes dated May 19, 2014).

The group also agreed that the primary criteria used to evaluate the effectiveness of the WFEPS will be through direct observations and that trap and transport will only a contingency plan, if failure were to occur on both fishways at Wanapum. No failures occurred at the Wanapum Dam fishways over this reporting date which required Grant PUD to resort to a trap and transport program for sockeye, summer Chinook or steelhead. The only major issues encountered over this reporting timeframe was the need to replace a single 90 Hp pump as discussed above at the LB-WFEPS (Section 2.0) and aquatic vegetation plugging pump screens and the auxiliary water supply at the Wanapum left bank fishway.

The Wanapum Fishway Exit Passage Systems have performed extremely well since installation in April 2014. As of this report, 706,802 (as of September 8, 2014) spring and summer Chinook, sockeye and steelhead have successfully migrated past the Wanapum Fishway Exit Passage Systems installed at Wanapum Dam to provide safe, efficient and effective passage (based on Rock Island fish counts). Adult sockeye salmon have accounted for more than 82% (n=580,050) of the adult salmonid migrating over Wanapum Dam as of September 8, 2014. No mortalities, injuries or stunned adult salmonids or steelhead have been observed since the WFEPS were installed at Wanapum Dam.

3.0 Pacific Lamprey Passage Plan – Status Update

Grant PUD provided a draft adult Pacific lamprey passage plan to the Priest Rapids Fish Forum (PRFF) for review on June 3, 2014. Minor comments were received from PRFF representatives, which were incorporated directly into the final lamprey passage plan (Appendix A).

The preferred passage approach of the lamprey passage plan was volitional passage through the existing fishways at Priest Rapids Dam and Wanapum Fishway Exit Passage Systems. Although preferred, Grant PUD realized that adult lamprey passage likely posed a challenge even with the modifications incorporated in the WFEPS (lamprey ramps, perforated plating, etc.). Therefore, in additional to volitional passage via the Priest Rapids fishways and WFEPS, Grant PUD implemented a trap and transport program for adult pacific lamprey. As detailed within the lamprey passage plan (Appendix A), adult lamprey were collected from the Priest Rapids and Wanapum dam fishways using tube traps strategically placed at various locations throughout the fishways at Priest Rapids and Wanapum Dams (Figure 7; Appendix A).

Figure 7 Adult Pacific lamprey tube traps used to collect lamprey from various locations within the fishways of Priest Rapids and Wanapum Dams, as part of the trap and transport program associated with the Wanapum Fracture.

Tube traps consisted of eight inch black or white plastic culvert material approximately five feet in length with large funnels on each end to deter fish from exiting the trap. The funnel end did not exceed two inches to prevent small salmonids (sockeye) from entering the traps. Traps were "seasoned" and hung for approximately two weeks prior to the initiation of trapping to reduce avoidance of material scent. The traps were tethered and deployed to the flooring of the ladder in two to three sections of each of the fish ladders at Priest Rapids and Wanapum dams beginning on July 1 with trapping scheduled to continue until mid-September (during the majority of the lamprey migration). Traps that routinely had a low catch per unit effort (CPUE) were moved to other potential higher CPUE areas.

In addition to the tube traps, Grant PUD also employed the use of four custom designed fixed site adult lamprey traps located at Priest Rapids Dam in the lower fishways that were developed and installed during 2009-2010(Figure 8 and Figure 9). These locations are the lowest feasible sites for trapping.

The fishway pool below the traps do not have diffusion grating so fish ascending the fish ladder are forced to pass over the weir wall. The orifice gate on the weir wall where the traps are located are closed during night-time trapping operations (20:00 hours and 04:00 hours) to maximize the catch efficiency, but remain open during the day-time period to facilitate passage for other fish. Grant PUD initiated operation of the traps on July1, 2014 on each of the left and right bank fishways

Figure 8 **Fixed site adult Pacific lamprey traps located and deployed in the fishways of Priest Rapids Dam. Lamprey traps used to collect lamprey migrating through the fishways of Priest Rapids, as part of the trap and transport program associated with the Wanapum Fracture.**

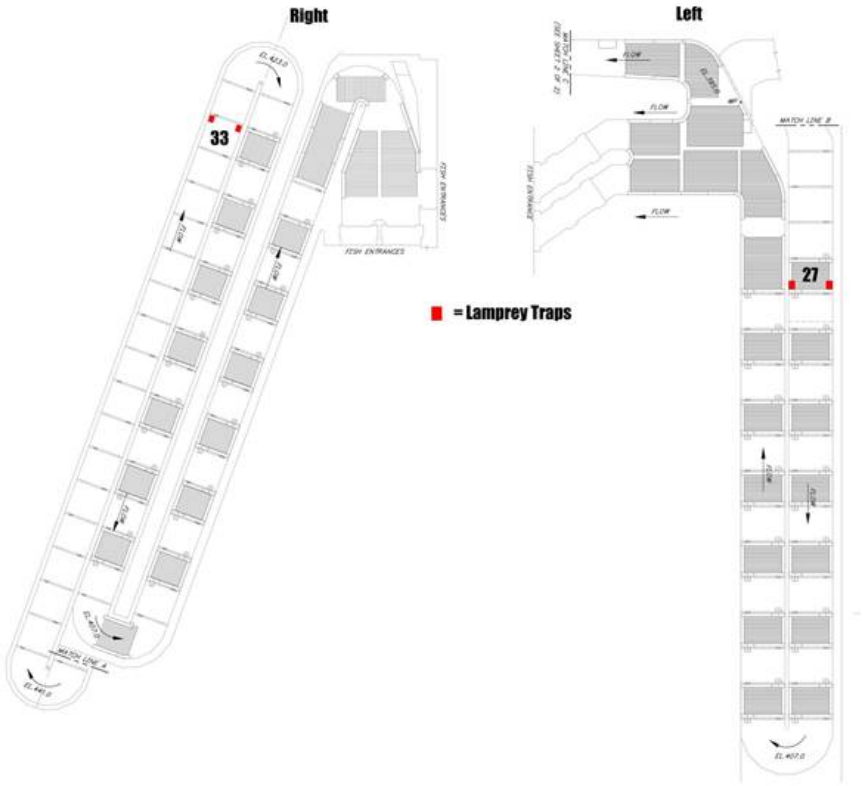


Figure 9 **Location of the fixed site adult Pacific lamprey traps in the fishways of Priest Rapids Dam. Lamprey traps used to collect lamprey migrating through the fishways of Priest Rapids, as part of the trap and transport program associated with the Wanapum Fracture.**

Adult lamprey that were collected were transported to the Wanapum Dam Fish Holding Facility located immediately downstream of Wanapum Dam on the right-bank and held until transport upriver to the Kirby Billingsley Hydro Park upstream of Rock Island Dam (~2 miles south of East Wenatchee, Washington). During transportation, Grant PUD Fisheries staff monitored dissolved oxygen, water temperature, and made periodic visual inspections.

3.1 Adult Pacific Lamprey Passage Plan - Results

A total of 6,121 adult Pacific lamprey have been documented passing the Priest Rapids Dam fishways via the video fish count stations (as of September 8, 2014). Of these migrating adult lamprey, Grant PUD has been able to trap and transport 2,127; approximately 35% of the lamprey migration observed passing through the video fish count stations at Priest Rapids Dam. In addition, another 2,310 adult lamprey have been documented volitionally passing through the Rock Island fishways. These are lamprey which have had to also passed through the WFEPS at Wanapum Dam. Based on this, it is estimated that approximately 72.5% of the lamprey observed at the Priest Rapids Dam video fish count stations have either volitionally migrated through the Priest Rapids Project or been transported upstream via the trap and transport program implemented by Grant PUD.

4.0 Juvenile Salmonid and Steelhead Evaluation

NOAA-Fisheries, the PRCC and Grant PUD agreed that a Wanapum Reservoir juvenile acoustic tag survival evaluation (presence/absence) was necessary to inform resource managers, tribal representatives and Grant PUD on the potential impacts on the juvenile salmonid and steelhead run at large under an emergency drawdown scenario, outside normal operating conditions. In addition, Grant PUD also conducted an evaluation to determine survival estimates for the Priest Rapids Reservoir and Priest Rapids Top-spill behavior and survival under normal operating conditions. This evaluation was agreed to and approved by the PRCC in November of 2012 and is described at the following link (Grant PUD 2013 Activities Under Priest Rapids Project).

The performance standard requirement for the Priest Rapids Project is 86.49% for both ESA-listed and non ESA-listed species per the 2008 NOAA-Fisheries Biological Opinion and Priest Rapids Salmon and Steelhead Settlement Agreement. Preliminary data presented to the PRCC (July 23, 2014) and at PRCC-HCP attendees on July 28, 2014 clearly indicates that passage survival through the Project exceeds the 86.49% project standard for both yearling Chinook and juvenile steelhead. Preliminary survival estimate for yearling Chinook is 90.5%, which is approximately 3.94% higher than what was observed during survival evaluation conducted in 2003, 2004 and 2005 (86.56% - three year consecutive average). The preliminary survival estimates for juvenile steelhead is 88.3%, a substantial increase from what had been observed during previous evaluations (2008-2010), in which the average of a three consecutive years of evaluation yielded a juvenile steelhead survival; rate of 81.05%.

Although more analysis is necessary to determine route specific survival at Wanapum and Priest Rapids Dam (bypasses, turbines and/or spillways), preliminary information indicates that survival at the dams for both yearling Chinook and juvenile steelhead is greater than 95%. For example, yearling Chinook survival at Wanapum and Priest Rapids Dams was 96.9% and 95.3% respectively. Preliminary survival estimates for juvenile steelhead at Wanapum and Priest Rapids Dam was also greater than 95% (96.8% and 95.2% respectively).

As stated above, the survival estimates are preliminary and further analysis is necessary. It is however believed that final estimates should increase slightly due to the fact that no correction factors (i.e. tag-life curve or detection efficiencies, etc.) have been incorporated into the calculations. Final analysis and survival estimates for yearling Chinook and juvenile steelhead will be completed and presented to the PRCC at the end of October 2014. Completed analysis will include survival estimates for the Priest Rapids Project, Wanapum and Priest Rapids Reservoir and Dams, Wanapum and Priest Rapids Dam and route specific survival. There may be some difficultly in teasing out specific route specific at Wanapum due to location of receivers.

5.0 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 B summarizes these phone conservations, conference calls, tours and meetings that Grant PUD has conducted since June 7, 2014 and September 5, 2014. The PRCC-HCP meeting summary for the September 8 meeting has not been finalized at this time and therefore will be included in the next status report. Meeting summaries and presentations related to joint briefing to the PRCC-HCP attendees related to the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plan can be reviewed in Appendix C and Appendix D, respectively. PRCC meeting minutes are provided in Appendix E. Presentations and meeting minutes related to information provided to PRFF, the Fall Chinook Working Group (FCWG), Coastal Conservation Association, and Priest Rapids Coordinating – Hatchery Subcommittee are located in Appendix F.

6.0 Recommended Conservation Measures Received from USFWS and NOAA Fisheries

Both NOAA-Fisheries (via email dated March 18, 2014) and the USFWS (via letter on March 28, 2014) provided recommended conservation measures related to the emergency ESA consultation process for the implementation of the IFPOP. In the May 1, 2014 Status Report, Grant PUD provided those recommended conservation measures and Grant PUD's response (e.g. meeting/not meeting with justification) to those measures in Appendix G. On May 21, 2014 NOAA-Fisheries provided recommended measures via letter that were consistent with the measures that were recommended via email on March 18, 2014. Since the recommended conservation measures were consistent with those already provided in Appendix G of the May 1, 2014 status report, no new recommended conservation measures were provided in the June 6, 2014 status report. No new recommended conservation measures have been provided since the June 6, 2014 status report and thus none are provided within this current report. Agency consultation via the PRCC, PRFF, FCWG, etc. during this reporting period is discussed in the sections above and is provided in the appendices.

7.0 Future Status Update Schedule

Grant PUD is proposing that the due date for the next status report be on November 21, 2014. The November 21, 2014 status report would allow Grant PUD the opportunity to provide a complete summary of passage information related to adult fall Chinook, coho, adult lamprey passage and final results for the juvenile salmonid and steelhead survival evaluation associated with the drawdown of Wanapum reservoir. The post November 21, 2014 status report schedule

will be dependent on the status of the Wanapum Spillway repair schedule and the expected length of time that the IFPOP will still be applicable, and if so any modifications to the IFPOP that will be needed during the spring passage season if applicable.

8.0 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 BiOps, SSSA, WDOE WQC, 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, design and current construction of the Priest Rapids Fish Bypass, and implementation of the various hatchery and habitat programs.

Appendix A
Priest Rapids Hydroelectric Project Interim Standard Operating Procedures for Volitional Passage and Trap and Haul of Pacific Lamprey in Response to Modifications to Wanapum Dam Adult Ladders

Priest Rapids Hydroelectric Project Interim Standard Operating Procedures for Volitional Passage and Trap and Haul of Pacific Lamprey Adults in Response to Modifications to Wanapum Dam Adult Ladders

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

June 27, 2014

Table of Contents

List of Figures

List of Appendices

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.

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 were dewatered, preventing upstream migrating fish from passing Wanapum Dam.

The fish ladder entrances at Wanapum remained operational, due to the tailwater elevation. At an elevation of 560-562 feet, the Wanapum Dam fish ladders exits would be able to be operated within criteria and without modifications.

Fishway Exit Passage Systems were installed at Wanapum Dam on April 15 (on left-bank) and April 26 (right-bank) and have been operational since. The Wanapum Fishway Exit Passage Systems (WFEPS) have successfully passed adult salmonids (spring Chinook), steelhead and other species (mountain white fish). To facilitate adult lamprey passage at the both the left and right bank fishways at Wanapum Dam; lamprey ramps were designed and incorporated into the WFEPS. A recent modification included the installation of perforated plate to preclude adult lamprey from attaching to the upper 3-4' of the WFEPS.

In additional to the volitional passage via the Priest Rapids fishways and WFEPS, the Public Utility District No. 2 of Grant County, Washington (Grant PUD) is preparing to trap and transport adult Pacific lamprey collected from Priest Rapids and Wanapum dam fishways and releasing them above Rock Island Dam at Kirby Billingsley Hydro Park approximately 2 miles south of East Wenatchee, Washington. While the preferred passage route for migrating adult lamprey is through the adult fish ladders under normal operation, the trap and transport reduces the potential migration delay and is a temporary solution for passage until the Wanapum Dam adult fish ladders are fully operational.

Based on previous years count data, Pacific lamprey typically begin arriving at Priest Rapids Dam in July (Figure 1). In preparation, Grant PUD, in coordination with the Priest Rapids Fish Forum (PRFF) will begin initiation of trap and haul activities on July 1 at Priest Rapids Dam and extend through September 1. Trapping at Wanapum Dam will begin on August 1, or after 10 or more adult lamprey have been counted passing the video count stations at Priest Rapids Dam for 5 consecutive days. These dates may be modified by the PRFF based on in-season counts and migration timing.

2.0 Trapping Methods

Grant PUD is proposing to fish adult lamprey tube traps (Figure 2) which have previously worked at Bonneville Dam and other small tributary dams by the Yakama Nation (YN) Fisheries and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR). The traps consist of 8 inch black or white plastic culvert material approximately five feet in length with large funnels on each end to deter fish from exiting the trap. The funnel end will not exceed 2 inches to prevent small salmonids (sockeye) from entering the traps. All traps will be "seasoned" and hung for approximately 2 weeks prior to the initiation of trapping to reduce avoidance of material scent. The traps will be tethered and deployed to the flooring of the ladder in two to three sections of each of the fish ladders at Priest Rapids and Wanapum dams July 1 through September 1 (during the majority of the lamprey migration). Traps that routinely achieve a low CPUE will be moved to evaluate potential higher CPUE areas. The proposed trapping locations will be determined by previous trapping efforts, the ability to access portions of the fish ladders at both dams, and the immediate downstream pool to each of the Wanapum false-weir locations. As trapping efforts progress, locations are contemplated to change based on real-time data and input provided by the PRFF members. The proposed locations at this time at each dam include the following;

1). Priest Rapids Dam – Left Bank Ladder (Appendix A)

a) Above the Adult Video Fish Count Station, or

b) Turning Pool downstream of the Off-Ladder Adult Fish Count Station, or

c) Upper pools downstream of the fish exit.

2). Priest Rapids Dam – Right Bank Ladder (Appendix A)

a) Second turning pool upstream of the fish ladder entrance, or

b) Turning Pool upstream of the Adult Fish Count Station, or

c) Upper pools downstream of the fish exit.

3). Wanapum Dam – Left Bank Ladder (Appendix B)

a) Above the Adult Video Fish Count Station, or

b) Upper pools downstream of the fish exit, or

c) Pool immediately downstream of the false-weir.

4). Wanapum Dam – Right Bank Ladder (Appendix B)

a) Above the Adult Video Fish Count Station, or

b) Upper pools downstream of the fish exit, or

c) Pool immediately downstream of the false-weir.

3.0 Collection

The adult lamprey tube traps will be checked daily by Grant PUD Fisheries staff. When traps are retrieved from the fish ladder, all adult Pacific lamprey will be carefully removed from the traps by placing and removing the funnel on either end of the trap over large coolers of oxygenated river water and allow collected lampreys to fall into the cooler volitionally. Direct placement into the coolers is expected to reduce handling. In the event that an attached lamprey is not easily removed, Grant PUD staff will be equipped with latex under cotton gloves and will manually remove the fish and place it into the cooler. Latex gloves are expected to reduce human and foreign scent when handling both fish and the traps.

Each cooler will be equipped with a dedicated aerator/stone and recessed with nylon mesh to prevent attachment. No cooler will contain more than 10 adults during collection or transportation. The number of fish to be transported in each cooler is proportionate to the size of cooler, using a ratio of 0.9 lbs. of fish per gallon of water. This density is based on the Washington Department of Fish and Wildlife and NOAA Fisheries recommendation for ESA-listed spring Chinook. Water temperature and DO mg/l will be frequently checked and fresh water added as needed to maintain water conditions are consistent with those parameters monitored in the fish ladder. If fish in a transport cooler are showing signs of stress (i.e., discoloration, “tipping,” potential lacerations, etc.), the cooler with stressed fish will be immediately transported to the Wanapum forebay at the Rocky Coulee Boat Launch, and fish released. Grant PUD Fisheries staff will be responsible for determining the optimal time for unloading based on fish health and maximum holding time. In the unlikely event that a juvenile

bull trout is collected in the traps, it will be immediately released upstream in the forebay of the respective dam in which it was collected.

After the traps have been checked at each dam, the coolers will be transported to the Wanapum Dam Fish Holding Facility located immediately downstream of Wanapum Dam on the right-bank. During transportation, Grant PUD Fisheries staff will monitor dissolved oxygen, water temperature, and make periodic visual inspections. A data sheet will be filled out daily that includes the number of fish transported, location where each fish was collected, location where fish were released, any mortalities, and any unusual fish behavior.

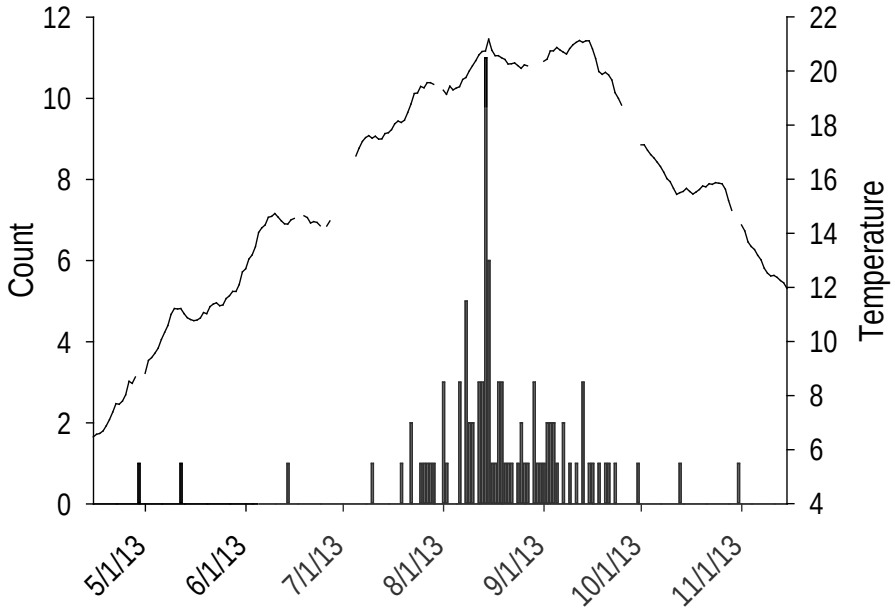


Figure 1 Pacific Lamprey run-timing at Priest Rapids Dam video counting stations during 2013.

4.0 Holding Facilities

The Wanapum Dam Fishtown is equipped with numerous holding tanks and dedicated water source and is seasonally used in support of Grant PUD's juvenile salmonid survival evaluations. Fish transported to Wanapum Dam Fishtown will be scanned for the presence of an Half Duplex PIT-tag and placed into one of the holding vessels until enough fish (10-20) warrant transportation to a release location, to be determined by the PRFF. Any HD PIT-tagged fish will be released into the Wanapum forebay or Rock Island forebay in support of monitoring upstream passage metrics evaluations.

Figure 2 Adult Lamprey Tube Traps (photos provided by R. Lampman – Yakama Nation Fisheries)

5.0 Transportation and Release

During transportation to the release location or holding areas, Grant PUD Fisheries staff will monitor DO levels and water temperature in the coolers or transport tank. Adjustments to oxygen flow meters will be made as necessary. Prior to release, staff will make observations to assess for signs of fish stress, such as belly-up, on-side position, or attachment with their heads above the water surface, and will measure and record water temperature and DO level in holding tanks. If 5% or more of the fish show signs of stress or mortality during any inspection they will contact the Field Supervisor.

If unexpected delays occur during transport, such as truck mechanical issues or emergency road closures, staff will inspect each transport vessel or cooler and measure and record water temperature and DO level for each and adjust oxygen flow meters as necessary. If prolonged transportation occurs, staff will add ice as necessary to maintain water temperature.

Immediately after arrival at the transfer destination, staff will inspect each transportation vessel or cooler of fish, and measure and record DO level and water temperature and adjust oxygen flow meters as necessary. If unexpected delays occur at the release site, staff will inspect the fish and measure and record DO and water temperature in each cooler every 30 minutes while standing by at the destination. Staff will measure and record the DO level and water temperature of the river. If transportation vessel/cooler temperature and river water temperatures differ by more than 3-degrees C, staff will consult with Field Supervisor prior to unloading and will add river water and ice as necessary to temper holding conditions in close proximity to river conditions. When temperatures are within 3-degrees C, staff will release the fish and visually

inspect and record their behavior on the data sheet. Staff will make every attempt possible to release the fish in the evening to reduce stress (pers. recommendation, CRITFC).

Release and potential overwinter holding locations are currently under consideration and have not yet been agreed upon by the PRFF. Potential release locations currently under review are at the Rocky Coulee Boat Launch, located approximately 8 miles upstream of Wanapum Dam, or above Rock Island Dam at Kirby Billingsley Hydro Park approximately 2 miles south of East Wenatchee. Potential locations for long-term holding (overwintering) for direct tributary release the following year are the YN Prosser Fish Facility in Prosser, and also the U.S. Fish and Wildlife Services Leavenworth Fish Hatchery.

6.0 Pacific Lamprey Volitional Passage Evaluation at WFEPS

In addition to trap and haul activities at both Priest Rapids and Wanapum dams, Grant PUD will be conducting other routine monitoring to ensure volitional passage including:

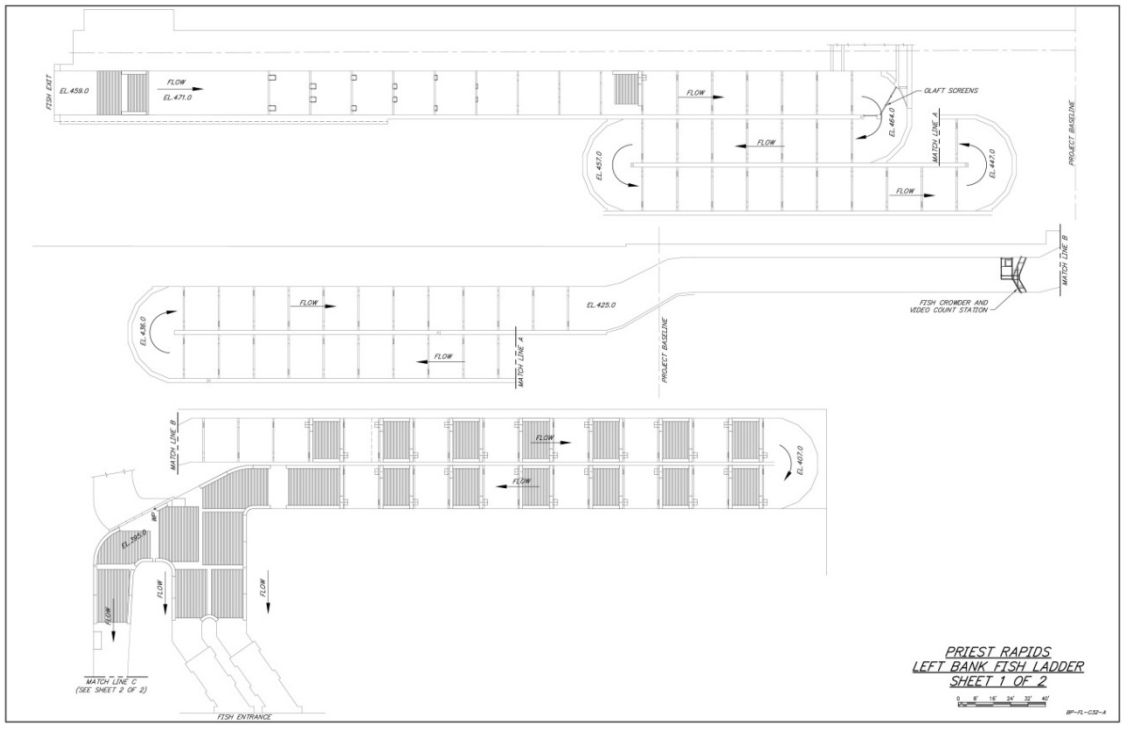
- Monitoring of its HD PIT detection arrays;
- Direct release of 20-30 HD PIT tagged fish translocated from Bonneville Dam directly into the fish ladder immediately downstream of the false weir at Wanapum Dam. Between 20 and 30 adult lamprey will be translocated by Yakama Nation Fisheries from Bonneville Dam to Wanapum Dam in mid-July. Fish will be held for 24 hours after transport at Wanapum Dam right bank fish holding facility and observed for signs of stress. Fish will then be anesthetized and implanted with HD PIT tags using standard methods. After tagging the fish will be held for 24 hours to allow for recovery then released at dusk into the Wanapum left bank fish ladder upper turning pool immediately downstream of the WFEPS. Video monitoring of the WFEPS will commence immediately after fish are released. The HD PIT station at the Wanapum Dam left bank fish ladder exit will be downloaded daily during the monitoring period to determine which of the experimental fish ascend to the vicinity of the WFEPS, or travel downstream in the fish ladder. Review of the night video will be determined by tag detection at the HD PIT station; i.e. time stamps of detection will inform similar time and review of the video data. Because these fish will have been transported and held for an extended period and are not considered to perform as “the run at large,” no quantitative measures or passage efficiency will be generated as a result of this test.
- Daily morning visual inspection of false weirs and slide for lamprey accumulation.
- Video monitoring will be used to assess lamprey passage and behavior over the false weir and approximately the first 10 feet downstream of the slide. In addition to continuing daytime effort to monitor the false weir for adult salmonid passage, two infrared-equipped cameras will be used to monitor lamprey behavior at the false weir during the night, when most passage is likely to occur. Two Canon XA10 HD camcorders, with additional illumination provided by a CMVision IR110 infrared light, will be used to monitor lamprey passage at the WFEPS and down the top portion of the slide structure (Figure 3). Night time video monitoring will occur from approximately 20:00 to 8:00 for 4-6 days immediately following release of translocated fish into the upper left bank fish ladder. This monitoring effort will serve to assess performance of ¼ inch raised perforated plate extension sections on the left and right sides of the descent ramp leading

to the spiral chute and a spray hose near the top of the false weir sill to deter attached adult lamprey and direct them into the Wanapum forebay.

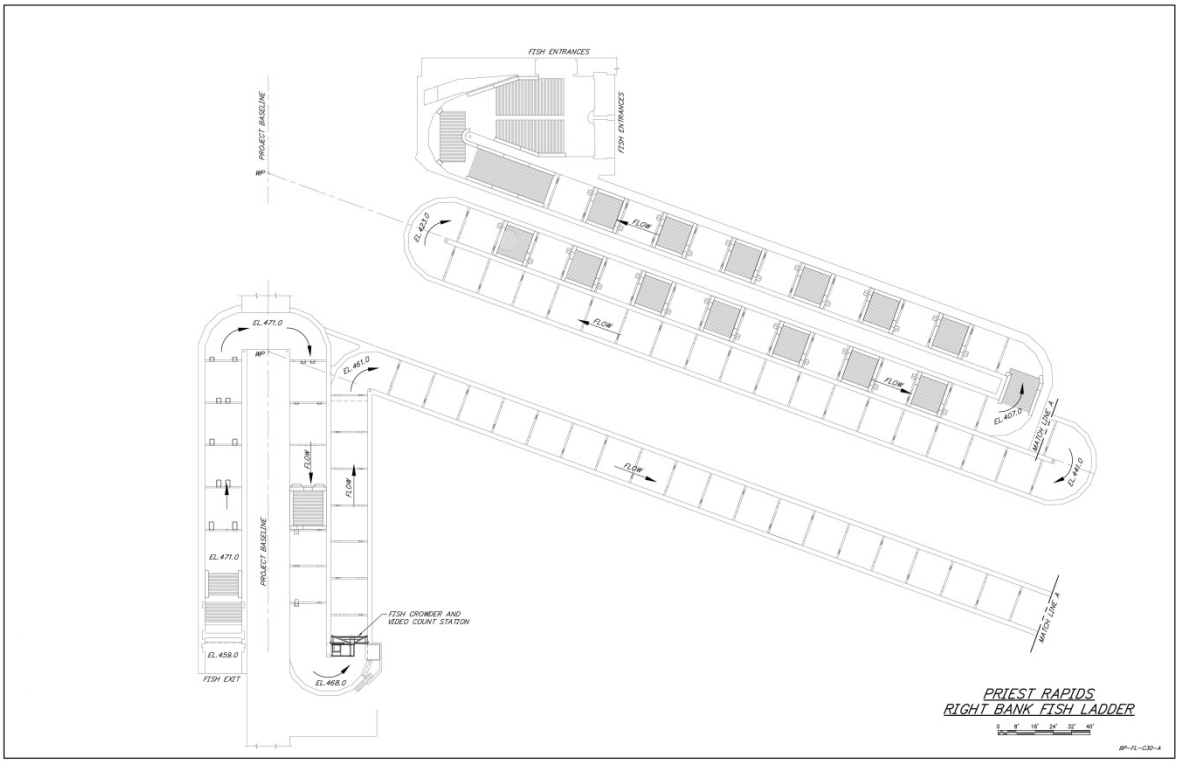
- Monitoring of potential areas of delay or accumulation of the WFEPS. Lamprey delay will be assessed by evaluating behavior at the WFEPS with video footage (failed attempts to ascend the ramps leading to the weir) and by calculating travel times for HD PIT tagged lamprey, using previous year's data to make comparisons for passage through the upper fish ladder.
- Maintain walkway access to address potential problems at the WFEPS.
- Dip-netting in the false weir box in the event lamprey accumulate and do not ascend over the sill.

Figure 3 **The Wanapum Fishway Exit Passage System (WFEPS) at the exit of the left bank fish ladder. Highlighted areas in red will be monitored with infrared-equipped high definition camcorders during the night after release of HD PIT tagged adult lamprey in the upper fish ladder in mid-July 2014.**

Appendix A
Priest Rapids Dam Left and Right Bank Fishways

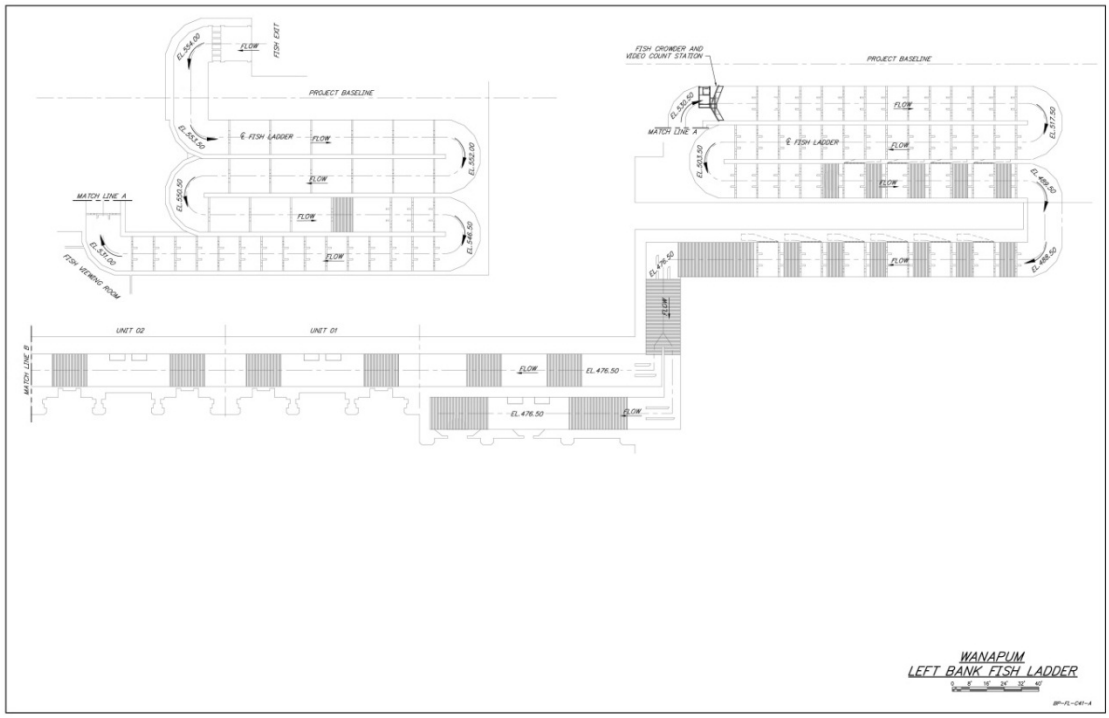


Priest Rapids Dam Left Bank Fish Ladder

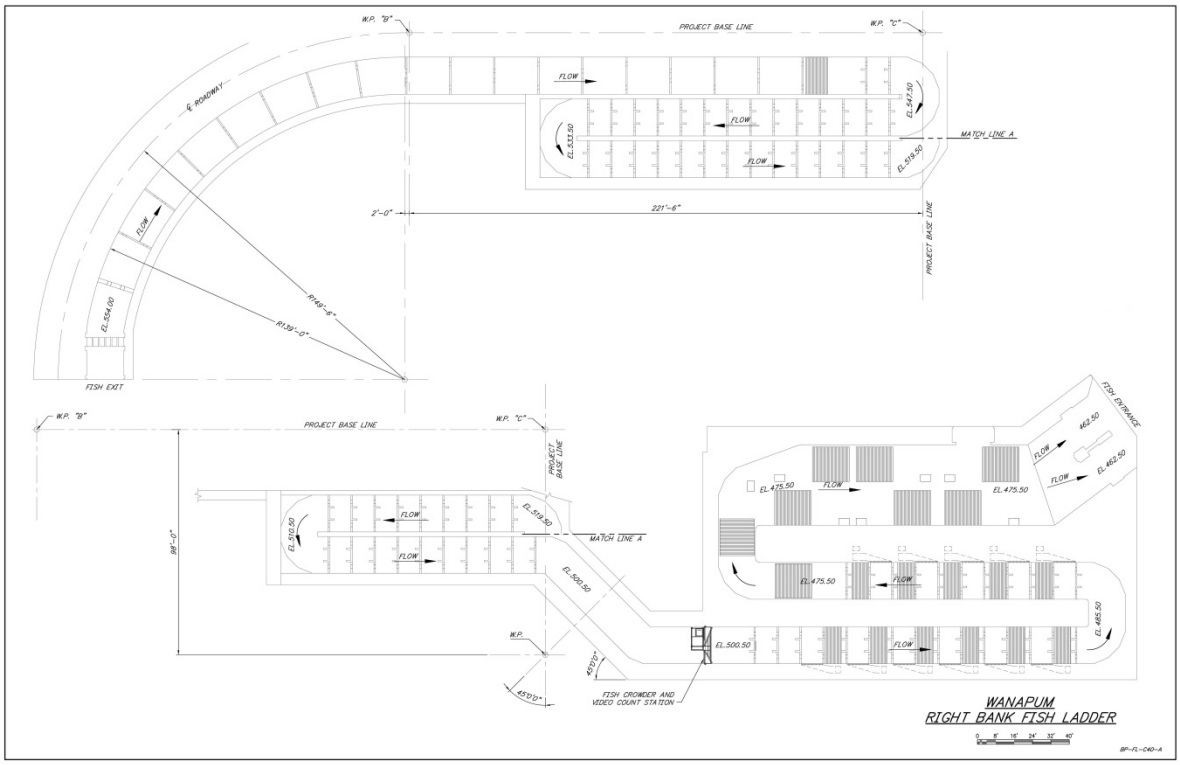


Priest Rapids Dam Right Bank Fish Ladder

Appendix B
Wanapum Dam Left and Right Bank Fishways



Wanapum Dam Left Bank Fish Ladder



Wanapum Dam Right Bank Fish Ladder

Appendix B
Agency, Tribal, and Interested Stakeholder Communication and Consultation Record Related to Wanapum Fish Passage and Interim Passage Operations Plan (June 7, 2014 through September 5, 2014

Agency, Tribal and Interested Stakeholder Communication and Consultation Record Related to Wanapum Fish Passage and Interim Fish Passage Operations Plan
June 7, 2014 through September 5, 2014

Date	Communication Type	Topic	Stakeholders
6/4/2014	Meeting	Discussion of draft Priest Rapids Hydroelectric Project Interim Standard Operating Procedures for Volitional Passage and Trap and Haul of Pacific Lamprey Adults in Response to Modifications to Wanapum Dam Adult Ladders	Priest Rapids Fish Forum
6/10/2014	Meeting	Status update of fish passage at Wanapum Dam.	Fall Chinook Working Group
6/11/2014	Conference Call	Discussion of modifications and incorporation of comments to the draft Priest Rapids Hydroelectric Project Interim Standard Operating Procedures for Volitional Passage and Trap and Haul of Pacific Lamprey Adults in Response to Modifications to Wanapum Dam Adult Ladders	Yakama Nation (YN), Columbia River Intertribal Fish Commission (CRITFC), Confederated Tribes of the Umatilla Indian Reservation, and Grant PUD
6/12/2014	Presentation	Status update on progress and implementation of the Wanapum Interim Fish Passage Operations Plan.	Coastal Conservation Association
6/16/2014	Conference Call/WebEx	Joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans.	Anchor QEA, Bonneville Power Administration (BPA), Chelan PUD, Colville Confederated Tribe (CCT), CRITFC, Denny Rohr and Associates (DRhor), Fish Passage Center (FPC), NOAA-Fisheries, US Fish and Wildlife Service (USFWS), Washington Department of Fish and Wildlife (WDFW), Washington Department of Ecology (WADOE) and Grant PUD
6/19/2014	Meeting	Status update of fish passage measure implemented at Wanapum Dam.	Priest Rapids Coordinating Committee – Hatchery Subcommittee
6/25/2014	Meeting	Status update of fish passage measures implemented at Wanapum Dam and adult lamprey passage plan.	PRCC
6/30/2014	Conference Call/WebEx	Joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans.	Anchor QEA, Chelan PUD, CCT, DRhor, NOAA-Fisheries, US Bureau of Reclamation (USBOR), USFWS, WDFW, WADOE, Yakama Nation (YN)

			and Grant PUD
7/1/2014	Meeting	Status update of fish passage measures implemented at Wanapum Dam.	Fall Chinook Working Group
7/2/2014	Meeting	Discussion and Finalization of the Priest Rapids Hydroelectric Project Interim Standard Operating Procedures for Volitional Passage and Trap and Haul of Pacific Lamprey Adults Plan	Priest Rapids Fish Forum
7/14/2014	Conference Call/WebEx	Joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans.	Anchor QEA, BPA, Chelan PUD, CCT, CRITFC, DRhor, FPS, NOAA-Fisheries, US Army Corps of Engineers (USCOE), USBOR, USFWS, WDFW, WADOE, and Grant PUD
7/23/2014	Meeting	Status update of fish passage measures implemented at Wanapum Dam and presentation of preliminary yearling Chinook and juvenile steelhead survival estimates.	PRCC
7/24/2014	Meeting	Status update of fish passage measures implemented at Wanapum Dam.	Priest Rapids Coordinating Committee – Hatchery Subcommittee
7/28/2014	Conference Call/WebEx	Joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans.	Anchor QEA, BPA, Chelan PUD, CCT, DRhor, FPS, NOAA-Fisheries, USBOR, USFWS, WDFW and Grant PUD
8/5/2014	Meeting and Presentation	Status update on adult lamprey passage measures implemented at the Priest Rapids Project	Priest Rapids Fish Forum.
8/11/2014	Conference Call/WebEx	Joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans.	Anchor QEA, BPA, Chelan PUD, CRITFC, DRhor, FPS, Northwest Power Planning and Conservation Council (NWPPCC), USFWS, WDFW and Grant PUD
8/25/2014	Conference Call/WebEx	Joint briefing on the progress and implementation of the Wanapum and Rock Island Interim Fish Passage Plans.	Anchor QEA, BPA, Chelan PUD, CRITFC, Confederated Tribes of the Umatilla Indian Reservation, DRhor, FPS, Northwest Steelheaders, USFWS, WDFW, WADOE and Grant PUD
8/27/2014	Meeting	Status update of fish passage measures implemented at Wanapum Dam and adult lamprey passage.	PRCC

Appendix C
Joint Briefing on the Progress and Implementation on the Wanapum and Rock Island Fish Passage Plans
Meeting Summaries

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:**	June 20, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris		
Re:	Final Summary of the June 16, 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, June 16, 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 (Tom Dresser)

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

Wanapum Fishway Exit Passage System Enhancements – Spiral Chute

Installation of the PRCC-approved spiral chute at the left bank Wanapum Dam Fishway Exit Passage System was delayed slightly due to windy weather conditions. However, last Friday, June 13, 2014, installation of the chute was completed, which now provides a 2- to 5-foot drop into the forebay (slides 2 and 3 of Attachment B).

Wanapum Fishway Exit Passage System Enhancements – Approach Ramp and Perforated Plate

Installation of the PRCC-approved approach ramp (left photograph on slide 4 of Attachment B), and perforated plate (right photograph on slide 4 of Attachment B) has also been completed at the left bank Wanapum Dam Fishway Exit Passage System. The purpose of the approach ramp is to limit sockeye jumping, and the purpose of the perforated plate is to minimize lamprey attaching to the flume. A walkway was also installed over the top of the flume system to provide human access, and foam padding was added to reduce the risk of fish injury.

Wanapum Fishway Exit Passage System Enhancements – Jump Curtain

Installation of the jump curtain at the left bank Wanapum Dam Fishway Exit Passage System was also completed on Friday, June 13, 2014 (slides 5 and 6 of Attachment B).

Conceptual Diagram of Proposed Spillway Repairs

Drilling of 83 holes in the Wanapum Dam grout gallery is completed. Drilling of the holes was required to check for seepage and cracks, and also for monitoring and evaluation efforts.

Wanapum Dam – Drill Work

Installation of platforms is underway on the forebay side of every pier (bottom left photograph on slide 8 of Attachment B). Drilling is also underway and is progressing better than expected: 4-inch pilot holes have been drilled in 10 of 12 monoliths to date. On May 29, 2014, Grant PUD submitted the Drill Plan and Tendon Installation Plan to the Federal Energy Regulatory Commission (FERC). As discussed during previous briefings, the Tendon Installation Plan proposes installing approximately 195-foot, 61-strand (10-inch-diameter bundle) pier tendons, with 100 feet of the tendon anchored into the bedrock. On June 3, 2014, FERC approved the Drill Plan; however, they did not yet approve installing the

tendons. Grant PUD may need to resubmit additional information for approval of installing the tendons.

Mobilization of large cranes via a barge system is underway on both the upstream and downstream sides of Wanapum Dam to serve as platforms to install the tendons. Grant PUD still anticipates achieving an intermediate pool raise by the fourth quarter of 2014. The intermediate pool raise elevation of 560 to 562 feet is being re-evaluated, and an expanded range is being considered because the refill scenario could negatively impact fall Chinook salmon in the Hanford Reach.

Adult Pacific Lamprey Passage Plan

Last week, the draft Adult Pacific Lamprey Passage Plan was distributed to the PRCC for review. Key components of the plan include volitional passage via the Priest Rapids fishways and Wanapum Fishway Exit Passage Systems, and collection and trap and transport. Some comments have already been received on the draft plan, and resolution still needs to be reached about when and where to trap and release lamprey. Grant PUD hopes to finalize the plan by the end of this week.

Next Steps

Next steps, as further described on slide 10 of Attachment B, include:

- Installation of the spiral chute and jump curtain at the right bank Wanapum Fishway Exit Passage System
- Development and finalization of the Adult Pacific Lamprey Passage Plan
- Conducting direct observations to evaluate adult sockeye, summer Chinook salmon, and steelhead passage at the Wanapum Fishway Exit Passage Systems (two observers will be stationed at both exits for 12-hour periods—one will focus on fish counts, and the other will focus on fish behavior)
- Evaluation of juvenile steelhead and yearling Chinook salmon data (last release was on May 28, 2014; need to retrieve receivers to download data)
- Coordination with Hydro Engineering on the proposed intermediate pool raise plan (need to provide the plan to the Board of Consultants [BOC] and FERC for review and

approval; already received comments from Bryan Nordlund [National Marine Fisheries Service] on staging and moving equipment)
- Coordination with Joe Taylor on reverse load factoring and the Hanford Reach
- Development of the next report, Interim Fish Passage Operation Plan, which is due to FERC by July 11, 2014

B. Questions (All)

Bryan Nordlund asked about the fourth column in the Conceptual Diagram of Proposed Spillway Repairs table (slide 7 of Attachment B). Tom Dresser explained that the fourth column is the timing Grant PUD originally proposed to FERC for proposed repairs in relation to the intermediate pool raise (i.e., 562 feet) and returning to normal operating conditions (i.e., 571.5 feet). He noted that the column is not up to date, and is tentative pending FERC direction.

Nordlund also asked about the duration of the outage at the left bank Wanapum Fishway Exit Passage System to install the spiral chute. Dresser replied that the outage (completely dewatered) lasted only 38 hours. He added that the original estimated time required for completion was 48 to 60 hours. He also noted that installation of the spiral chute was originally scheduled to start on June 9, 2014; however, due to windy weather conditions, installation was not started until June 11, 2014.

Nordlund asked about the fish counts at the right bank while the left bank was offline, and Dresser said that he did not have those numbers available.

Mike Schiewe recalled that Dresser had indicated that FERC approved drilling holes in the Wanapum Dam monoliths, but has not yet approved installing the tendons; he asked what FERC plans to do with the holes if installing the tendons is not approved to anchor the monoliths. Dresser said that he does not know the answer to that question, but he noted that FERC often approves individual steps in multi-step processes in an incremental fashion.

Jim Craig (U.S. Fish and Wildlife Service [USFWS]) asked if there is a timeline for FERC approval of the Tendon Installation Plan, and Dresser replied that FERC is aware of

Grant PUD's goals; however, he is unaware of a specific timeline for FERC approval of the document. Dresser added that the tendons are already on order.

Denny Rohr asked if the tendon installation has been approved by the BOC, and Dresser said that it has. Dresser added that the BOC reviews and approves everything prior to submitting to FERC.

Steve Lewis (USFWS) asked how the spiral chute is connected to the flume system and lamprey ramps. Dresser said that there is not a hard connection from the flume system to the spiral chute—it just slides on the end. He added that with high winds, there may be a point of tension where the flume system terminates and the spiral chute begins. Nordlund added that the manufacturer of the spiral chute installed a curb at the top of the chute to decrease the gap between the flume system and the chute.

Tom Skiles (Columbia River Inter-Tribal Fisheries Commission) asked about the process for installing the spiral chute at the right bank Wanapum Fishway Exit Passage System. Dresser said that installation will begin today, which means the spiral chute support frame will be lifted and dropped into place to mark pilot holes for drilling (completed in the dry). He said that once those pilot holes are drilled, the area is epoxied and cured for one day, and then the spiral chute will be installed. He said that with this schedule, the attachment process will occur on Wednesday, June 18, 2014, with an anticipated 48- to 60-hour outage. He added that the duration of the outage may be less since the jump ramp is already installed at the right bank Wanapum Fishway Exit Passage System.

Skiles asked if sockeye have been observed passing the left bank Wanapum Fishway Exit Passage System since installation of the jump ramp, and Dresser said that he has not yet been notified of sockeye using the ramp.

III. Chelan PUD

A. Rock Island IFPP Update (Lance Keller)

Lance Keller (Chelan PUD) said that as of June 5, 2014, installation of the denil structure and slide gate at the left bank fish ladder at Rock Island Dam has been completed. Immediately

following completion, construction equipment was extracted and has since been removed from the Rock Island tailrace.

On June 2, 2014, the total count of fish passing Rock Island Dam included 3,767 Chinook salmon, 19 steelhead, and six bull trout.

The daily average river flow past Rock Island Dam is 170,500 cubic feet per second (170.5 kcfs), ranging from 117.8 to 207.19 kcfs. This translates to an average tailrace elevation of 567.19 feet, ranging from 561.33 to 570.41 feet.

B. Questions (All)

Jim Craig asked to confirm that all denil extensions at Rock Island Dam are now in place and ready for low flow conditions. Lance Keller said that is correct, and added that the new long-term fish attendants have also started at Rock Island Dam. The attendants will be on shift 24 hours a day, 7 days a week, watching river elevations to dial in the denil extensions when needed.

Denny Rohr asked if any sockeye have been observed passing Rock Island Dam. Keller said that on June 14, 2014, there was one visual observation of a single sockeye passing Rock Island Dam. Tom Skiles noted that yesterday, June 15, 2014, a total of 1,500 sockeye passed McNary Dam.

IV. Next Steps

Denny Rohr said that the next HCP-PRCC Wanapum Briefing is scheduled 2 weeks from now on Monday, June 30, 2014, to be held by conference call. He said that he will distribute a notification for the call prior to the briefing, and 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 PRCC/HCP Briefing Presentation

Attachment A
List of Attendees

Organization
Anchor QEA, LLC
Bonneville Power Administration
Chelan PUD
Columbia River Inter-Tribal Fisheries Commission
Confederated Tribes of Umatilla Indian Reservation
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

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:**	July 4, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris		
Re:	Final Summary of the June 30, 2014 HCP-PRCC Wanapum Briefing		

Members of the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees and the Priest Rapids Coordinating Committee (PRCC) met by conference call on Monday, June 30, 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 (Tom Dresser)

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

Wanapum Fishway Exit Passage System Enhancements – Spiral Chute

Installation of the PRCC-approved spiral chutes at the left and right banks of the Wanapum Dam Fishway Exit Passage System is complete. The chutes are in optimum working condition, with the majority of fish exiting in a head-first orientation and dropping 2 to 5 feet into the forebay (slides 2 and 3 of Attachment B). A video clip link of the left bank is available in slide 3 of Attachment B.

Wanapum Dam Fish Ladder Observations – Sockeye

Peak passage of sockeye at Wanapum Dam is expected July 7 and 8, 2014. The sampling team is no longer performing individual fish counts, due to limited visibility on the back side of the jump curtain on the downstream side of the chute. Instead, the team is focusing on collecting behavioral data.

Pilot and Tendon Hole Drilling

Grant PUD received Federal Energy Regulatory Commission (FERC) approval for 30 tendon holes. On June 25, 2014, FERC approved the drilling of roadway tendon holes in monoliths 2, 3, and 5 through 11. With this approval, the total number of approved tendon holes to drill increased from 10 to 30. To date, 15 of 30 pilot holes have been drilled at 4 inches with no issues. The intermediate holes will be drilled at 10 inches and the final tendon holes will be completed at 16 inches in diameter.

Intermediate Pool Raise

Regarding the intermediate pool raise, there are two options being considered. The first option is an intermediate pool raise elevation of 560 to 562 feet, in which operators would be unable to meet reverse load factoring (RLF) requirements with a 2-foot elevation band and which would likely require pulsing in Hanford Reach during the day. The second option is an intermediate pool raise elevation of 558 to 562 feet, which would provide operators the range in elevation band needed to meet RLF. However, the ladders would be out of compliance below 560 feet.

Other options are under review, considering issues such as spillway repairs, fishway operations, temporary irrigation intake structures, and RLF. Dresser is optimistic about approval in the fourth quarter of 2014, but any proposed intermediate pool raise would be

contingent on many factors, including Board of Consultants (BOC) and FERC review and approval.

Adult Pacific Lamprey Passage Plan

A revised version of the draft Adult Pacific Lamprey Passage Plan went out to the Priest Rapids Fish Forum (PRFF) last week. Key components of the plan include volitional passage via the Priest Rapids fishways and Wanapum fishway exit passage systems, collection and trap and transport, and pilot passage testing and video monitoring. The comments received are now in review, and the plan will be redistributed to the PRFF this week.

Next Steps

Next steps, as further described on slide 8 of Attachment B, include:

- PRCC approval is pending on the support of daily inspections of exit systems to ensure no failures are associated with passage systems
- Juvenile steelhead and yearling Chinook salmon evaluation data processing and quality assurance/quality control on reservoir arrays is expected in mid- to late-August
- The draft Benthic Fauna Survey and Evaluation Report is expected in mid- to late-August
- Work with hydro engineering and internal staff on the proposed intermediate pool raise options
- Work with Joe Taylor on Hanford Reach on the RLF
- The Interim Fish Passage Operation Plan is due to FERC on September 12, 2014

B. Questions (All)

Bob Rose (Yakama Nation) asked what the PRCC role would be in weighing options for the intermediate pool raise. Tom Dresser said that the Grant PUD proposed option will be reviewed by the PRCC. However, the timing of BOC and FERC approval is unknown at this time.

Kirk Truscott (Colville Confederated Tribes) asked for clarification on whether the Interim Fish Passage Report, which is due to FERC on September 12, 2014, was a new fish passage

plan. Dresser said that it is not a new fish passage plan; rather, it is a summary of current activities.

III. Chelan PUD

A. Rock Island IFPP Update (Lance Keller)

Lance Keller (Chelan PUD) said that the Rock Island HCP Coordinating Committee recently toured Rock Island Dam, although the water level was too high to view the denil structures that were completed on June 5, 2014. No further construction is planned.

On June 16, 2014, the total count of fish passing Rock Island Dam included 18,523 Chinook salmon, 19,501 sockeye, and 13 bull trout.

The daily average river flow past Rock Island Dam is 186,500 cubic feet per second (186.5 kcfs). This translates to an average tailrace elevation of 568.8 feet, and an average forebay elevation of 612.8 feet.

The Rock Island IFPP June 2014 Monthly Report will be filed with FERC on July 1, 2014. Chelan PUD will continue reporting on a monthly basis for the duration of the implementation of the IFPP.

B. Questions (All)

Jeff Korth (Washington Department of Fish and Wildlife) asked for clarification of the 568.8 feet and 612.8 feet values. Lance Keller clarified that the 568.8-foot value represented tailrace elevation, and the 612.8-foot value represented forebay elevation.

Bob Rose asked for an update on fish injuries. Jim Craig (U.S. Fish and Wildlife Service) replied that spring Chinook salmon have shown no increased prevalence of injuries, and there have been no subsequent reports. Jeff Korth said that summer Chinook salmon are passing Wells Dam with no wounds. Scott Carlon (National Marine Fisheries Service) mentioned that the initial injuries were not fully understood; however, there was speculation that they were caused by sea lions.

IV. Next Steps

Denny Rohr said that the next HCP-PRCC Wanapum Briefing is scheduled 2 weeks from now on Monday, July 14, 2014, to be held by conference call. He said that he will distribute a notification for the call prior to the briefing, and 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 PRCC/HCP Briefing Presentation

Attachment A
List of Attendees

Organization
Anchor QEA, LLC
Chelan PUD
Colville Confederated Tribes
DRohr and Associates
Grant PUD
National Marine Fisheries Service
U.S. Bureau of Reclamation
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:**	July 18, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris		
Re:	Final Summary of the July 14, 2014 HCP-PRCC Wanapum Briefing		

Members of the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees and the Priest Rapids Coordinating Committee (PRCC) met by conference call on Monday, July 14, 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 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

Mike Schiewe (Anchor QEA, LLC), HCP Coordinating Committees Chair, welcomed those in attendance. He said that Denny Rohr (DRohr and Associates), PRCC Chair, was experiencing technical difficulties and may be on and off the call.

II. Grant PUD

A. Wanapum IFPP Update (Curt Dotson)

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

Wanapum Fishway Exit Passage System

There is no news to report on the Wanapum Fishway Exit Passage System, which means that everything is operating as planned. Blue Leaf Environmental, the contractor who has been monitoring fish passage and fish behavior at the Wanapum Fishway Exit Passage System, is continuing to monitor fish behavior at the passage system 12 hours per day, 7 days per week. However, due to the large volume of fish passing the dam, fish counts will no longer be tracked at Wanapum Dam. Instead, fish count at Priest Rapids and Rocky Reach dams will be used, as needed.

On July 3, 2014, about 41,000 sockeye passed Priest Rapids Dam, and on July 11, 2014, another 39,000 sockeye passed the dam. A video of the Wanapum Fishway Exit Passage System (https://www.youtube.com/watch?v=tK-YB_FbNz8&feature=youtu.be) shows a large number of sockeye passing through the system, as the fish passage numbers at Priest Rapids Dam would suggest. Also depicted in the video are the anti-jump curtain that was installed to reduce fish injuries caused by fish jumping out of the weir box, and the padding that was added to both the vanes and the black cross-member that braces the vanes.

Adult Pacific Lamprey

The PRCC approved the Adult Pacific Lamprey Passage Plan, which involves deploying 18 lamprey traps in the Priest Rapids and Wanapum fish ladders, and implementing collection, and trap and transport of captured lamprey. A photograph of a lamprey trap is depicted on the right side of slide 4 of Attachment B, and a list of trap locations is outlined on slide 5 of Attachment B. Trapping is scheduled at Priest Rapids and Wanapum dams from July 1, 2014 through September 1, 2014, which is during the majority of the lamprey migration.

The Adult Pacific Lamprey Passage Plan also involves obtaining study lamprey from downstream in the system that will be passive integrated transponder (PIT)-tagged and released downstream of the false weir to evaluate volitional passage at the Wanapum false weir. Video monitoring will be used to assess lamprey passage and behavior over the false weir during daytime hours, and two infrared-equipped cameras will also be used to monitor lamprey behavior at the false weir during nighttime hours, when most passage is likely to occur.

To address the concern that lamprey may attach to sections of the weir, a spray hose will be installed near the top of the false weir sill that can be used to help detach lamprey. A walkway was also installed over the top of the flume system to provide human access.

A photograph of a dewatered Wanapum fish ladder is depicted on slide 7 of Attachment B. In this photograph, four PIT-tag plate detectors are shown—two below the orifices and two below the overflow weirs.

Also installed at both the left and right bank Wanapum Fishway Exit Passage Systems are ramps located on both sides of the ladder to aid lamprey in getting up and over the false weir and down the chute (slide 8 of Attachment B).

Pilot and Tendon Hole Drilling

The Board of Consultants (BOC) and the Federal Energy Regulatory Commission (FERC) are requiring Grant PUD to install tendons in each pier, which involves drilling thirty 16-inch holes. A drilling rig on top of a monolith is depicted in the photograph in the top left corner of slide 9 of Attachment B. Drilling of the full-sized tendon holes started on June 6, 2014, and involves first drilling a 4-inch pilot hole, followed by a 10-inch hole, and then the final 16-inch hole. To date, twenty-two of the thirty 4-inch pilot holes are complete, and two of the thirty 16-inch holes are complete, with a third in progress.

Intermediate Pool Raise

For reference, a full reservoir at Wanapum would be at an elevation of 570.5 feet. Two options are now being considered for an intermediate pool raise. Originally, the intermediate pool raise target elevation was 560 to 562 feet. However, this target elevation would likely not allow operators to meet reverse load factor (RLF) requirements with a 2-foot elevation band and would likely require pulsing in Hanford Reach during the day. The other option would be an intermediate pool raise to an elevation of 558 to 562 feet. This range would provide operators the band that they need to meet RLF requirements. These options are being reviewed and will require BOC and FERC approval. Key issues to consider in regard to the intermediate pool raise is that the minimum criteria for the fish ladders to be in compliance is 560 feet, and there also needs to be coordination with local farmers regarding the temporary irrigation intake structures.

Next Steps

Next steps, as further described on slide 11 of Attachment B, include:

- Blue Leaf Environmental will continue monitoring the Wanapum Fishway Exit Passage Systems
- A draft report on the juvenile steelhead and yearling Chinook salmon acoustic studies is expected in mid- to late-August
- A draft report on the benthic fauna survey and evaluation is also expected in mid- to late-August
- Review will continue of the intermediate pool raise options
- The Interim Fish Passage Operation Plan will be submitted to FERC on September 12, 2014

B. Questions (All)

Tom Skiles (Columbia River Inter-Tribal Fisheries Commission [CRITFC]) recalled that, regarding the juvenile steelhead and yearling Chinook salmon Juvenile Salmon Acoustic Telemetry System (JSATS) studies, Grant PUD previously indicated that preliminary results may be available by July 10, 2014, and Skiles asked if this is not the case anymore. Curt Dotson explained that an issue with high river flows is not allowing divers to safely retrieve the data loggers from the Wanapum forebay. He said that the JSATS receivers that were deployed mid-stream at Crescent Bar, Mattawa, and the Hanford Reach have already been retrieved, as those were anchored to units that release the receivers by remote, and once the receivers float to the water's surface, they can be retrieved. He said, however, that the 18 receivers deployed in the Wanapum forebay were hard-installed with brackets to Wanapum Dam infrastructure. He said that without the ability to use the Wanapum Reservoir to reduce flows, the only other option is to wait for flow to decrease so that divers can safely retrieve the receivers. He added that Grant PUD had thought that river flows would be lower by now, but they are not. He also noted that the 18 receivers still in the water hold three-dimensional data on fish passage routes that are key components to the study.

Steve Lewis (U.S. Fish and Wildlife Service) asked for an update on lamprey trapping at Priest Rapids Dam. Dotson said that the traps are in place; however, he has not received an update on whether any lamprey have been captured.

III. Chelan PUD

A. Rock Island IFPP Update (Keith Truscott)

Keith Truscott (Chelan PUD) said that during the operating period of June 30 to July 13, 2014, the daily average river flow past Rock Island Dam was 173,200 cubic feet per second (173.2 kcfs), ranging from 143.5 to 205.5 kcfs. This translated to an average tailrace elevation of 567.5 feet, ranging from 564.4 to 570.5 feet.

Since July 13, 2014, the total count of fish passing Rock Island Dam includes 314,359 sockeye, 591 steelhead, 76,119 Chinook salmon, and 74 bull trout. CRITFC and Grant PUD staff noticed possible noise issues with the Rock Island Dam right bank PIT-tag detection system. Biomark is currently investigating the cause of this. In the meantime, when calculating conversion rates, the total project count should be used (not just the right bank PIT-tag detections).

B. Questions (All)

Tom Skiles asked if the Rock Island Dam right bank PIT-tag detection system is not detecting PIT-tags at all; Truscott confirmed that is correct. Truscott added that after the spring Chinook salmon run mostly passed, Chelan PUD noted declining conversion rates, and CRITFC and Grant PUD staff noticed that the right bank detection system was not functioning as it should be.

IV. Next Steps

Mike Schiewe said that the next HCP-PRCC Wanapum Briefing is scheduled for 2 weeks from now on Monday, July 28, 2014, to be held by conference call. He said that Denny Rohr will distribute a notification for the call prior to the briefing, and added that attendees can contact him or Denny Rohr by email or phone with additional questions.

List of Attachments

Attachment A	List of Attendee Organizations
Attachment B	Grant PUD PRCC/HCP Briefing Presentation

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
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

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:**	August 1, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris		
Re:	Final Summary of the July 28, 2014 HCP-PRCC Wanapum Briefing		

Members of the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees and the Priest Rapids Coordinating Committee (PRCC) met by conference call on Monday, July 28, 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 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) provided a presentation on activities at Wanapum Dam (Attachment B), as further described in the following sections.

Wanapum Fishway Exit Passage System

The system continues to be a success, with more than 600,000 Chinook salmon, sockeye, and steelhead passing the modified fish ladders. Recall that given the large spring Chinook salmon and sockeye runs, fish counts are no longer being tracked at Wanapum Dam; rather, these counts are based on fish counts at Priest Rapids and Rocky Reach dams.

Adult Pacific Lamprey Passage Plan

There are three major components to the Adult Pacific Lamprey Passage Plan, as follows:

- *Collection and Trap-and-Transport*: Trapped lamprey will be collected and held at Wanapum Dam, and then transported to a boat launch above Rock Island Dam.
- *Volitional Passage via the Priest Rapids Fishways and Wanapum Fishway Exit Passage Systems*: Passive integrated transponder (PIT)-tag arrays will be used to monitor volitional passage of PIT-tagged lamprey at the Priest Rapids Fishways and Wanapum Fishway Exit Passage Systems.
- *Pilot Passage Testing and Video Monitoring*: PIT-tagged lamprey will be released downstream of the Wanapum false weir to evaluate volitional passage at the weir. Video monitoring will be used to assess lamprey passage and behavior over the false weir during daytime hours, and two infrared-equipped cameras will also be used to monitor lamprey behavior at the false weir during nighttime hours.

A photograph of an aluminum lamprey trap that was installed at Priest Rapids Dam around 2004/2005 is on the right side of slide 3 of Attachment B. The aluminum trap is lowered to the base of the fishway wall and lamprey migrate along the edge of the wall into the opening of the trap and into the box. A photograph of Grant PUD staff installing lamprey tube traps is also on the left side of slide 3 of Attachment B.

Collection and Trap-and-Transport

Lamprey collection is scheduled for July 1 through September 1, 2014 (during the majority of the lamprey migration). The proposed collection locations at each dam are described on slide 4 of Attachment B.

Trap-and-Transport and Volitional Passage Results

As of July 24, 2014, a total of 596 adult lamprey have been documented via the video count system passing through Priest Rapids Dam (including both the right and left banks). A total of 367 adult lamprey have been documented migrating up the left bank (62%). A total of 86 adult lamprey have been collected at Priest Rapids Dam using both the tube and aluminum traps, and 56 of those have been transported above Rock Island Dam.

A photograph of adult lamprey being held before transport is in the bottom left corner of slide 5 of Attachment B. A photograph of the spray hose that was installed near the top of the Wanapum false weir sill, used to detach lamprey, is in the bottom right corner of slide 5 of Attachment B.

A total of five lamprey have been documented during daytime hours passing through the flume system and down the spiral chute. One lamprey was documented attaching to the flume system floor, climbing back up the vein wall, and moving back into the pool.

Passage Evaluation Results

For the pilot passage testing, a total of 30 adult lamprey were collected and transported from John Day and Priest Rapids dams (15 lamprey from each location). Two lamprey appeared stressed and were removed from the study prior to release (the origin of these two lamprey is unknown). On July 25, 2014, a total of 28 PIT-tagged adult lamprey were released in the upper one-third section of the left bank Wanapum Fishway. Video monitoring is in place to assess lamprey passage and behavior over the false weir and approximately the first 10 feet downstream of the slide. Two infrared-equipped cameras are in place to collect data between 8:00 p.m. and 8:00 a.m. for 4 days immediately following the release of tagged lamprey. This meeting coincides with the fourth day following the July 25, 2014 release, and no lamprey have been observed.

Wanapum Spillway Repairs

Progress is being made on the Wanapum Spillway repairs. Of the 30 required holes, a total of twenty-two 4-inch pilot holes have been drilled, six 16-inch holes have been started, and two 10-inch holes have also been started (the latter are ahead of schedule).

Drilling for the temporary upstream anchors has started. If the current progress continues, all seven holes are expected to be completed by Friday, August 1, 2014. Also, construction of the downstream drilling platforms is in progress.

Preliminary Results – Yearling Chinook Salmon and Juvenile Steelhead Survival Evaluation

Grant PUD's survival standard requirement for the Priest Rapids Project (Rock Island to Priest Rapids tailrace) is 86.49%. For yearling Chinook salmon and steelhead, project survival is currently estimated to be 90.4% and 88.3%, respectively. Regarding survival through the concrete, route-specific survival is unknown because the remote receivers that are installed on the faces of Wanapum and Priest Rapids dams have not yet been retrieved.

These preliminary data have not been corrected for tag loss and other biases; therefore, the results are biased low and are expected to increase following a complete analysis. Any questions regarding this yearling Chinook salmon and juvenile steelhead survival evaluation should be directed to Curt Dotson (Grant PUD).

B. Questions (All)

Denny Rohr asked why the remote receivers installed on the faces of Wanapum and Priest Rapids dams have not been retrieved. Tom Dresser explained that the receivers cannot yet be retrieved due to high river flows. He added that once river flow decreases, divers will be dispatched to retrieve the equipment.

III. Chelan PUD

A. Rock Island IFPP Update (Keith Truscott)

Keith Truscott (Chelan PUD) said that during the period of July 14 to 27, 2014, the daily average river flow past Rock Island Dam was 148,700 cubic feet per second (148.7 kcfs), ranging from 133.5 to 171.9 kcfs. This translated to an average tailrace elevation of 565.1 feet, ranging from 563.0 to 567.6 feet.

The total count of fish passing Rock Island Dam includes 558,649 sockeye, 1,265 steelhead, 98,260 Chinook salmon, and 77 bull trout.

Use of denil structures for adult fish passage at Rock Island Dam is slowly beginning. Rock Island Dam staff are documenting 0.5-hour to 2-hour time periods during the early morning hours when the structures have been in use.

To address the noise issues with the Rock Island Dam right bank PIT-tag detection system, the half-duplex (HD) site located at the upper end of the right bank fish ladder will be converted into a HD and full-duplex PIT-tag assessment site. This area is free of electrical interference and will be the new permanent recording site.

B. Questions (All)

There were no questions for Chelan PUD during today's conference call.

IV. Next Steps

Denny Rohr said that the next HCP-PRCC Wanapum Briefing is scheduled 2 weeks from now on Monday, August 11, 2014, to be held by conference call. He said that he will distribute a notification for the call prior to the briefing, and added that attendees can contact him or Mike Schiewe by email or phone with additional questions.

List of Attachments

Attachment A	List of Attendee Organizations
Attachment B	Grant PUD PRCC/HCP Briefing 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. Bureau of Reclamation
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

DRAFT MEMORANDUM

To:	Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees, and Priest Rapids Coordinating Committee	**Date:**	August 15, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris		
Re:	Draft Summary of the August 11, 2014 HCP-PRCC Wanapum Briefing		

Members of the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees and the Priest Rapids Coordinating Committee (PRCC) met by conference call on Monday, August 11, 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 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, welcomed those in attendance.

II. 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.

Wanapum Fishway Exit Passage System

The passage of adult salmonids continues to be a success, with more than 688,000 Chinook salmon, sockeye, and steelhead passing the modified fish ladders. Recall that given the large

spring Chinook salmon and sockeye runs, fish counts are no longer tracked at Wanapum Dam; rather, fish counts occur at Priest Rapids and Rocky Reach dams.

Wanapum Fishway Exit Passage System

On July 28, 2014, Wanapum Dam operators noticed that the breaker on one of the four 90-horsepower pumps began tripping during a routine inspection of the system. The breaker was reset, and on the morning of July 29, 2014, the pump was briefly taken offline for divers to inspect the pump and clean out vegetation that had plugged the pump. Electricians also inspected the electrical system at this time. The pump was brought back online for the first half of the day, but began tripping again on the afternoon of July 29, 2014. At this time, the auxiliary water supply to the left bank ladder was shut down to discourage fish from entering the system on the left bank, and the three remaining left bank pumps were used to pass the fish already in the ladder. On July 31, 2014, the malfunctioning pump was replaced, and at 4:00 p.m., all four pumps were operational. Two spare pumps are now on site as back-ups.

Adult Pacific Lamprey Passage Plan

There are three major components to the Adult Pacific Lamprey Passage Plan, as follows:

- *Collection and Trap-and-Transport*: Trapped lamprey will be collected and held at Wanapum Dam, and then transported to a boat launch above Rock Island Dam.
- *Volitional Passage via the Priest Rapids Fishways and Wanapum Fishway Exit Passage Systems*: Passive integrated transponder (PIT)-tag arrays will be used to monitor volitional passage of PIT-tagged lamprey at the Priest Rapids Fishways and Wanapum Fishway Exit Passage Systems.
- *Pilot Passage Testing and Video Monitoring*: PIT-tagged lamprey will be released downstream of the Wanapum false weir to evaluate volitional passage at the weir. Video monitoring will be used to assess lamprey passage and behavior over the false weir during daytime hours, and two infrared-equipped cameras will also be used to monitor lamprey behavior at the false weir during nighttime hours.

Trap-and-Transport and Volitional Passage Results

As of August 9, 2014, the video count system has documented a total of 2,720 adult lamprey passing through Priest Rapids Dam (including both the right and left banks). A total of 1,308 adult lamprey have been documented migrating up the left bank (62%). A total of 506 adult

lamprey have been transported upstream of Rock Island Dam, and of that total, 36 unique tags have been detected at Priest Rapids Dam and two unique tags have been detected at Wanapum Dam. At Priest Rapids Dam, 76.5% of the detected PIT-tagged adult lamprey have been detected at the exit of the fishway; at Wanapum Dam, 61.5% of the detected PIT-tagged adult lamprey have been detected at the exit of the fishway.

Passage Plan Observational Results

A total of 28 adult lamprey have been tagged and released into the upper section of the left bank of the Wanapum Fishway, all of which were tagged with half-duplex PIT-tags. The fish were collected and transported from John Day Dam to Priest Rapids Dam. One fish was removed from the study based on the tag indicating downstream movement. During daylight hours, video monitoring is used to assess lamprey passage and behavior over the false weir and 10 feet downstream of the slide. During the night, when the majority of passage is likely to occur, two infrared-equipped cameras are used to monitor lamprey behavior at the false weir. Results from July 25, 2014 video monitoring show 26.7% passage, with 55 of 75 lamprey re-entering the weir pool. A video clip of lamprey passage is available on slide 7 of Attachment B.

In order to enhance the Wanapum Fishway Exit Passage System and improve lamprey passage through the weir pool, two perforated plates were installed on both sides of the flume. With the installation of the vertical perforated plates, the lamprey no longer appear to be attaching to the side of the flume and traveling back into the weir pool. With this enhancement, lamprey passage is expected to increase significantly.

Wanapum Spillway Repairs

Progress is being made on the Wanapum Spillway repairs. Grant PUD and the Board of Consultants have increased the number of required holes from 30 to 37. Of the 37 required holes, a total of twenty-two 4-inch pilot holes have been drilled, six 16-inch holes have been started, and one sheath installation is in progress. Of the 20 upstream bar installations required on Monolith #4, one is in progress. Monolith #4 also requires 25 crack grouting holes, of which 21 are complete. Seven upstream bar installations are required on Monolith #3, but have not yet begun.

B. Questions (All)

Jim Craig (U.S. Fish and Wildlife Service) asked if there had been any attempts to hose down the lamprey traveling back up the flume before the lamprey were able to re-enter the weir pool. Tom Dresser said that there have been attempts to hose the lamprey down the flume. Dresser further explained that with the installation of perforated plates, the number of lamprey re-entering the weir pool is expected to decrease substantially.

Tom Skiles (Columbia River Inter-Tribal Fisheries Commission) asked if there were additional traps placed in the left ladder to increase passage efficiency and capture fish that are not able to pass through the system. Dresser said that no additional traps have been specifically placed in the left ladder; however, the traps are frequently moved from areas that have not been performing ideally to areas where lamprey have been observed.

III. Chelan PUD

A. Rock Island IFPP Update (Lance Keller)

Lance Keller (Chelan PUD) said that during the period of July 28 to August 10, 2014, the daily average river flow past Rock Island Dam was 138,800 cubic feet per second (138.8 kcfs), ranging from 114.2 to 151.1 kcfs. This translated to an average tailrace elevation of 562.9 feet, ranging from 560.8 to 565.2 feet.

The total count of fish passing Rock Island Dam includes 580,581 sockeye; 107,180 Chinook salmon; and 80 bull trout.

The PIT-tag detection system at the Rock Island Dam Right Bank Adult Fishway has been experiencing 100% noise for some time now. A half-duplex PIT-tag antenna array was installed on August 5, 2014 upstream of the count window, about 5 feet from the fishway exit. This is a temporary PIT-tag detection arrangement capable of detecting both half- and full-duplex PIT-tags. A new permanent solution will be installed during the 2014/2015 adult ladder maintenance period.

B. Questions (All)

There were no questions for Chelan PUD during today's conference call.

IV. Next Steps

Denny Rohr said that the next HCP-PRCC Wanapum Briefing is scheduled 2 weeks from now on Monday, August 25, 2014, to be held by conference call. He said that he will distribute a notification for the call prior to the briefing, and added that attendees can contact him or Mike Schiewe by email or phone with additional questions.

List of Attachments

Attachment A	List of Attendee Organizations
Attachment B	Grant PUD PRCC/HCP Briefing Presentation

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
Northwest Power Planning and Conservation Council
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:**	August 29, 2014
From:	Michael Schiewe, HCP Coordinating Committees Chair		
Cc:	Kristi Geris		
Re:	Final Summary of the August 25, 2014 HCP-PRCC Wanapum Briefing		

Members of the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees and the Priest Rapids Coordinating Committee (PRCC) met by conference call on Monday, August 25, 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 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 (Curt Dotson)

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

Wanapum Fishway Exit Passage System

The left bank and right bank Wanapum Fishway Exit Passage Systems continue to successfully pass adult salmonids. As of August 19, 2014, nearly 700,000 Chinook salmon, sockeye salmon, and steelhead trout have passed the modified fish ladders based on fish counts at Rock Island Dam.

Over the past 2 weeks, there has been a problem with aquatic vegetation (predominately milfoil) building up on and plugging the intake screens of the four 90-horsepower pumps located at the left bank Wanapum Fishway Exit Passage System. In response, Grant PUD has initiated maintenance cleaning by divers every other day to clear the screens. Grant PUD is closely monitoring the screens and has a dive crew that is available to respond on non-scheduled days. Measures to keep vegetation from plugging the screens are being considered.

Adult Pacific Lamprey – Passage Plan

As of August 19, 2014, based on video counts at Priest Rapids Dam, more than 4,000 lamprey have passed the dam, 1,071 of which have been trapped and transported upstream of Rock Island Dam (roughly 25% of the total passed).

Wanapum Spillway Repairs

Progress on the Wanapum spillway repairs, as further described in slide 5 of Attachment B, includes:

- Pilot 4-inch holes: 23 of 37 completed
- Full-size 16-inch holes: 4 of 37 completed (7 in progress)
- Sheath installation (lining inside the holes): 1 of 37 completed (2 in progress)
- Tendon installation and tensioning: 0 of 37 completed
- Monolith No. 4 – upstream bar installation: 0 of 20 completed (3 in progress)
- Monolith No. 3 – upstream bar installation: 0 of 7 completed
- Monolith No. 4 – crack grouting holes: 25 of 25 completed

B. Questions (All)

Jim Craig (U.S. Fish and Wildlife Service) asked, regarding the problem with vegetation plugging the intake screens, whether Grant PUD has considered lowering the intake screens

for the pumps. Dotson said that this option is being considered; however, he noted that the auxiliary water supply is also getting plugged, which is about 60 feet below the water's surface at the drawdown elevation. He added that lowering the intake screens would require shutting down the fish ladder to complete any modification.

Aaron Jackson (Confederated Tribes of Umatilla Indian Reservation) asked what the surface area is of the intake screens. Dotson said that he does not have the exact surface area measurements available; however, the pumps are about 8 feet tall and they are wide enough in circumference that he cannot reach around them. He added that there are four pumps in banks of two and the screen cage that is getting plugged surrounds the pumps.

III. Chelan PUD

A. Rock Island IFPP Update (Lance Keller)

Lance Keller (Chelan PUD) said that over the past 2 weeks, operations at Rock Island Dam have been almost identical to those reported during the last Wanapum briefing on August 11, 2014. The daily average river flow past Rock Island Dam was 108,500 cubic feet per second (108.5 kcfs), ranging from 88.9 to 127.3 kcfs. This translates to an average tailrace elevation of 560.3 feet, ranging from 557.8 to 562.7 feet.

Use of the denil structures for adult fish passage at Rock Island Dam has continued on a daily basis for a few hours each day. During the remainder of the day, the denils are submerged underwater and the normal passage routes are open for fish passage.

The total count of fish passing Rock Island Dam includes 580,950 sockeye salmon, 113,133 Chinook salmon, 80 bull trout, and 4,265 steelhead trout.

B. Questions (All)

Jim Craig asked if the total count of Chinook salmon includes spring and summer Chinook salmon. Keller replied that it does.

IV. Next Steps

Denny Rohr said that the next HCP-PRCC Wanapum Briefing is scheduled 2 weeks from now on Monday, September 8, 2014, to be held by conference call. He said that he will distribute a notification for the call prior to the briefing and added that attendees can contact him or Mike Schiewe by email or phone with additional questions.

List of Attachments

Attachment A	List of Attendee Organizations
Attachment B	Grant PUD PRCC/HCP Briefing Presentation

Attachment A
List of Attendees

Organization
Anchor QEA, LLC
Bonneville Power Administration
Chelan PUD
Columbia River Inter-Tribal Fisheries Commission
Confederated Tribes of Umatilla Indian Reservation
DRohr and Associates
Fish Passage Center
Grant PUD
Northwest Steelheaders
U.S. Fish and Wildlife Service
Washington Department of Fish and Wildlife
Washington State Department of Ecology

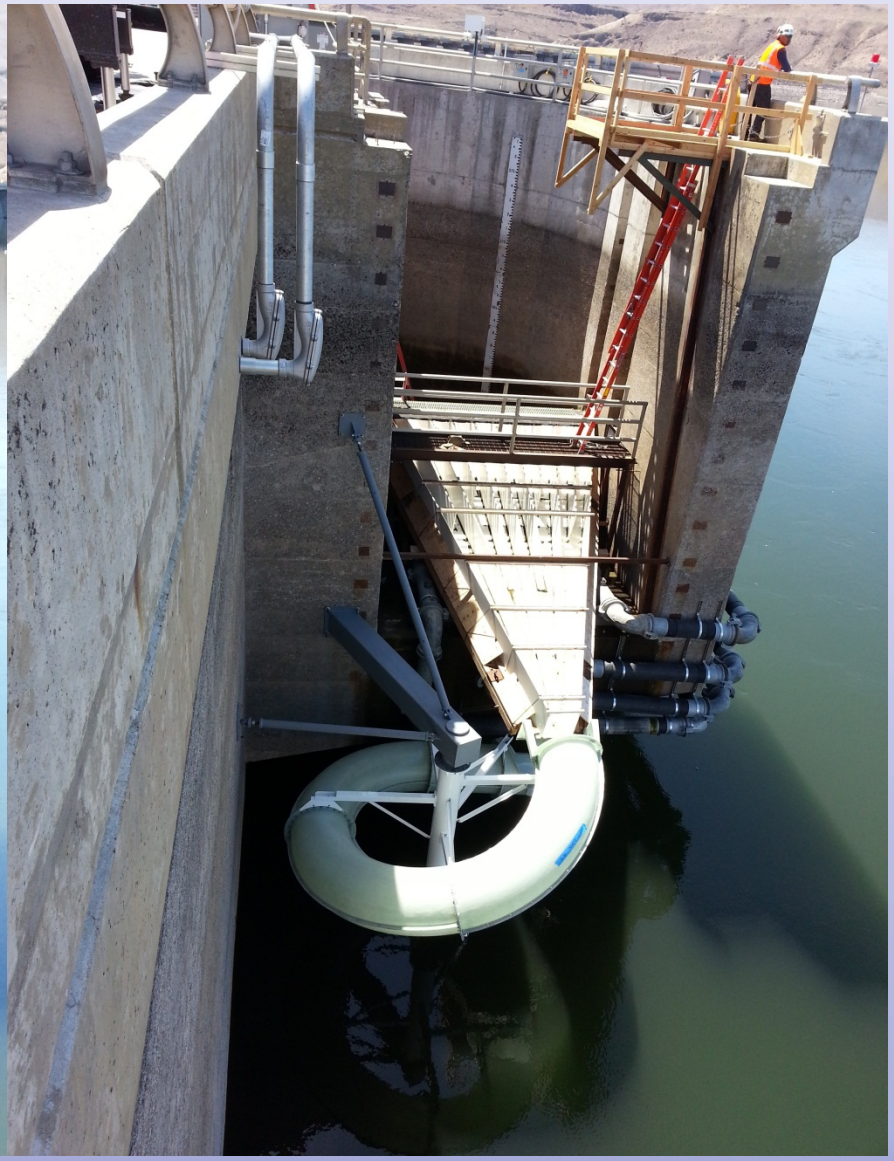
Appendix D
Joint Briefing on the Progress and Implementation on the Wanapum and Rock Island Fish Passage Plans
Presentation

PRCC-HCP Briefing

June 16, 2014

Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

Wanapum Fishway Exit Passage System Enhancements (Spiral Chute)



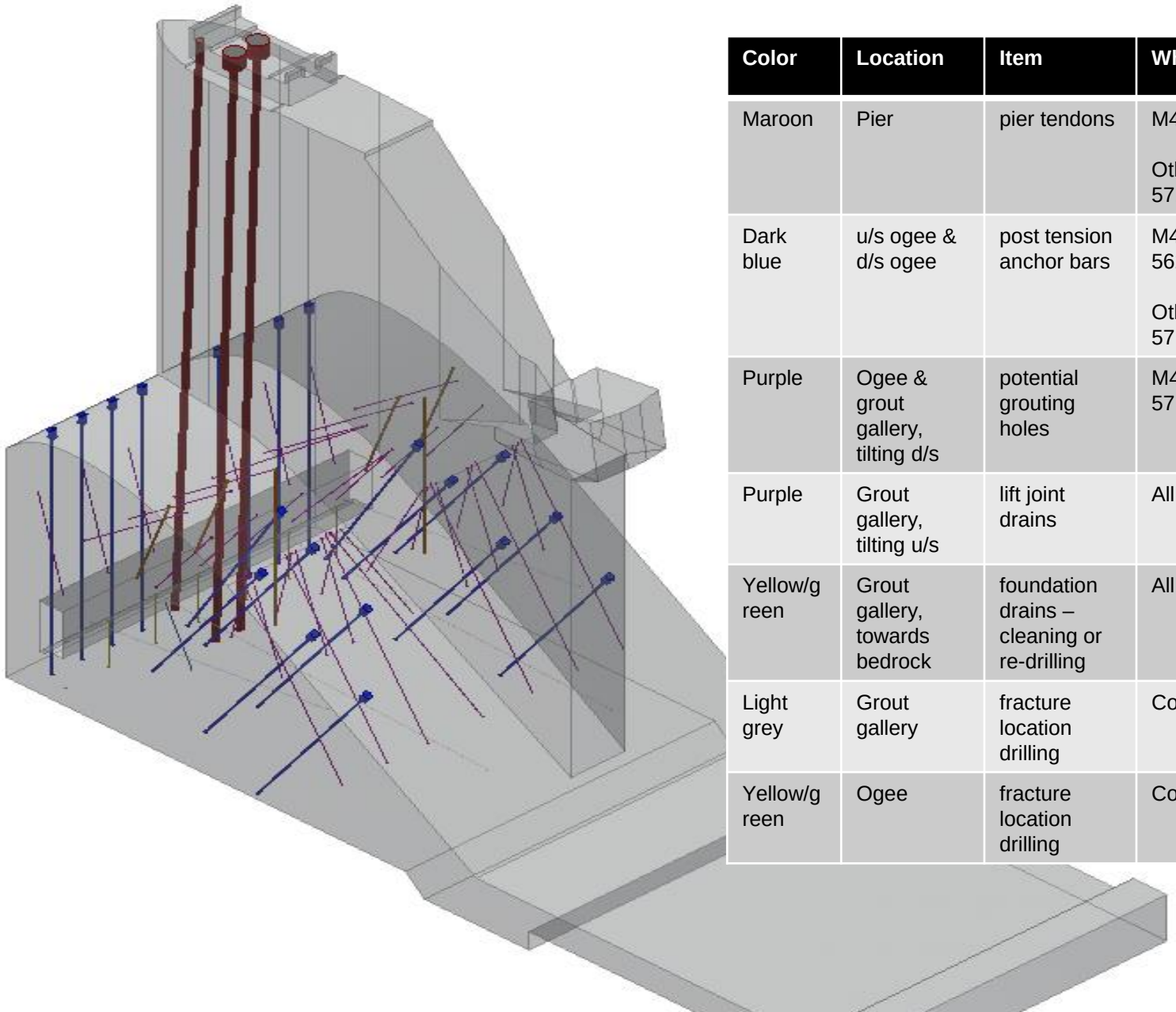
Wanapum Fishway Exit Passage System Enhancements (Spiral Chute)

Wanapum Fishway Exit Passage System enhancements (Approach Ramp & Perforated Plate)

Wanapum Fishway Exit Passage System Enhancements (Jump Curtain)

Wanapum Fishway Exit Passage System Enhancements (Jump Curtain)

Conceptual Diagram of PROPOSED Spillway Repairs

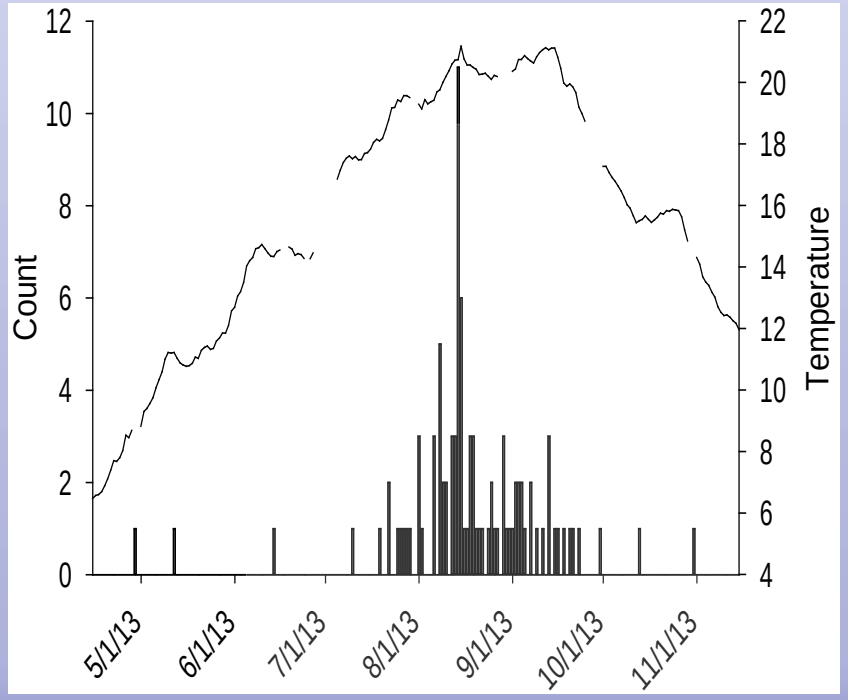


Color	Location	Item	When
Maroon	Pier	pier tendons	M4 – before 562 Others – before 571.5
Dark blue	u/s ogee & d/s ogee	post tension anchor bars	M4 – 4 u/s before 562 Others – before 571.5
Purple	Ogee & grout gallery, tilting d/s	potential grouting holes	M4 only – before 571.5
Purple	Grout gallery, tilting u/s	lift joint drains	All – before 562
Yellow/green	Grout gallery, towards bedrock	foundation drains – cleaning or re-drilling	All before – 571.5
Light grey	Grout gallery	fracture location drilling	Complete
Yellow/green	Ogee	fracture location drilling	Complete

Wanapum Dam - Drill Work

Adult Pacific Lamprey Passage Plan

- Comments received on the Draft adult Pacific lamprey Plan that was distributed Priest Rapids Fish Forum last week
- Key Components of the Plan
  - Volitional passage via the Priest Rapids fishways and Wanapum Fishway Exit Passage Systems;
  - Collection and Trap-N-Transport



Next Steps/Planned Activities

- Installation of Spiral Chute right bank at Wanapum Fishway Exit Passage Systems;
- Adult Pacific Lamprey Passage Plan *in development*;
- Direct observations to evaluate adult sockeye, summer Chinook and steelhead passage at Wanapum Fishway Exit Passage Systems
- Juvenile steelhead & yearling Chinook evaluation
- Working with Hydro Engineering on proposed intermediate pool raise plan
- Working with Joe Taylor on Hanford Reach – Reverse Load Factoring
- Interim Fish Passage Operation Plan due to FERC – July 11, 2014

PRCC-HCP Briefing

June 30, 2014

Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

Wanapum Fishway Exit Passage System Enhancements (Spiral Chute)

Wanapum Fishway Exit Passage System Enhancements (Spiral Chute)

VIDEO CLIP

https://vimeo.com/99173608

PASSAGE WORD

fishladder

Grant County PUD

Wanapum Dam Fish Ladder Observations: Sockeye

DRAFT

		YEAR TO DATE				WEEK OF 6/18/2014 - 6/24/2014			
		Left Bank*		Right Bank*		Left Bank*		Right Bank*	
		n	%	n	%	n	%	n	%
Fish Observed	Sockeye	505	100.0%	80	100.0%	487	100.0%	57	100.0%
Weir Entry Method	Jump	33	6.6%	17	21.3%	31	6.4%	9	15.8%
	Swim	466	93.4%	63	78.8%	452	93.6%	48	84.2%
Weir Entry Success	Yes	484	97.2%	68	93.2%	466	97.1%	46	90.2%
	No	14	2.8%	5	6.8%	14	2.9%	5	9.8%
Weir Passage Slot	1	274	56.0%	17	22.1%	267	56.7%	15	27.8%
	2	98	20.0%	20	26.0%	93	19.8%	12	22.2%
	3	15	3.1%	9	11.7%	13	2.8%	6	11.1%
	Middle	53	10.8%	16	20.8%	49	10.4%	10	18.5%
	Right	49	10.0%	15	19.5%	49	10.4%	11	20.4%
Initial Orientation	Vertical	439	91.5%	54	74.0%	426	92.0%	42	82.3%
	Horizontal	41	8.5%	19	26.0%	37	8.0%	9	17.6%
Swim Orientation - Top	Head	472	98.5%	70	94.6%	454	98.5%	48	92.3%
	Tail	7	1.5%	4	5.4%	7	1.5%	4	7.7%
Swim Orientation - Mid	Head	356	74.0%	53	71.6%	339	73.2%	33	63.5%
	Tail	125	26.0%	21	28.4%	124	26.8%	19	36.5%
Swim Orientation - Bottom	Head	315	66.2%	48	65.8%	298	65.1%	29	56.9%
	Tail	161	33.8%	25	34.3%	160	34.9%	22	43.1%
Movement	Snake	433	90.2%	68	90.7%	420	90.9%	50	96.1%
	Flop	47	9.8%	7	9.3%	42	9.1%	2	3.8%
Water Exit	With Water	2	100.0%	21	95.5%	1	100.0%		
	Out of Water			1	4.5%				
Landing Orientation	Head	6	85.7%	17	80.9%	5	83.3%		
	Tail			2	9.5%				
	Dorsal								
	Ventral								
	Lateral	1	14.3%	2	9.5%	1	16.7%		
Landing Behavior	Swim	182	100.0%	27	100.0%	164	100.0%	9	100.0%
	Stunned								
	Mortality								
Slide Rate	With Water	370	77.9%	60	83.3%	352	77.0%	39	78.0%
	Hold	105	22.1%	12	16.7%	105	23.0%	11	22.0%

Pilot & Tendon Hole Drilling

<u>Pilot & Tendon Hole Drilling</u>: 30 Required.

- ✓ Four Inch pilot hole drilling continues with no issues. They have now drilled 15 pilot holes and are working on the 16.
- ✓ On 6/25, FERC approved the drilling of the roadway tendon holes (including the installation of sheaths) in monoliths 2, 3, and 5-11. With this approval, the total number of approved tendon holes to drill increases from 10 to 30.
- ✓ 1.5 of 30 approved 16” diameter holes have been completed. Throughout the drilling process, some of the holes will need to grouted (to make the hole water tight) and then re-drilled. This is a common drilling practice.
- ✓ Drilling of the full sized tendon holes started June 6.
  - ❖ Monolith 5 - 16” drilled to bedrock
  - ❖ Monolith 4 - 16” drilled to full depth
  - ❖ Monolith 7 - 10” drilled to bedrock

Intermediate Pool Raise

- **Option 1: 560-562’**
  - Operators would be unable to meet RLF requirements with a 2’ elevation band and would likely require pulsing in Hanford Reach during the day.

- **Option 2: 558-562’**
  - This range would provide operators the band they need to meet RLF. However the ladders are out of compliance below 560’.

- **Other Options Under Review**

- **Issues to Consider in regards to Intermediate Pool Raise**
  - Spillway Repairs
  - Fishway Operations
  - Temporary Irrigation Intake Structures
  - Reverse Load Factoring
  - Others

Any Proposed Intermediate Pool Raise Contingent on BOC and FERC Review and Approval

Adult Pacific Lamprey - Passage Plan

- Comments Received in review
- Revised Version out to Priest Rapids Fish Forum last week
- Key Components of the Plan
  - Volitional passage via the Priest Rapids fishways and Wanapum Fishway Exit Passage Systems;
  - Collection and Trap-N-Transport
  - Pilot passage testing & video monitoring

Next Steps/Planned Activities

- Daily inspections of exit systems to assure no failures associated with passage systems.
- Juvenile steelhead & yearling Chinook evaluation data processing & QA/QC on reservoir arrays (Mid/late August).
- Benthic Fauna Survey and Evaluation – Mid/late August
- Working with Hydro Engineering/Internal Staff on proposed intermediate pool raise options
- Working with Joe Taylor on Hanford Reach – Reverse Load Factoring
- Interim Fish Passage Operation Plan due to FERC – Sept 12, 2014

PRCC-HCP Briefing

July 14, 2014

Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

Wanapum Fishway Exit Passage System

Wanapum Fishway Exit Passage System

youtube

https://www.youtube.com/watch?v=tK-YB_FbNz8&feature=youtu.be

Adult Pacific Lamprey - Passage Plan

- Approved by Priest Rapids Fish Forum
- Key Components of the Plan
  - Collection and Trap-N-Transport
  - Volitional passage via the Priest Rapids fishways and Wanapum Fishway Exit Passage Systems;
  - Pilot passage testing & video monitoring

Adult Pacific Lamprey - Passage Plan

Collection and Trap-N-Transport

- Collection to occur in three sections of each of the fish ladders at Priest Rapids and Wanapum dams July 1 through September 1 (during the majority of the lamprey migration).
- Traps that routinely achieve a low CPUE will be moved to evaluate potential higher CPUE areas.
- As trapping efforts progress, locations are contemplated to change based on real-time data and input provided by the PRFF members.
- The proposed locations at this time at each dam include the following;

  - Priest Rapids Dam – Left Bank Ladder
    - Above the Adult Video Fish Count Station, or
    - Turning Pool downstream of the Off-Ladder Adult Fish Count Station, or
    - Upper pools downstream of the fish exit.

  - Priest Rapids Dam – Right Bank Ladder
    - Second turning pool upstream of the fish ladder entrance, or
    - Turning Pool upstream of the Adult Fish Count Station, or
    - Upper pools downstream of the fish exit.

  - Wanapum Dam – Left Bank Ladder
    - Above the Adult Video Fish Count Station, or
    - Upper pools downstream of the fish exit, or
    - Pool immediately downstream of the false-weir.

  - Wanapum Dam – Right Bank Ladder
    - Above the Adult Video Fish Count Station, or
    - Upper pools downstream of the fish exit, or
    - Pool immediately downstream of the false-weir.

Pacific Lamprey Volitional Passage Evaluation at WFEPS

- Monitoring of its HD PIT detection arrays;
- Direct release of 20-30 HD PIT tagged lamprey into the fish ladder immediately downstream of the false weir at Wanapum Dam.
- The HD PIT station at the Wanapum Dam left bank fish ladder exit will be downloaded daily during the monitoring period to determine which of the experimental fish ascend to the vicinity of the WFEPS, or travel downstream in the fish ladder.
- Daily morning visual inspection of false weirs and slide for lamprey accumulation.
- Video monitoring (daytime) will be used to assess lamprey passage and behavior over the false weir and approximately the first 10 feet downstream of the slide. Two infrared-equipped cameras will be used to monitor lamprey behavior at the false weir during the night, when most passage is likely to occur.
- Monitoring effort will serve to assess performance of ¼ inch raised perforated plate extension sections on the left and right sides of the descent ramp leading to the spiral chute.
- Spray hose near the top of the false weir sill to deter attached adult lamprey and direct them into the Wanapum forebay.
- Maintain walkway access to address potential problems at the WFEPS.
- Dip-netting in the false weir box in the event lamprey accumulate and do not ascend over the sill.

HD PIT - Configuration

Wanapum Fishway Exit Passage System

Pilot & Tendon Hole Drilling

<u>Pilot & Tendon Hole Drilling</u>: 30 Required.

- ✓ Twenty-Two of 30 - 4” pilot holes completed.
- ✓ Drilling of the full sized tendon holes started June 6 and continues.
  - ❖ Monolith 5 - 16” drilled to bedrock
  - ❖ Monolith 4 - 16” drilled to full depth
  - ❖ Monolith 7 - 16” drilled to 168’ – 54’ remaining

Intermediate Pool Raise

- **Several Option currently Under Internal Review**

- **An Early Option (560'-562'):** Likely would not allow Operators to meet RLF requirements with a 2' elevation band and would likely require pulsing in Hanford Reach during the day.

- **558'-562':** This range would provide operators the band they need to meet RLF. Need to further assess ladder operations.

- **Issues to Consider in regards to Intermediate Pool Raise**
  - Spillway Repairs
  - Fishway Operations
  - Temporary Irrigation Intake Structures
  - Reverse Load Factoring
  - Others

Any Proposed Intermediate Pool Raise Contingent on BOC and FERC Review and Approval

Next Steps/Planned Activities

- Daily inspections of exit systems to assure no failures associated with passage systems.
- Juvenile steelhead & yearling Chinook evaluation data processing & QA/QC on reservoir arrays (Mid/late August).
- Benthic Fauna Survey and Evaluation – Mid/late August
- Working with Hydro Engineering/Internal Staff on proposed intermediate pool raise options
- Interim Fish Passage Operation Plan due to FERC – Sept 12, 2014

PRCC-HCP Briefing

July 28, 2014

Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

Wanapum Fishway Exit Passage System

- **Wanapum Fishway Exit Passage Systems continue to <u>successfully</u> pass adult salmonids;**

- **More than 600,000 Chinook salmon, sockeye and steelhead have successfully passed the modified fish ladders.**

Adult Pacific Lamprey - Passage Plan

- Key Components of the Plan
  - Collection and Trap-N-Transport
  - Volitional passage via the Priest Rapids fishways and Wanapum Fishway Exit Passage Systems;
  - Pilot passage testing & video monitoring

Adult Pacific Lamprey - Passage Plan

Collection and Trap-N-Transport

- Collection to occur in three sections of each of the fish ladders at Priest Rapids and Wanapum dams July 1 through September 1 (during the majority of the lamprey migration).

- The proposed locations at this time at each dam include the following;
  - Priest Rapids Dam – Left Bank Ladder
    - Above the Adult Video Fish Count Station, or
    - Turning Pool downstream of the Off-Ladder Adult Fish Count Station, or
    - Upper pools downstream of the fish exit.
  - Priest Rapids Dam – Right Bank Ladder
    - Second turning pool upstream of the fish ladder entrance, or
    - Turning Pool upstream of the Adult Fish Count Station, or
    - Upper pools downstream of the fish exit.
  - Wanapum Dam – Left Bank Ladder
    - Above the Adult Video Fish Count Station, or
    - Upper pools downstream of the fish exit, or
    - Pool immediately downstream of the false-weir.
  - Wanapum Dam – Right Bank Ladder
    - Above the Adult Video Fish Count Station, or
    - Upper pools downstream of the fish exit, or
    - Pool immediately downstream of the false-weir.

Adult Pacific Lamprey - Passage Plan

Trap-N-Transport & Volitional Passage - RESULTS

- **A total of 596 adult lamprey have been documented via the video count system passing through Priest Rapids Dam (7/24/2014);**
- **62% (n=367) migrated up left bank;**
- **Eighty-six (n=86) have been collected at Priest Rapids Dam;**
- **Fifty-six have been transported.**

Adult Pacific Lamprey - Passage Plan

Passage Evaluation - RESULTS

- **A total of 28 adult lamprey have been tagged and released into the upper section of the Wanapum Fishway – Left Bank (Evening of 7/25/2014)**
- **All were tagged with HD PIT tags;**
- **Fifteen were collected and transported from John Dam, while the remaining 15 were from Priest Rapids Dam (2 removed from study prior to release);**
- **Video Monitoring: Used to assess lamprey passage and behavior over the false weir and approximately the first 10 feet downstream of the slide (Daytime).**
- **Two infrared-equipped cameras will be used to monitor lamprey behavior at the false weir during the night, when most passage is likely to occur.**
- **Night time video monitoring will occur from approximately 20:00 to 8:00 hours for 4 days immediately following release of tagged lamprey**.

Wanapum Spillway Repairs

<u>Tendon Hole Drilling</u>: 30 Required.

- ✓ Twenty-Two of 30 - 4” pilot holes completed.
- ✓ First 6 of the 30 – 16” started.
  - ❖ Monolith 4 - 16” drilled to full depth
  - ❖ Monolith 5 - 16” drilled to bedrock
  - ❖ Monolith 7 - 16” drilled to full depth
  - ❖ Monolith 8 - 10” drilled to 22’
  - ❖ Monolith 9 – 10” drilled to full depth
- ✓ Temporary Upstream Anchors.
  - ❖ Monolith 3 – 2 of 7 holes completed
  - ❖ Monolith 4 – drill templates installed waiting on FERC approval
- ✓ Downstream Anchors.
  - ❖ Monolith 4 – Construction of downstream drilling platforms in progress

Preliminary Results - Yearling Chinook & juvenile steelhead Survival Evaluation

The survival standard requirement that Grant PUD is required to achieve per the NOAA Fisheries BiOp (for ESA listed species) and the Priest Rapids Settlement Agreement (non-ESA listed species) for the Priest Rapids Project (Rock Island to Priest Rapids Tailrace) **is 86.49%.**

PROJECT SURVIVAL

- **Yearling Chinook:**
  - Wanapum Reservoir + Dam = 95.2%
  - Priest Rapids reservoir + Dam = 95.0%
  - Project Survival (Rock Island to Priest Rapids Tailrace) = 90.4%

- **Steelhead:**
  - Wanapum Reservoir + Dam = 92.4%
  - Priest Rapids reservoir + Dam = 95.6%
  - Project Survival (Rock Island to Priest Rapids Tailrace) = 88.3%

"CONCRETE SURVIVAL"

- **Wanapum Dam:**
  - Yearling Chinook = 96.9%
  - Juvenile Steelhead = 96.8%

- **Priest Rapids Dam:**
  - Yearling Chinook = 95.3%
  - Juvenile Steelhead = 95.2%

PRCC-HCP Briefing

August 11, 2014

Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

Wanapum Fishway Exit Passage System

- **Wanapum Fishway Exit Passage Systems continue to successfully pass adult salmonids;**

- **More than 688,000 Chinook salmon, sockeye and steelhead have successfully passed the modified fish ladders based on Rock Island Fish Counts (8/6/2014).**

Wanapum Fishway Exit Passage System

- **On evening of July 28; the breaker for one of the four 90 hp pumps began tripping. This was observed by the Operators routinely inspecting the system at night.**

- **Breaker was reset and carried over into the morning of July 29. Divers were sent in to inspect pump and clean debris and electricians inspected electrical system.**

- **The pump operated for about ½ day with no problems before the breaker began tripping again. On the afternoon of July 29, the auxiliary water supply to the left bank ladder (LBL) was turned off to reduce attraction flow to keep fish from selecting the LB ladder and use the right bank ladder. The three remaining LB pumps were used to keep the ladder watered up for fish were already in the ladder.**

- **On July 31, the installation of the replacement pump was completed and by 1600 hrs all four pumps were up and running.**

Adult Pacific Lamprey - Passage Plan

- Key Components of the Plan
  - Collection and Trap-N-Transport
  - Volitional passage via the Priest Rapids fishways and Wanapum Fishway Exit Passage Systems;
  - Pilot passage testing & video monitoring

Adult Pacific Lamprey - Passage Plan

Trap-N-Transport & Volitional Passage - RESULTS

- **A total of 2720 adult lamprey have been documented via the video count system passing through Priest Rapids Dam (8/9/14);**
- **62% (n=1,308) of the adult lamprey have migrated up through the Priest Rapids Dam – Left-Bank ;**
- **505 adult lamprey have been transported (Upstream of Rock Island and CPUD tagging/release; 8/10);**
- **A total of 38 unique tags have been detected at Priest Rapids (n=36) and Wanapum Dams (n=2);**
- **Priest Rapids Dam - 76.5% of the detected PIT tagged adult lamprey have been detected at exit of fishway (26 of 34);**
- **Wanapum Dam – 61.5% of the detected PIT tagged adult lamprey have been detected at the exit of the fishway (8 of 13);**

Adult Pacific Lamprey - Passage Plan Observational Results

- **A total of 28 adult lamprey have been tagged and released into the upper section of the Wanapum Fishway – Left Bank (Evening of 7/25/2014). All were tagged with HD PIT tags;**

- **Fish were collected and transported from John Dam, and Priest Rapids Dam (1 removed from study based on downstream movement, i.e., tag effect);**

- **Video Monitoring: Used to assess lamprey passage and behavior over the false weir and approximately the first 10 feet downstream of the slide (Daytime). Two infrared-equipped cameras will be used to monitor lamprey behavior at the false weir during the night, when most passage is likely to occur.**

Video Monitoring Results

Date	Traveled up Ramp & Down Flume	Re-entered Weir pool	Net Passage	Passage Percent
7/25/2014	75	55	20	26.7%
7/26/2014	74	55	19	25.7%

Adult Pacific Lamprey Passage

Wanapum Left bank Exit passage System Video Clip

https://vimeo.com/102980479

Password - fishladder

Adult Pacific Lamprey - Passage Plan

Wanapum Fishway Exit Passage System Enhancements

Wanapum Spillway Repairs

<u>Pilot - 4”</u>: 37 Required

- ✓ 22 of 37 - 4” pilot holes completed.

<u>Full Size – 16”</u>: 37 Required

- ✓ 6 in progress.

<u>Sheath Installation</u>: 37 Required

- ✓ 1 in progress.

<u>Tendon Installation & Tensioning</u>: 37 Required

- ✓ No Progress.

<u>Monolith #4 – Upstream Bar Installation</u>: 20 Required

- ✓ 1 in progress.

<u>Monolith #3 – Upstream Bar Installation:</u> 7 Required

- ✓ 0 completed.

<u>Monolith #4 – Crack Grouting Holes:</u> 25 Required

- ✓ 21 completed.

PRCC-HCP Briefing

August 25, 2014

Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

Wanapum Fishway Exit Passage System

- **Wanapum Fishway Exit Passage Systems continue to SUCCESSFULLY pass adult salmonids;**

- **More than 697,000 Chinook salmon, sockeye and steelhead have ly passed the modified fish ladders based on Rock Island Fish Counts (8/19/2014).**

Wanapum Fishway Exit Passage System

- **Over the course of the past 2 weeks aquatic vegetation build up on the intake screens of the four - 90 hp pumps located at left bank Wanapum Fishway Exit Passage System (LB-WFEPS) and auxiliary water supply for the left bank Wanapum fishway has become problematic.**

- **To respond and address, Grant PUD has initiated maintenance dive cleaning of the left bank fish ladder exit pump screens three days a week. In addition, dive crews are available to respond on non-scheduled days.**

Adult Pacific Lamprey - Passage Plan

- A total of 4,188 adult lamprey have been documented via the video count system passing through Priest Rapids Dam (8/19/14);
- 1,071 adult lamprey have been transported (Upstream of Rock Island and CPUD tagging/release; 8/19);

Wanapum Spillway Repairs

<u>Pilot - 4”</u>: **37 Required**

- ✓ 23 of 37 - 4” pilot holes completed.

<u>Full Size – 16”</u>: **37 Required**

- ✓ 4 completed
- ✓ 7 in progress.

<u>Sheath Installation</u>: **37 Required**

- ✓ 1 completed
- ✓ 2 in progress.

<u>Tendon Installation & Tensioning</u>: **37 Required**

- ✓ No Progress.

<u>Monolith #4 – Upstream Bar Installation</u>: **20 Required**

- ✓ 3 in progress.

<u>Monolith #3 – Upstream Bar Installation:</u> 7 Required

- ✓ 0 completed.

<u>Monolith #4 – Crack Grouting Holes:</u> 25 Required

- ✓ 25 completed.

PRCC-HCP Briefing

September 8, 2014

Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

Wanapum Fishway Exit Passage System

- **Wanapum Fishway Exit Passage Systems continue to SUCCESSFULLY pass adult salmonids;**

- **More than 705,000 Chinook salmon, sockeye and steelhead have passed the modified fish ladders based on Rock Island Fish Counts (9/3/2014).**

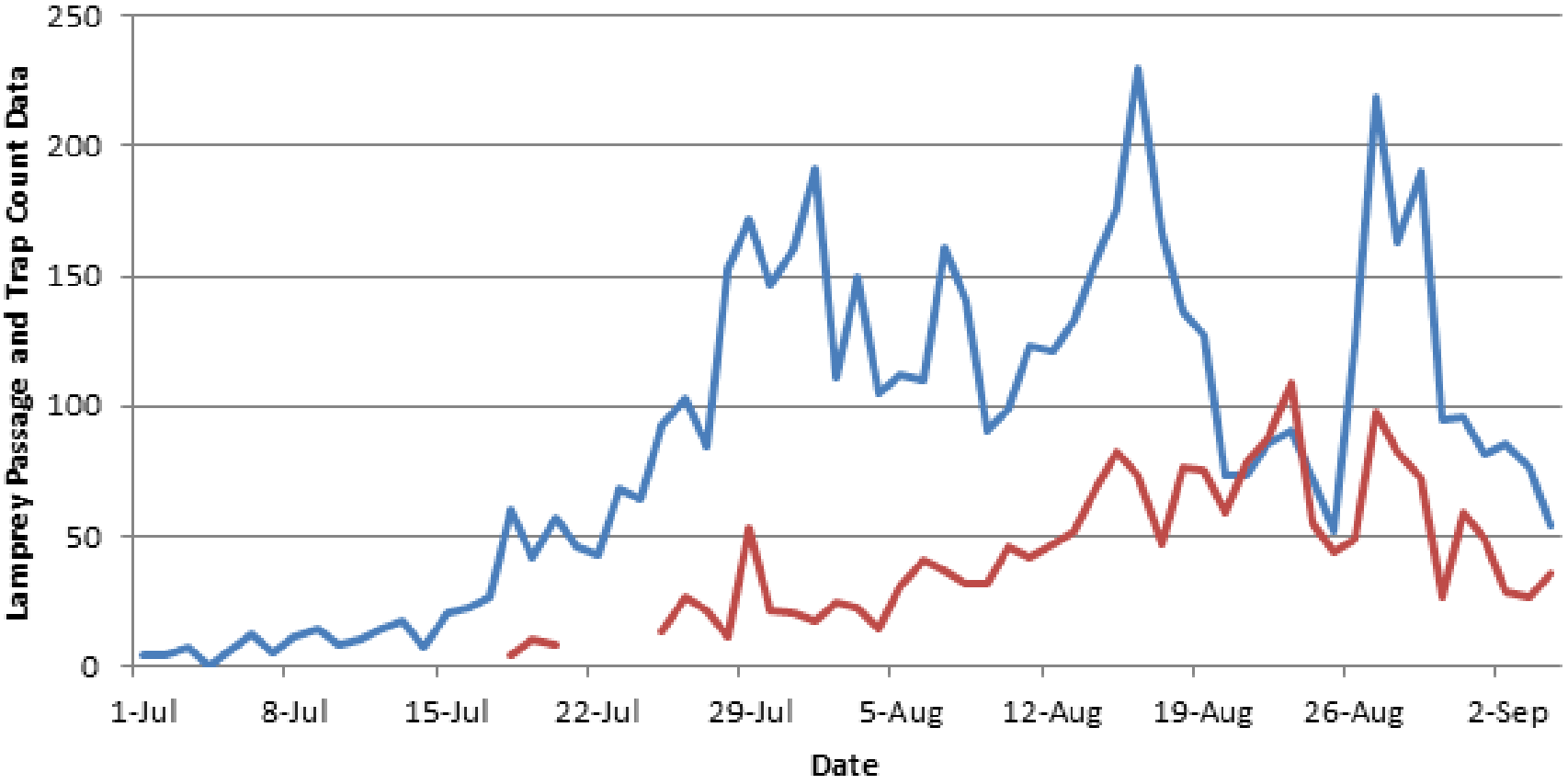
Wanapum Fishway Exit Passage System

Grant PUD is currently implementing maintenance dive cleaning of both the left and right bank fish ladder exit pump screens. Maintenance dives on LB are occurring 3-4 times/week

Adult Pacific Lamprey - Passage

- A total of 5,820 adult lamprey have been documented via the video count system passing through Priest Rapids Dam (9/4/14);
- 2,087 adult lamprey have been transported upstream and released above Rock Island Dam (9/6/14);
- At this time ~35% of the adult lamprey migration has been trap-n-transported upstream of Rock Island dam.
- To date a total of 4,378 adult lamprey have either volitionally passed through the PR Project (n=2,291) or have been trapped and transported upstream of Rock Island (n=2,087).
- At this time ~75% of the adult lamprey migration has either volitionally migrated or has been trap-n-transported upstream of Rock Island dam

2014 Pacific Lamprey Passage
Priest Rapids Project
Passage v. Trap Catch



Wanapum Spillway Repairs

<u>Pilot - 4”</u>: **37 Required**

- ✓ 24 of 37 - 4” pilot holes completed.

<u>Full Size – 16”</u>: **37 Required**

- ✓ 5 completed
- ✓ 6 in progress.

<u>Sheath Installation</u>: **37 Required**

- ✓ 2 completed
- ✓ 3 in progress.

<u>Tendon Installation & Tensioning</u>: **37 Required**

- ✓ 1 in progress.

<u>Monolith #4 – Upstream Bar Installation</u>: **20 Required**

- ✓ 4 in progress.

<u>Monolith #3 – Upstream Bar Installation:</u> 7 Required

- ✓ 0 completed.

<u>Monolith #4 – Crack Grouting Holes:</u> 25 Required

- ✓ 25 completed.

Intermediate Pool Raise

- **Preferred Option - 558'-562':**
  - ✓ Water supply forecasts serving as a guide to how much water may be available for fish flow requirements and refill operations;
  - ✓ Review/Analysis of Mid-Columbia Operations and Constraints;
  - ✓ Adult Fish Passage Timing; Fishway Operations, Hanford Reach Considerations;
  - ✓ Six different re-fill timing scenario's under consideration (Oct 1, Oct, 15, Nov 1, Nov 15, Dec 1, or Dec 15). River Operations and constraints by project (e.g. Rock Island, Rock Reach, Wells, etc.) under analysis for each re-fill timing scenario's;
  - ✓ Three different re-fill hold points likely (551', 556', and 561.5'); Proposal would include maximum of up to 3' vertical feet per day;
  - ✓ Inspections and Monitoring Program in development;
  - ✓ Notifications/Coordination – Internal and External Stakeholders;
  - ✓ Before any steps are taken to raise the pool elevation, this Refill Plan will be submitted to the BoC for their review, comment and concurrence. Once that has been received, it will be submitted to FERC for review and acceptance.

Next Steps/Planned Activities

- Daily inspections of exit systems to assure no failures associated with passage systems. Pump cleaning occurring 3-4/week occurring;
- Development of re-fill plan in development for BoC and FERC meeting in September (end of);
- Juvenile steelhead & yearling Chinook evaluation data processing & QA/QC. Presentation of draft final numbers presented to PRCC at October meeting;
- Benthic Fauna Survey and Evaluation draft report in development;
- Water Quality Evaluation in development;
- Interim Fish Passage Operation Plan due to FERC – Sept 12, 2014

Appendix E
Priest Rapids Coordinating Committee Meeting Minutes, Conference Calls, and Presentations

Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

Priest Rapids Coordinating Committee Meeting

Wednesday, June 25, 2014
9:00 am – 4:00 pm

PRCC Members

Scott Carlon, Bryan Nordlund, Justin Yeager, 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
Jeff Korth, WDFW
Patrick Verhey, Carmen Andonaegui, WDFW
Tom Dresser/Curt Dotson, GCPUD
Denny Rohr, Facilitator
Jim Craig, USFWS
Aaron Beavers, NMFS
Danny Didricksen, WDFW
Debbie Williams, GCPUD

Distributed Items:

1. 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.
2. FCWG and PRFF Briefing Reports.
3. Wanapum Dam Fish Ladder Observations and June 18, 2014 Summary Figures.

Decision Summary:

1. PRCC members agreed that one person observe both the left and right bank Wanapum ladders for mechanical failures and that fish counting and behavioral observations be discontinued; subject to approval by Truscott, Rose and Skiles.

Action Items:

1. Rohr will contact Truscott, Rose and Skiles regarding their vote to approve or deny Grant PUD's proposal to utilize one observer for the left and right bank Wanapum ladders.

Final Meeting Minutes

I. Welcome and Introductions

II. Meeting Minutes Approval and Affirmation

1. Affirmation: April 4, 2014 – Affirmed, April 11, 2014 – Affirmed, April 14, 2014 – Affirmed. April 22, 2014, awaiting approval from Rose.

2. Approval: April 28, 2014, May 1, 2014, May 5, 2014, May 6, 2014, May 9, 2014, May 19, 2014 - Waiting approval of Rose. May 28, 2014 - Korth will send comments from Andonaegui to Melissa Rohr. Awaiting approval from Rose and Skiles.

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

IV. Action Items Review – May 28, 2014 Meeting

1. D. Rohr to contact Bob Rose and Jeff Korth for approval of April 4, April 11, April 14 and April 22 meeting minutes - Complete
2. D. Rohr to work with Mike Schiewe, HCP Chair, on the June 24-25 meeting possibilities - Complete
3. D. Rohr to contact Bob Rose regarding decision on Allen Evans proposal - Complete
4. Allen Evans will send PPT presentation to D. Rohr and he will distribute to committee members - Complete
5. D. Rohr to follow up with upper management of NOAA and Grant to discuss spiral chute installation - Complete
6. C. Andonaegui will contact WDFW personnel within her office regarding Lisa Pelly, Trout Unlimited, and questions regarding the MVID water diversion study - Complete
7. C. Andonaegui to contact WDFW personnel within her office to find out if previous work conducted on fish screens on the Twisp and Methow rivers can will be refurbished or if it will be a complete loss. – Complete with email response from Jenny Novak, WDFW.

From: Novak, Jennifer L (DFW)
Sent: Monday, June 23, 2014 11:29 AM
To: Andonaegui, Carmen (DFW)
Cc: Korth, Jeff (DFW)
Subject: MVID

WDFW fabricated and installed the screens for both MVID East and West, which I believe was funded by BPA and the Bureau funded the design. The first attachment above illustrates the costs for fabrication of MVID West ($117,500), MVID East ($98,000) and installation costs for both ($31,400). The project totals for MVID East and West fabrication and installation: **$249,300**, paid for by BPA in 2004.

WDFW did refurbished MVID East in 2009 because the screen material was worn out due to high sediment load and debris. We replaced the (4) 6' x 12' self-cleaning traveling belt screens with new Intralox S1800 screen material, new sprockets, bottom shafts, and bearings. The 2nd attachment above itemizes the total cost for the refurbishment work: **$34,663**, which may have been funded by PRCC. However, Danny and I are having a hard time following paper trails and Pat's old files to confirm this.

The screens and gantry materials can be reused at a different location if WDFW acquires them, so decommissioning is not a total loss.

Please feel free to call if you have any further questions!

V. Update of Wanapum Dam Activities

1. Lamprey Passage Plan – Dresser reported that the Priest Rapids Fish Forum (PRFF) developed standard operating procedures for volitional passage and trap and haul of lamprey in the Priest Rapids Project (PRP). Lamprey will be counted via video fish counting at Priest Rapids Dam, and detected via PIT-tag detection at both Priest Rapids and Wanapum dams. Trap-n-haul activities at PRD will start on July 1 and extend through September. Trapping at Wanapum will begin on August 1, or after 10 or more adult lamprey have been counted passing the video count stations at PRD for 5 consecutive days. All trapped lamprey will be transported to Wanapum Fish Town and held until sufficient numbers are accumulated for transport above Rock Island Dam.

   Dresser explained that the PRFF would like to PIT-tag 20 to 30 lamprey that have been collected downstream of the PRP and put them into the upstream sections of the Wanapum Left Bank Ladder, in an effort to see if lamprey will pass the Wanapum Fishway Exit Passage Systems (WEEPS). The PRFF would also like lamprey behavior in the WLBL to be observed at night, for one week, via infrared video, in an effort to see if passage efforts will work.

2. Discussion of Sockeye, Summer Chinook, Steelhead and Bull Trout Observation Activities – Dresser asked PRCC members to consider an alternative proposal to the two observers currently counting fish and providing behavioral information at the left and right bank ladders at Wanapum Dam. Grant PUD proposed that one person split their time between the two Wanapum ladders in an effort to assure that no mechanical malfunctions occur, and that fish counting and behavioral observations be discontinued, except for a subsample of fish behavior that will be observed as the person travels back and forth between ladders. Grant PUD Operators will also continue their hourly inspections of the fishways. PRCC members present didn't feel it necessary that fish be counted any longer and agreed that one person could observe both the Wanapum left and right bank ladders for mechanical failures, especially during periods of high fish passage. Status quo remains until all members vote. PRCC members agreed that one person observe both the left and right bank Wanapum ladders for mechanical failures and that fish counting and behavioral observations be discontinued; subject to approval by Truscott, Rose and Skiles. Rohr will contact Truscott, Rose and Skiles.

VI. Update by Danny Didricksen, WDFW, regarding "Mid-Columbia River Intake Screen and Diversion Assessment" – The following update was provided by Didricksen.

6/25/2014

PRCC NNI Funded Project

Intake Screen Structure and Diversion Assessment

Progress Update and future Plans

Project Manager: Danny Didricksen, WDFW

Project budget: $102,838.58

As a result of the crack found in Wanapum Dam earlier this spring, and consequent lowering of Wanapum pool, emergency outreach was conducted to assure irrigators had access to their water in time for startup. Information gathered during the outreach and permitting processes resulted in significant progress relating to the NNI funds obtained by WDFW through in January 2014 to assess the intake screen structures and diversions.

In the original proposal, 23 potential points of diversion (POD's) were identified in the Wanapum pool as a result of surveys conducted by WDFW in 1994 and 1998, and by Grant PUD in 2012. It was found that many of these sites were relic diversions no longer in use. While final scoping is still necessary, it seems most active diversions in this reservoir are either adequately screened or in the process of becoming compliant.

Originally, WDFW had planned to hire divers to inventory all the potential sites after the irrigation season ended in 2014. It now seems that this effort will only be necessary in the Priest Rapids pool, where there are only 9-10 diversions to evaluate. WDFW is moving forward with a modified SOW to accomplish that objective. This will represent a cost savings for the project.

I would like to have input from the PRCC members regarding the project timeline and how the funds should be spent. I would point out that assisting with some immediate correction of screens in the Wanapum pool, Barnes and West diversions specifically, would be advantageous logistically and of benefit to fish if we could perform that work before this winter.

Didricksen and Dresser will work on diver coordination efforts in the Priest Rapids Reservoir (PRR). Dresser proposed that the PRR assessment be conducted, and then discussions be held in the PRCC regarding the following issues: timing and how intakes will be screened upon pool refill, considerations of reverse load factor, and NNI funding of this project.

VII. Affirmation of NNI Funding Proposal – *"Comprehensive Assessment of Total Smolt Mortality in Relation to Avian Predation on the Mid- and Lower Columbia River: Spatial and Temporal Analysis of Reservoir-Specific Smolt Losses"* – PRCC members affirmed their vote. Rose approved via a telephone conversation with Rohr.

VIII. Affirmation of NNI Funding Proposal (from Habitat Subcommittee) – *"Methow Valley Irrigation District Instream Flow Improvement Project"* – PRCC members affirmed their vote. Rose approved via a telephone conversation with Rohr. Email approval was provided to Rohr by WDFW.

IX. Spill Report for 2014 – Spring spill changed to summer spill on June 15, 2014.

X. Updates

1. Inland Avian Predation Activities (Goose Island / NW Rocks Follow Up) – The following update from Allen Evans, regarding the OSU/RTR Fish Tagging Study Update was provided by Curt Dotson - *Thursday (6/12) was our final day of PIT-tagging at the Rock Island Dam juvenile fish trap for the 2014 season. In total, we PIT-tagged and released 7,662 juvenile steelhead (5,669 hatchery, 1,993 wild) and 5,450 yearling Chinook (5,039 hatchery, 411 wild) between 12 April and 12 June. We achieved our target sample size goals for the season and fish were tagged in proportion to the run passing Rock Island Dam, with fish selected for tagging regardless of rear-type or condition (i.e., a representative sample of the run at-large).*

   PIT tag recovery at bird colonies, including the Caspian tern colony on Goose Island (NW Rocks), is scheduled for late-July through August.

   Please let us know if you have any questions or concerns. Otherwise, we'll keep you updated as the 2014 nesting season comes to an end.

2. Priest Rapids Bypass Operation – PRCC members toured the bypass during today's tour.

3. Hatchery Construction Activities – No updates.

   a. Carlton Acclimation Facility
   b. Nason Creek Acclimation Facility
   c. PR Hatchery Modifications

4. Hatchery Permits (Section 10 for Summer Chinook and Section 7 Consultation for Bull Trout - Ongoing

5. NNI Funded Projects

   a. Real Time Research Avian Study – Will look at other islands (Alan Evans)
   b. Comprehensive Assessment of Total Smolt Mortality in Relation to Avian Predation on the Mid- and Lower Columbia River: Spatial and Temporal Analysis of Reservoir-Specific Smolt Losses - Ongoing
   c. Upper Columbia Fish Screen Monitoring Program Phase I Contract Extension - Ongoing
   d. Upper Columbia Fish Screen Monitoring Program Phase II – Change order has been signed by both parties. - Ongoing
   e. Lower Wenatchee Instream Flow Enhancement Project Phase II – Ongoing
   f. Mid-Columbia River Intake Screen and Diversion Assessment - Ongoing
   g. Methow Valley Irrigation District (MVID) Instream Flow Improvement Project – Working through contract process.
   h. Supplementary Tags and Tagging for Assessment of Predation Losses of Subyearling Chinook Salmon in the lower Hanford Reach and Upper McNary Reservoir – Funding approved for sub tracking. Dresser will follow up with Langshaw.

6. Committee Reports – Rohr emailed to committee members.

7. NNI and Habitat Funds Report – Rohr will send electronic copies.

XI. Next Meeting – July 23, 2014 SeaTac Radisson Hotel

Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

Priest Rapids Coordinating Committee Meeting

Wednesday, July 23, 2014
9:00 am – 12:00 pm
Conference Call

PRCC Members

Scott Carlon, Bryan Nordlund, Justin Yeager, 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, NMFS
Jeff Korth, WDFW
Kirk Truscott, CCT
Curt Dotson, GCPUD
Denny Rohr, Facilitator
Jim Craig, USFWS
Tom Skiles, CTUIR
Tom Dresser, GCPUD
Melissa Rohr, D. Rohr & Associates

Decision Summary:

1. PRCC members approved a contract change order for the Chewuch River Permanent Instream Flow Project for an additional $24,859.00.
2. PRCC members affirmed and approved Fish Ladder Observer Duties and Activities.
3. PRCC members approved Grant PUD relocating the Rocky Coulee release site facilities to the Priest Rapids Hatchery.

Action Items:

1. Dresser to check on the differences between the fish ladder counts for sockeye at Priest Rapids and Wanapum dams versus John Day and McNary dam sockeye ladder counts.

2. Rohr to speak with B. Rose regarding approvals of today's decisions plus past meeting minutes needing his approval.

Final Meeting Minutes

I. Welcome and Introductions – Rohr welcomed committee members.

II. Meeting Minutes Approval and Affirmation:

A. Needing approval and affirmation: April 22, 28 (Rose); May 1, 5, 6, 9, 19 (Rose); May 28 (Skiles & Korth) – Skiles and Korth approved May 28 and Rohr concluded they are now final. Rohr will contact Rose for additional approvals as listed as he was not in attendance for today's meeting.

B. June 25, 2014 – approved and final.

III. Agenda Review – Dresser added to the agenda a discussion regarding a change order request to the Chewuch River Permanent Instream Flow Project, and a discussion regarding the removal of the Rocky Coulee Fish Release site facility.

IV. Action Items Review – June 25, 2014 Meeting – Rohr commented that May 28th action items were either completed or will be discussed during today's agenda proceedings.

V. Update of Wanapum Dam Activities – The Wanapum Dam spillway fracture repairs are well ahead of schedule. The drilling of 21 of 30 pilot holes has been completed. Six of 30 have been drilled out to the 16 inches diameter mark. Three have been drilled to full depth and completed. One of the three is at 22 feet and one is at bedrock. Upstream-anchors have two holes completed. Monolith #4 is still waiting on FERC approval for anchoring and pinning.

Grant PUD is still discussing the intermediate pool raise and the decommissioning of the flumes and spiral chutes. The question centers around how much water can refill per day when the intermediate pool raise begins.

Dresser said they hope to make a planned deadline during the second or third week of September. A determination of this also depends on the discussion and outcome of a meeting among the Board of Consultants, FERC, and Grant PUD at the end of September.

Currently, Blue Leaf Environmental is performing daily inspections at both Wanapum fish ladders; no fixes have been needed. Fish passage is going good.

575,039 Sockeye have gone over Priest Rapids Dam as of July 22, 2014, and 525,019 have gone over Rock Island Dam as of July 21, 2014. Committee members questioned the higher numbers of fish being reported (sockeye) passing Priest Rapids Dam and Rock Island Dam compared to lower numbers being reported at John Day and McNary dams. Dresser will look at Grant PUD counting operations and past reports regarding the differences in these numbers. Truscott commented that some adult passage through John Day and McNary takes place through the locks at these projects and therefore those fish are not counted. Dresser will investigate and report back.

The Lamprey Passage Plan has been approved by the PRFF, and they will begin to PIT-tag, release and track how lamprey use the false weir/fish ladder system. As of now, four lamprey have been observed during day time observations at the left bank ladder. Three went over the flume quickly and one was knocked lose by a sockeye, but continued through the flume. Currently 25 lamprey have been trapped.

VI. Affirmation of Approval of Fish Ladder Observer Duties and Activities (D. Rohr) - PRCC members affirmed and approved the Fish Ladder Observer Duties and Activities. Rohr

commented that he had received verbal and email approvals from Rose, Skiles, and Truscott concurring with the decision made during the June 25th PRCC meeting.

VII. Spill Report for 2014

There are no changes in the flow estimates. Chief Joseph is currently at 140 KCFS, so looking at 160-165 KCFS at the projects due to side-flows.

VIII. Chewuch River change order request

The Chewuch Channel River Company was diverting 34 cfs for irrigation purposes. During late summer and low–flow years, this amount was 2/3 of the river flow. The project was to reduce this amount from 33 ½ cfs to 24 cfs when the river, measured at Winthrop, reaches 100 cfs. This is the first time incorporated water users have agreed to permanently reduce their water agreement. Trout Unlimited is asking for an additional $24,859 to cover the costs of the changes that took place during the construction of this previously approved project.

PRCC members commented they felt this was an important project and that it should be covered. All members agreed to fund the change order of $24,859 pending Rose approval.

IX. Rocky Coulee Fish Release Site

The Rocky Coulee fish release site facility was installed during the early part of adult migration in late April and early May and was used as a release site for fish being collected during trap and haul operations at the Priest Rapids OLAFT. It is located on the right bank upstream of the Vantage Bridge above Wanapum Dam. Subsequently, the PRCC concluded that the Wanapum fish ladders were working and that the trap and haul program was no longer necessary. However, the release site facility was left in place in case it was needed for sockeye passage.

Dresser stated that fish ladder passage numbers show that sockeye are doing great and that the release facility is no longer needed. Grant PUD Hydro Engineering asked Dresser if the PRCC would feel comfortable allowing them to dismantle the release site facility and move it to Priest Rapids Hatchery. Mike Lewis, WDFW, feels that the release site pipe would help with collection and sorting of natural origin fall Chinook into one pond plus expedite the process of off loading trucks at the hatchery. This year, 40,000+ fall Chinook are expected to return to the hatchery.

The release pipe is not planned for lamprey use. The only outlier foreseen by PRCC members is the possible need to quickly put the facilities back in place at the Rocky Coulee site if needed. Grant PUD feels the pipe could be moved and assembled for use in one to two days.

PRCC committee members approved relocating the facility to the Priest Rapids Hatchery.

X. Updates

A. Inland Avian Predation Activities (Goose Island / NW Rocks Follow Up) - Currently in the Potholes area there are 312 terns on NW Rocks with 32 tern nests being tended to. It is fairly active right now, and NW Rocks is now connected to Goose Island due to the Potholes Reservoir level lowering. The discussion as to whether NW Rocks is an actual part of Goose Island is still ongoing. The scanning for PIT-tags will begin in late August as soon as terns have left the area. The satellite tags show that 11 of the 28 terns tagged have left the area, which equates to 40% being out of the

area. Of the 28 tags, 25 are still active, two have been lost to predation, and one has lost contact. These terns have been detected in Richmond, B.C., Grays Harbor, Washington; the estuary of the Columbia River; Payette, Idaho; Mountain Home, Idaho; Salton Sea, California; and the Northern end of the Gulf of California (Mexico). 24% are still foraging at the Columbia and Snake Rivers.

B. Priest Rapids Bypass Operation - Spilling is taking place. 18 receivers are still in the forebay area. Grant PUD has not been able to get divers into the area to retrieve them and secure the data. There is a life span on the batteries but not on the data collection which is stored on memory disks. The main concern is exposure to debris in the river and the debris hitting and damaging the receivers.

C. Hatchery Construction Activities - Grant PUD is closely watching wildfires in the area as the Carlton Acclimation Facility and Nason Creek Acclimation Facility are just a few miles away from the fires.

Priest Rapids Hatchery Modifications are moving forward at the lower end in the adult collection area. Mike Lewis, WDFW, has been working closely with the contractor, who requested an additional week of construction time. Grant PUD did not agree to the time extension; the project needs to be ready on time.

D. Hatchery Permits Section 10 for Summer Chinook and Section 7 Consultation for Bull Trout – No update provided.

E. NNI Funded Projects

1. Real Time Research Avian Study - The tagging of 10,000 yearling Chinook and steelhead at the Rock Island Index Count Station has been completed. Realtime Research will go in the nesting areas and look for PIT-tags in late August after the birds leave the nesting colonies.

2. Comprehensive Assessment of Total Smolt Mortality in Relation to the Wanapum Pool Drawdown - Dotson shared some preliminary survival estimates from the 2014 JSATS Survival study:

Project Survival via Ricker Estimation

Yearling Chinook

- Wanapum Reservoir + Dam: 95.2%
- Priest Reservoir + Dam: 95.0%
- Project (Wanapum*Priest): 90.4%

Steelhead

- Wanapum Reservoir + Dam: 92.4%
- Priest Reservoir + Dam: 95.6%
- Project (Wanapum*Priest): 88.3%

Wanapum Dam ("Concrete") Survival

- *Yearling Chinook – 96.9%*
- *Steelhead – 96.8%*

Priest Dam ("Concrete") Survival

- *Yearling Chinook – 95.3%*
- *Steelhead – 95.2%*

Currently the passage estimates are very preliminary and they should only increase due to the fact that no correction factors (i.e. tag-life curve or detection

efficiencies) have been incorporated into the calculations. These estimates could increase by another 1-1.5%.

The Priest Rapids performance standard target is 86.49%. The preliminary total Project survival estimate for yearling Chinook this year (the "5-year check-in") was 90.5%, up from the 86.56% 3-year Project survival estimate for yearling Chinook. This shows a big jump in survival rates on steelhead, which can be attributed to avian predation work. The total Project met the performance standard of 86.49% for steelhead also with a total Project survival estimate of 88.3%.

Members asked how survival numbers were created without the 18 receivers in the Priest Rapids forebay. Dotson commented there are receivers on the hazard barrier about 300-500 feet in front of the dam that picked up the tag signals and then again in the tailrace, at both Wanapum and Priest Rapids dams.

3. Upper Columbia Fish Screen Monitoring Programs Phase I and Phase II – Korth commented there are currently no updates regarding the specifics of the program. The fires in the area have created power outages and the screens are not operating. Korth discussed the close communication WDFW is having with the users that they will need to clean the screens more frequently due to fires. It was also noted by Truscott that rain predicted in the areas burned by the wild fires over the next few days could create higher runoff and the need to clean the screens more often. Korth will discuss communications and the frequency of cleaning the screens with the WDFW habitat staff.
4. Lower Wenatchee Instream Flow Enhancement Project Phase II – No update at this time.
5. Mid-Columbia River Intake Screen and Diversion Assessment - No update at this time.
6. Methow Valley Irrigation District (MVID) Instream Flow Improvement Project - Grant PUD is continuing to work with internal contracting process and requirements.
7. Supplementary Tags and Tagging for Assessment of Predation Losses of Sub yearling Chinook salmon in the lower Hanford Reach and Upper McNary Reservoir - Dotson commented that Realtime Research is waiting for the birds to leave the nesting colonies so they can go in and look for tags on the islands in the lower river on this study also. Data collection will be taking place later on in the season.

F. Committee Reports – Rohr emailed reports to the PRCC. Rohr commented that the Priest Rapids Fish Forum (PRFF) report highlighted the question under dispute regarding the number of juvenile White Sturgeon to release into the Priest Rapids Project. The PRFF could not agree on a number. The PRFF were considering the release of 4,200-6,500 juvenile White Sturgeon. The PRFF referred the matter to the PRFF Policy Committee to address and answer the question. The PRFF Policy Committee could not agree and therefore did not decide upon a release number. Grant PUD then referred the question to Washington Department of Ecology, who determined to release 6,500 White Sturgeon in to the Priest Rapids project. Rohr suggested committee members call Tracy Hillman, PRFF facilitator if they had questions.

G. NNI and Habitat Funds Report

NNI Fund 601	$2,891,404
Habitat Supplemental Fund 602	$3,835,578
Habitat Fund 603	$779,710
Total Unencumbered Balance for all PRCC Funds	$7,506,693

XI. Other - Dresser announced that Grant PUD will be shifting Dotson as the primary PRCC member and Dresser will become the alternate. Dotson will now be the voting representative.

XII. Next Meeting – August 27, 2014 SeaTac Radisson Hotel

Debbie Williams

From: Tom Dresser
Sent: Wednesday, July 23, 2014 3:46 PM
To: Carlon, Scott; Bryan Nordlund; Justin Yeager - NOAA Federal (justin.yeager@noaa.gov); Craig, Jim; Bob Rose; Tom Skiles (skit@critfc.org); Korth, Jeff (DFW) (Jeff.Korth@dfw.wa.gov)
Cc: Rohr, Dennis; Debbie Williams; Curtis Dotson; Melissa Rohr (melissarohr76@gmail.com)
Subject: Per the discussion today on potential differences in sockeye counts between McNary and PR

PRCC Folks;

Per the discussion today on potential differences in sockeye counts between McNary and PR; I had staff take a look at previous counts to see how things looked over past years. The differences between the 2 dams are likely attributed to sockeye's use of the McNary lock passage and PRD fallback. I however, would like to believe that our fish cloning machine is back on line and fully operational and we are increasing the run-size in the mid-Columbia :o)

Year	McN	PRD	% Diff PRD to McN
2014	~543,000	575,039	105.9
2013	134,202	163,079	121.5
2012	364,147	408,258	112.1
2011	113,952	145,070	127.3
2010	278,799	357,058	128.1
2009	121,672	153,466	126.1
2008	146,924	196,835	134.0
2007	18,175	24,645	135.6
2006	29,295	26,710	91.2
2005	63,540	74,563	117.3

Tom Dresser
Fish, Wildlife & Water Quality Manager
Public Utility District No. 2 of Grant County, Washington
30 C Street SW
Ephrata, Washington 98823

Cell: 509-797-5182
Office: 509-764-0500 ext. 2312

PRCC Habitat Subcommittee
Project Specifications Sheet

Date submitted: **May 7, 2013**

Project Sponsors:

Lisa Pelly, Director
Trout Unlimited-Washington Water Project
103 Palouse, Suite 14
Wenatchee, WA 98801
lpelly@tu.org

Jennifer Molesworth, Methow Basin Liaison
Bureau of Reclamation
206 Glover Street
PO Box 918
Twisp, WA 98856
jmolesworth@usbr.gov

Project Liaison:

Kate Terrell, USFWS

Project Title

Chewuch River Permanent Instream Flow Project

Project Type:

Permanent Instream Flow Enhancement

Location:

Methow Sub-Basin - The areas affected by the project extend from the Chewuch Canal Company point of diversion at RM 8.0 of the Chewuch River downstream to the confluence of the Chewuch and Methow Rivers and a short distance downstream in the Methow River. Project construction activities will take place in or around Pearrygin Lake, Lake Creek, Town of Winthrop, Bear Creek, and adjacent uplands.

Requested funding amount from PRCC Habitat Subcommittee: $450,000

Short description:

This project will permanently enhance flows in the Chewuch River in the late summer and fall months, supporting three listed fish species: UCR spring Chinook, UCR steelhead, and CR bull trout.

Project description and justification:

The Chewuch Canal Company (CCC) diverts up to 34 cfs from the Chewuch River to irrigate over 700 acres of farmland. During late summer in dry years, this amount can equal 2/3^{rds} of the total flow in the river. This project will permanently reduce the Chewuch Canal Company's maximum diversion from 33.5cfs to 24 cfs when Chewuch flow levels reach 100 cfs, measured at the USGS gauge near Winthrop, representing a 10% increase in instream flow for the Chewuch River. This permanent diversion reduction represents a significant milestone for the Chewuch Canal Company, because it is the first time the incorporated water users have agreed to permanently reduce their diversion, and more importantly the reduction will be triggered when the Chewuch River reaches critically low flow levels (<=100 cfs).

The Chewuch River is a major tributary of the Methow River which provides habitat for three fish species listed under the Endangered Species Act (ESA): endangered Upper Columbia River (UCR) spring Chinook salmon (*Oncorhynchus tshawytscha*), threatened UCR summer steelhead trout (*Oncorhynchus mykiss*), and threatened Columbia River (CR) bull trout (*Salvelinus confluentus*). The lower reach of the Chewuch River benefited by this project provides adult upstream passage, juvenile rearing habitat, and spawning habitat for these species. In addition, this reach contains numerous game and non-game fish species including UCR summer Chinook salmon, cutthroat trout, rainbow trout, mountain whitefish, Pacific lamprey, and others.

The basis of the project is a contract between Trout Unlimited (TU) and CCC, under which CCC agrees to permanently reduce its diversions on the Chewuch River. The project will create a permanent reduction in diversions at baseflow conditions (under 100 cfs) during the irrigation season (May 1 to October 1) and switch the season of reservoir filling from the fall/winter during critically low flows to the spring and early summer during higher flows. By enabling spring reservoir filling by the CCC, this project will allow the CCC to move diversions from the fall baseflow period to the spring rising limb and peak flow periods.

The project will return 10 cfs to the flow-impaired Chewuch River during irrigation season and low flows annually at a specified target of 100 cfs, and this project will shift reservoir diversion timing to maximize benefit to ESA listed fish. Shifting the reservoir fill to the spring will effectively return up to15 cfs to the river during the critical fall season when flows are low. The changes will improve late season flow by 25 cfs in late season in one of the most productive rivers in the Upper Columbia Basin.

During the irrigation season, irrigation diversions will continue under their current water right authorization of 34 cfs during peak flow, peak flow recession and baseflow recession periods. When flows in the Chewuch fall below 100 cfs, CCC will reduce their diversion rate to 24 cfs, thus reducing diversions throughout late summer baseflow. In addition, CCC will permanently cease diversions on October 1. The combination of these two changes will increase flows both

during the irrigation season in late summer/early fall after the Chewuch River falls below 100 cfs, as well as during the former reservoir filling period in mid/late fall, and result in an immediate benefit to listed fish species, especially spring Chinook.

To allow these diversion reductions, canal upgrades have been designed to enable CCC to maintain sufficient irrigation supply for their shareholders while returning water instream during critical times. The Chewuch River Permanent Instream Flow project includes five construction elements that will improve the CCC infrastructure and thereby increase efficiency:

- *Lake Creek Pipe*: a new pipe in the hillside above Lake Creek between Pearrygin Lake and the existing Bubbler debris screen;
- *Pearrygin Intake Structure*: a new intake structure at Pearrygin Lake to supply the Lake Creek Pipe;
- *Silverline Pipe*: a new pipe connecting the Wright Lateral and the new Lake Creek Pipe;
- *Debris, Flow Control, and Flow Metering Structures*: two new debris screening structures in upland areas; a new concrete flow metering structure and two new flow control structures in the new and existing pipe alignments near the Bubbler;
- *Winthrop to Bear Creek Pipe:* piping the last section of open irrigation ditch below Pearrygin Lake in the area between the Town of Winthrop and Bear Creek.

The Chewuch River Permanent Instream Flow Project is at a crucial juncture, ready to construct, but short on funding. Over the last three years costs have increased since budgets and grant requests were initially made. The project was delayed from construction in 2012 because negotiations for the Diversion Reduction Agreement and the reservoir fill permit refinements were not final, combined with additional permit requirements (including a new Section 106 Archeology requirement), and extra costs in obtaining an easement from Washington State Parks. The design also took longer than anticipated due to significantly added complexity for managing and monitoring flows in and out of Pearrygin Lake (the reservoir), and dealing with canal debris from 6 miles of open canal above the lake. The estimate of probable cost also increased due to added complexity for reservoir management and monitoring, and increased material costs. The additional monitoring system, data gathering, and analysis have also added more cost to the project.

The project already has passed many significant milestones: the environmental permits for the project are all obtained and the Record of Examination (ROE) for refinement of the reservoir fill permit is out for 30 day public review until May 29th, 2013. A large investment is already in place from current funders and Reclamation engineering.

TU has obtained and analyzed historic data including hydrographic records and irrigation records to estimate the acre-foot water quantities that will remain instream. Because this agreement is triggered by river flows, the actual amount of water returned for instream flows will change from year to year. Annual diversion reductions during the irrigation season resulting from this agreement are on average about 640.8 acre feet per season based on historical CCC average diversions for the past 20 years and USGS records for flows in the Chewuch River. Climate change modeling specific to the Methow sub-basin indicates that climate change will result in earlier and higher peak flows and earlier and lower base flows in the Methow River. We believe

that under this agreement, the average annual amount of water returned instream is likely to significantly increase if climate change models are accurate. This additional water available instream under the terms of this agreement will provide additional protection for aquatic habitat as the Methow River hydrograph shifts, making this project important as a climate change adaption project.

In addition, CCC presently holds a reservoir permit allowing post-season irrigation withdrawals from the Chewuch River to fill Pearygin Lake and the year-round right to withdraw the top five feet in the lake, (a quantity of 1,000 acre-feet) at their discretion. The CCC prefers to enter the winter with a full reservoir to guard against the possibility that for some reason (such as their ditch blowout above the lake this spring) they are not able to fill the lake in April prior to irrigation commencing on May 1st. The quantity of water they annually divert to fill the reservoir in October and November varies and is usually dependent upon the actual lake level at the end of September. For example, in 2008, CCC records show that they had used approximately four of the five feet available to them, so CCC diverted about 800 acre-feet in October to fill Pearrygin Lake. At present, under their existing permit they can divert up to 1,000 ac/ft in October and November to fill their reservoir in the event of a dry year which compels them to use all of the top five feet of the reservoir by October 1st. Available CCC records show that an average of nine cfs and a maximum of 12 cfs have been diverted during October. This represents between 11% and 15% of the average base flows in the Chewuch River which will be returned to the river in areas of ESA-designated Critical Habitat for spring Chinook, steelhead, and bull trout by this project.

TU currently has funding for this project from the Columbia Basin Water Transaction Program/BPA, Yakama Nation, Tributary Committee and Bureau of Reclamation. We also have two proposals submitted for additional funding for the project.

Because of uncertainty regarding project costs especially the cost of pipe, TU recently obtained three estimates to ground truth the project budget, one completed by BOR engineers and two by private, engineering firms. The proposed budget below is based on the estimate that came in in the middle. While we believe this is a reasonable estimate final project costs will be determined when we go out for a final bid this summer. We have attached the cost comparison's of the three estimates and the construction costs for the ABC estimate as appendixes to this proposal.

We believe this project, despite higher costs, remains in line with market rates for these types of projects especially the importance of the increase in flow derived from this project is significant.

PROPOSED BUDGET			
ITEM	***PRCCHSC REQUEST***	***OTHER CONTRIBUTION***	***TOTAL COST***
Winthrop to Bear Creek Construction	$350,000	$780,989	$1,130,989
Lake Creek and Silverline Pipe Construction		$841,661	$841,661
Project Management, Easements, Re-vegetation, Monitoring	$100,000	$195,897	$295,897
		Total project costs	**$2,268,547**

Estimated Timeline:

Activity	**Already completed / will be by August 2013**	**September – November 2013**	**March – May 2014**	**2015**	**Ongoing through 2016**
Project Planning & Development	X				
Engineering & Design	X				
Permitting & Consultation					
ESA Consultation	X				
SEPA	X				
JARPA/HPA	X				
Section Consultation	X				
Section 106 Mitigation	X				
DRA	X				
ROE	X				
OCPI				If needed	
Final Survey & Baseline Staking	X				
Contracting	X				
Construction		X	X		
Administration. Monitoring & Reporting				X	X

Appendix A: Cost Estimate Description

Appendix B: Project Maps

Appendix C: Project Photos

FINAL MEETING MINUTES

PRCC Habitat Subcommittee

June 13, 2013

1:00 – 5:30

Chelan PUD Auditorium

PRCC Habitat Subcommittee Members

Scott Carlon, NMFS	Kate Terrell, USFWS
Chris Fisher, CCT	Dave Duvall, GCPUD
Lee Carlson, YN	Carl Merkle, CTUIR
Jeremy Cram, WDFW	Denny Rohr, Facilitator

Meeting Attendees: (*Denotes PRCC HSC member)

Jeremy Cram, WDFW*	Chris Fisher, CCT*
Dave Duvall, GCPUD*	Lee Carlson, YN*
Scott Carlon, NMFS* (via phone)	Kate Terrell, USFWS*
Mickey Fleming, CDLT	Denny Rohr, Facilitator
Cindy Inch, GCPUD	

Action Items:

1. **Rohr will convey the message to the PRCC on June 26th that the HSC would like to operate without the NNI Use SOA, but go back to how they have operated in the past, which is to request NNI funding from the PRCC when the HSC felt it to be appropriate.**
2. **Duvall will make the discussed and agreed upon modifications regarding the Tyee Ranch Landowner Agreement and Conservation Easement; Rohr will contact Susan Dretke and explain the HSC position.**
3. **Rohr will continue discussions with Tracy Hillman regarding the appraisal process.**

4. **Fisher will talk to ONA regarding consideration to waive their administrative fee for the purchase of the 2 bottomless box culverts.**
5. **Duvall and/or Terrell will work on a potential spec sheet on a Nason Creek stream gage station.**
6. **Duvall and/or Cram will work on a carcass distribution program for nutrient enhancement using surplus fall Chinook from Priest Rapids Hatchery.**

Decisions:

1. **HSC approved funding of the TU proposal for the Peshastin and Icicle Irrigation Districts Pump Exchange Project for $174,847 from Habitat Fund 603.**
2. **HSC approved requested funding for the Chewuch River Permanent Instream Flow Project of $450,000, and agreed to request NNI funding (601) from the PRCC.**
3. **HSC approved funding for the Barkley Irrigation Company for $46,366, from Habitat Fund 603.**

Final Meeting Minutes

I. **Welcome** – Rohr welcomed members.

II. **Agenda Review** – Two agenda items were added. 1) HSC discussed the possibility of funding a stream gaging station in Nason Creek, similar to what was done in the White River and Okanogan Basin. The caveat is that this would be temporary funding and that a different long-term source would be required after the second year. Duvall and/or Terrell will work with the sponsor for a future spec sheet. 2). Duvall mentioned there was expected to be a large number of untreated carcasses from the Priest Rapids Hatchery this fall and asked if the HSC be interested in implementing a carcass distribution for nutrient enhancement. In general the HSC was receptive to the idea. Duvall and Cram would further discuss ideas.

III. **Action Items Review** - Action items identified during the May 9, 2013 meeting were reviewed.

1. **Rohr will send the draft NNI document to HSC members for review. (Completed)**
2. **Peshastin and Icicle Irrigation Districts Pump Exchange Project - Send email vote of approval or denial to Rohr, by noon on Friday, May 17, 2013. (See agenda item discussion below)**

3. **Rohr will contact Reese about conducting the appraisal and having another appraiser do the review. Rohr will contact Hillman regarding when this will be on the Trib Committee agenda again. (See agenda item discussion below)**

4. **Duvall will talk to Grant PUD contracting folks about the easiest way to pay for these small expenditures, and keep HSC members apprised of the process. (Removed from discussion)**

5. **Nason Creek LWP Flood Plain Reconnection Project Fisher will look at the spec sheet and report back if it has a termination date listed, or not. Duvall will send the contract out to HSC members. (See agenda item discussion below)**

6. **Wenatchee Nutrient Enhancement Proposal – Terrell will send her update to Williams. (Completed)**

IV. Habitat Funding Report – As of May 31, 2013, Habitat Funds totaled (not including interest).

Fund	Balance	Unencumbered Balance
No Net Impact Fund 601	$6,456,810	$5,348,149
Habitat Supplemental Fund 602	$5,892,243	$3,539,972
Habitat Fund 603	$1,075,441	$890,484
Total	$13,424,494	$9,778,605

V. Update of NNI Funding Document (D. Rohr) – Rohr explained that the draft NNI Funding Guidance SOA was still under discussion among PRCC members, and it would be addressed at the next PRCC meeting on June 26th. HSC members discussed the SOA, and opinions were expressed both pro and con. HSC members concluded with a general lack of support for the SOA that is under review and consideration by the PRCC. Another idea was to use the document as a "Guidance Document" rather than calling it an SOA. **The HSC concluded they would like to operate without the NNI Funding Guidance SOA, but go back to how they have operated in the past, which is to request NNI funding from the PRCC when the HSC felt it to be appropriate. HSC members asked Rohr to**

convey that message to the PRCC at their next meeting on June 26th.

VI. UPDATE DISCUSSION: Tyee Ranch Project Proposal – Mickey Fleming, CD Land Trust, met with the HSC to review her analysis and report regarding the Tyee Ranch Land Owner Agreement (LOA) and Conservation Easement (CE). Because of her extensive background in this area, the HSC had contracted with Fleming to complete this analysis. Fleming walked through her report and answered questions from HSC members. The conclusion of the review and discussion with HSC members was that the LOA and CE contained areas that needed some modifications in order to satisfy the concerns and questions discussed. **Accordingly, HSC members concluded that the modifications needed to be clearly identified in the two documents and sent to Susan Dretke at Cascadia Conservation District with a request to review, make the modifications, and respond back to the HSC. Duvall commented that in the interest of time, he would be willing to make the discussed and agreed upon modifications, and he would review them with the Grant PUD attorney prior to sending to Dretke. The HSC approved these next steps as a path forward. Rohr will contact Dretke and explain the HSC decision.**

VII. Update Discussion: Scope of Work – Peshastin and Icicle Irrigation Districts Pump Exchange Project – During the month of April, Chelan County Natural Resources Department (CCNRD) sent a proposal for the Icicle and Peshastin Irrigation Districts Pump Exchange Project, at a cost of $220,000 (April 10th Project Spec Sheet), to study the feasibility of constructing one or more pumping facilities on the Wenatchee River, in order to deliver water to the Peshastin and Icicle Irrigation District canals. The proposal was an agenda item for discussion at the April 11th meeting. However, because Carlon and Fisher were not at the meeting, the discussion was tabled until the next meeting. On May 7th, a counter proposal, costing $174,847, was received from Trout Unlimited (TU). Members discussed both proposals during the May 9th meeting, and Duvall and Fisher asked for additional time for review and clarification.

The HSC continued their discussion of the two proposals during today's meeting. After extended discussion, it was noted that the CCNRD proposal had been modified and submitted to other forums for funding consideration. Accordingly, the HSC removed the CCNRD proposal from further consideration. **After additional discussion, the HSC approved funding of the Trout Unlimited proposal of $174,847 from Habitat Fund 603 with caveats to the**

approval including notation this was a feasibility study, and that option 4 of the proposal (Dryden South Site Pump and Force Main / Gravity System) will be removed from funding if CCNRD receives funding from other sources to complete this option.

VIII. Review of Habitat Subcommittee Appraisal Process – Discussion of the appraisal process to be used for evaluation of future acquisitions and conservation easements continued. The HSC concluded they would like to include local appraisers in the process. The review appraisers can come from outside the local area, but the HSC felt it to be advantageous to have the appraisers come from the local area. **Accordingly, Rohr will talk with Tracy Hillman, Tributary Committee chair, to determine who might fill this role and discuss further with the HSC at the next meeting.**

IX. Robinson Acquisition Project – Rohr stated his comments were to update the HSC members on the status of the appraisal for this project. This project had been previously approved for funding by the HSC. This project was to follow what was considered to be the "new appraisal process" which would include using an HSC appraiser plus an HSC review appraiser (See agenda item VIII above). However, the new process had not been finalized, so Rohr polled the HSC members prior to today's meeting to determine if they were alright with using the "old appraisal process" which consisted of the project sponsor getting their own appraisal completed. The result of the polling of HSC members was to allow the sponsor for this project to take care of getting their own appraisal completed.

X. Bremer Property, Phase 3 – Due to time constraints, this subject was not discussed.

XI. Chewuch River Permanent Instream Flow Project Proposal – This proposal was tabled at the May 9th meeting for discussion at today's meeting. It was noted that this project is time sensitive, and a near term decision by the HSC would be helpful. This project is to permanently enhance flows in the Chewuch River in the late summer and fall months, supporting three listed fish species: UCR spring Chinook, UCR steelhead, and CR bull trout. **After review and discussion, HSC members approved the requested funding for the project of $450,000, and agreed to request NNI funding from the PRCC, with the caveat that any savings that occurred due to potential modifications to the project which resulted in a reduction in the funds necessary to complete the project would be returned to the HSC. If the request for NNI funding is denied, the HSC approved funding the project from Habitat Fund 602.**

XII. ORRI Phase II, "Purchasing Discussion" Regarding 2 Bottomless Box Culverts – Information regarding this discussion had been circulated to HSC members prior to today's meeting. The question centered around possibly purchasing the box culverts within the U.S. and shipping into Canada versus having a Canadian entity purchase the culverts in the U.S. and transporting them to the site for installation. The savings for a U.S. purchase would amount to approximately $10,000. Fisher also commented that if the purchase was made within Canada, this would result in an administrative fee from ONA of approximately 10%. Accordingly, the HSC discussed making a request to ONA to waive their administrative fee for this particular purchase. Fisher agreed to follow up on this with ONA and report back.

XIII. Barkley Irrigation Company – This project was approved for funding several months ago by the HSC. The project included buying and installing irrigation pipe. Recently a fire that resulted from actions by a local resident destroyed much of the irrigation pipe, and the project sponsor is requesting funding to replace the pipe. An insurance claim is being investigated to replace the pipe**. After discussion, the HSC approved funding as requested for $46,366, from Habitat Fund 603, with the caveat that any insurance funds received be delivered to the HSC and the landowner had to show proof that a claim had been submitted to the insurance company. HSC approval was an amendment to the original funding amount of $174,500 by increasing the original amount by $46,366 for a new not-to-exceed total of $220,866.**

XIV. Updates (not discussed due to time constraints; conference call scheduled for 1:00 pm, June 17th to address Updates listed below)

A. McIntyre Dam

B. VDS 13

C. ORRI Phase 2

D. Nason Creek LWP Flood Plain Reconnection Project

E. Wenatchee Nutrient Enhancement Proposal

F. Icicle Creek Boulder Field Assessment Project – Terrell distributed the final report to HSC members. Further discussion will take place at the next HSC meeting.

G. Tyee Ranch Project – (See agenda item VI above)

H. Lower Wenatchee Instream Flow Enhancement Project

I. Lower Chewuch Beaver Restoration Project

J. Shuttleworth Creek Project

K. Methow River 1890s Side Channel Groundwater Gallery Properties Strategic Acquisition

L. Roaring Creek Flow Restoration and Diversion Removal Project

XV. Approval of Meeting Minutes

A. May 9, 2013 – Approved with agreement that Duvall will add a few minor edits that had been inadvertently left off before finalizing and posting to the website.

XVI. Next Meeting:

A. Conference call scheduled for 1:00 pm, June 17, 2013 to complete today's agenda items, including Updates.

B. Next regularly scheduled meeting is Thursday, July 11, 2013

C. HSC members agreed to changing the August meeting to a conference call, plus they agreed to scheduling the meeting in November from the 14th to the 15th.

Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

Priest Rapids Coordinating Committee Meeting

Wednesday, August 27, 2014
9:00 am – 12:00 pm
SeaTac Radisson Hotel

PRCC Members

Scott Carlon, Bryan Nordlund, Justin Yeager, 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

Jim Craig, USFWS
Jeff Korth, WDFW
Curt Dotson, GCPUD
Kirk Truscott, CCT (Via phone)
Tom Dresser
Debbie Williams, GCPUD (Via phone)
Denny Rohr, Facilitator

Distributed Items:

1. Final Agenda 08-27-2014
2. Habitat and NNI Funds Report for July, 2014
3.
4. Chewuch Final Narrative
5. FCWG Briefing Report, Aug 2014
6. PRFF Briefing Report, Aug 2014

Decision Summary:

1. Rohr affirmed that Rose approved the Contract Change Order for the Chewuch River Permanent Instream Flow Project for an additional $24,859.00.
2. Rohr affirmed that Rose approved Grant PUD relocating the Rocky Coulee release site facilities to Priest Rapids Hatchery.

Draft Meeting Minutes

I. Welcome and Introductions

II. Meeting Minutes Affirmation and Approval:

A. Affirmation of Approvals Received – B. Rose, April 22, 28, May 1, 5, 6, 9, 19, 2014. J. Korth (for C. Andonaegui), T. Skiles, May 28, 2014. Rohr affirmed that all listed meeting minutes have been approved.

B. July 23, 2014 – Approved subject to approval from Craig, Skiles, Carlon and Korth.

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

IV. Action Items Review – July 23, 2014 Meeting – All action items were complete.

V. Update of Wanapum Dam Activities (T. Dresser) – Based on Rock Island Dam counts, Dresser reported that more than 700,000 adult salmonids have passed Wanapum Dam. Over the course of the past 2 weeks aquatic vegetation buildup on the intake screens of the four 90 hp. pumps located at the left bank Wanapum fishway has become problematic. To address this issue, divers will clean the left bank fish ladder exit pump screens three days a week. In addition, dive crews are available to respond on non-scheduled days as well. Fishways are not dewatered while pumps are cleaned, but are out of criteria for 20 minutes because of lower water levels. Last week, the auxiliary water supply also became plugged with aquatic vegetation; divers were splashed to clean the screen.

Volitional lamprey passage, as well as trap and transport, is going extremely well. 4,188 adult lamprey have been documented passing Priest Rapids Dam via the video count system, and 1600 adults have been trapped and transported upstream of Rock Island Dam. The Priest Rapids Fish Forum is discussing whether to continue trap and transport after Sept 1st.

Grant PUD continues to work on the Wanapum Spillway fracture as well as development of a refill plan. The plan will allow the pool to be operated from 558' to 562'. Although the target refill time has not been determined, it is likely to occur between October and December 2014. Prior to implementation, the refill plan must be approved by the Board of Consultants and FERC. The expected full pool target date is Memorial Day 2015.

VI. Affirmation of Approval by B. Rose for Contract Change Order for the Chewuch River Permanent Instream Flow Project for an additional $24,859.00. (D. Rohr) – Rohr affirmed Rose's approval.

VII. Affirmation of Approval by B. Rose for Grant PUD relocating the Rocky Coulee release site facilities to Priest Rapids Hatchery (D. Rohr) – Rohr affirmed Rose's approval.

VIII. Spill Report for 2014 (C. Dotson) Dotson reported that based on the Rock Island count index, spill is still going on at Priest Rapids and Wanapum dams. Total fish spill at Wanapum Dam is 20 kcfs (5 kcfs through the bypass and 15 kcfs divided amongst Gates 12 through 7 on the Wanapum spillway). Large aquatic vegetation mats near the entrance to the bypass created a large eddy that was pulling the mats towards the powerhouse. Spill was concentrated at Gate 12 in order to rectify the situation. This plan was approved by the 2014 PRCC Spill Representatives.

IX. Updates

A. Inland Avian Predation Activities (Goose Island / NW Rocks Follow Up) (C. Dotson) – Dotson reported that the Goose Island dissuasion program was successful and now that the nesting season is over, tags on the island are being gathered. A draft report is expected in October. As of August 12th, data from Real-Time Research showed satellite tags located in the following locations: 6 in the Columbia Plateau, 3 in Washington/British Columbia, 4 in Central Oregon/Southern Idaho, 9 at the Salton Sea in California, and 3 in Sonora, Mexico. Satellite tags show the extensive travel range of a Caspian tern. Dissuasion activities will be maintained in the future. WDFW is still maintaining the feeding ponds in the Potholes Reservoir. For additional information on terns, visit Bird Research.com.

B. Priest Rapids Bypass Operation (C. Dotson, T. Dresser) – Fish spill is ongoing. Dotson noted that receivers for the 3-D route specific behavior study of steelhead and Chinook through the bypass were pulled on August 8th and are being downloaded. A draft report is expected in October. Preliminary survival numbers were provided during last month's meeting, and those numbers haven't changed; John Skalski will review all data. Blue Leaf Environmental and Skalski will be in attendance in October to discuss the data.

C. Hatchery Construction Activities (T. Dresser)

1. **Carlton Acclimation Facility** – Fish will be on station 10/1. Working with WDFW on outstanding items at this facility. This is the second year fish have been on station.
2. **Nason Creek Acclimation Facility** – Facility is complete, working on punch list. Fish will be on station at the end of September. WDFW noted that the NCAF personnel meant to live at this location will be leaving WDFW and they are working to fill the position.
3. **PR Hatchery Modifications** – Modifications identified by Grant PUD and WDFW are being worked on. Jackson Creek modifications at the fish trap are slated to be done by September 29th; the finger weir is currently being installed and the crowder system is complete. Flows through the adult trap and how to manage them have been determined. 56,000 fall Chinook are estimated to return this year, compared to 40,000 last year. The facility was watered on September 1st. Broodstock collection will continue until the first of December.

   Dresser reported that PNNL will be conducting biological testing and experimenting with the Woosh fish gun. In mid-October, WDFW will transport 200 fall Chinook to the raceway for the experiment. Dresser will let folks know when the experiment will take place.

D. Hatchery Permits (Section 10 for Summer Chinook and Section 7 Consultation for Bull Trout. (T. Dresser) – Dresser reported that Grant PUD doesn't foresee any issues with the Section 7 Consultation for bull trout, but does have questions for NOAA on the Section 10 permit that could possibly slow the process down a little bit. Draft HGMP's have been distributed for Methow spring Chinook. Douglas PUD has the lead on that program.

E. NNI Funded Projects

1. **Real Time Research Avian Study** (C. Dotson)

   ** Including "Comprehensive Assessment of Total Smolt Mortality in Relation to Avian Predation on the Mid- and Lower Columbia River: Spatial and Temporal Analysis of Reservoir-Specific Smolt Losses" – See discussion under IX-A, above.

2. **Supplementary Tags and Tagging for Assessment of Predation Losses of Subyearling Chinook Salmon in the lower Hanford Reach and Upper McNary Reservoir** (C. Dotson) – Battelle is analyzing data collected from the 200 subyearling Chinook tagged with JSATS tags. A draft report is expected in October.

3. **Upper Columbia Fish Screen Monitoring Program Phase I Contract Extension** (J. Korth) – Korth had no update on the screening program, but did report that no screens were lost in the Carlton Complex fire. Debris from recent rains is causing issues.

4. **Upper Columbia Fish Screen Monitoring Program Phase II** – (J. Korth) – No update provided.

5. **Lower Wenatchee Instream Flow Enhancement Project Phase II** – (J. Korth) – No update provided.

6. **Mid-Columbia River Intake Screen and Diversion Assessment** (T. Dresser) – Divers will conduct surveys on the Priest Rapids Reservoir in October after irrigation has been suspended for the season. Dresser will contact D. Didricksen to schedule.

7. **Methow Valley Irrigation District (MVID) Instream Flow Improvement Project** (T. Dresser) – Dresser reported that the contract is complete and has been signed by Trout Unlimited and Grant PUD.

F. Committee Reports (D. Rohr) – FCWG and PRFF reports were distributed by Rohr.

G. NNI and Habitat Funds Report (D. Rohr) – As of July 31, 2014.

Fund	Balance	Unencumbered Balance
No Net Impact Fund 601	$6,395,099	$2,872,904
Habitat Supplemental Fund 602	$5,210,968	$3,838,616
Habitat Fund 603	$1,218,639	$ 780,124
Total	$12,824,706	$7,491,644

X. Review of Next Month's Agenda Topics (D. Rohr) – Standard items

XI. Next Meeting – September 24, 2014, via Webinar conference.

Appendix F
Priest Rapids Fish Form, the Fall Chinook Working Group, Coastal Conservation Association, and the Priest Rapids Coordinating Hatchery Subcommittee Meeting Minutes and Briefings

Priest Rapids Fish Forum

Wednesday, 4 June 2014
Grant PUD Wenatchee Office

PRFF Members

Stephen Lewis, USFWS
Bob Rose, YN
Carl Merkle, Umatilla Tribe
Tom Dresser, GCPUD
Aaron Jackson, CTUIR
Patrick Verhey, WDFW
Keith Hatch, BIA
Pat McGuire, WDOE
Mike Clement, GCPUD
Jason McLellan, CCT

Attendees:

Pat McGuire, WDOE
RD Nelle, USFWS
Patrick Verhey, WDFW
Tom Skiles, CRITFC (Via phone)
Steve Lewis, USFWS (Via phone)
Mike Clement, GCPUD
Tracy Hillman, Facilitator
Doris Squeochs, Wanapum
Bob Rose, YN
Chad Jackson, WDFW (Via phone)
Jim Powell, BC Center for Aquatic Health Sciences (Via phone)
Aaron Jackson, CTUIR (Via phone)
Debbie Williams, GCPUD (Via phone)

Final Meeting Minutes

I. Welcome and Introductions

II. Agenda Review

A. Action Items from last meeting – All action items were complete.

B. Meeting Minute Approval – May 07, 2014 – Approved with minor edits from Rose.

C. Additional agenda items – No additions were made to the agenda. PRFF members finalized notes from the February Juvenile Sturgeon Workshop.

III. Update on Wanapum Dam and Fish Passage – Grant PUD provided a PowerPoint presentation on Wanapum Dam. The presentation included justification for an intermediate pool raise to 560-562 feet, modifications to the adult fish ladders, passage success (travel times and conversion rates), and next steps and planned activities. So far, spring Chinook are meeting all passage success criteria. Grant PUD also described their adult lamprey passage plan, which includes volitional passage through the adult fishways and trap-and-transport. They concluded the presentation by discussing juvenile survival evaluations and fish injuries.

IV. Update on PLMP

A. NNI Update – The PRFF discussed the next steps needed to address Pacific lamprey assessments and recovery actions for NNI. Most members agreed with moving forward with the ten objectives proposed by the Yakama Nation during the May meeting. It was noted that the PUDs are not responsible for funding all aspects of the ten objectives, only those which are consistent with Grant PUD's PLMP. The Yakama Nation will try to convene a joint meeting with the PRFF, RRFF, and ASWG to discuss the science and approaches associated with each objective. At a later date, the three groups will meet to align objectives or components of objectives with license agreements and management plans.

B. Lamprey Regional Implementation Planning Process – Local experts will continue to meet to fill out templates for the Pacific Lamprey Regional Implementation Planning process. The templates should be completed by the end of July.

C. Proposed Trap-n-Transport Options – Grant PUD described their Standard Operating Procedures for trapping, collecting, holding, transporting, and releasing adult Pacific lamprey in response to modifications to Wanapum Dam adult ladders. The PRFF provided feedback on the timing and location of trapping, and the need to season the traps. Comments on the SOP are due to Grant PUD by Friday, 6 June. Comments from the PRFF will be incorporated into the SOP and approved by the PRFF at the July 2 meeting.

Skiles questioned the typical lamprey arrival date of August 1st outlined in the SOP. He explained that he used data from the DART website to create a histogram showing that some lamprey arrive as early as mid-July, and that CRITFC would like to see traps deployed by July 1st. Clement said Skiles recommendation would be taken into consideration. Rose suggested that all trapped lamprey be PIT-tagged with full-duplex tags in order to collect data. Clement noted that internal discussions have taken place regarding PIT-tagging lamprey, but that at this point, Grant PUD is reluctant to absorb tagging costs for a tributary study upstream of Rock Island and well outside the Priest Rapids Project Area. If the PRFF agrees that this will fulfill any mitigation to adult lamprey as a result of Wanapum Drawdown, Grant PUD would consider it. Rose suggested costs could be shared between Grant PUD and the YN. PRFF members volunteered time to tag trapped lamprey. Clement agreed that fish would be released in the Rock Island forebay or further upstream.

D. Other Lamprey Items - None

V. Update on WSMP

A. Update on Dispute Resolution and Stocking Decision for 2014 – The PRFF Policy Committee is trying to find a meeting date to discuss and resolve the dispute on the total number of juvenile sturgeon to release into the Priest Rapids Project Area. Recall that the PRFF asked the Policy Committee to (1) determine the total number of juvenile white sturgeon to release into the Project Area in 2014, and (2) provide guidance or a SOA that outlines the protocols to be used to determine the appropriate release number after 2014. The Policy Committee has 60 days to decide how many, if any, of the remaining 2,168 juvenile sturgeon on station at Marion Drain should be released into the Project Area.

B. Broodstock Collection – During 12 days of fishing below McNary Dam, a total of nine females and 12 males were captured and transported to Marion Drain. Grant PUD began fishing for broodstock below Rock Island Dam and so far they have collected one male and two females; two 9.5 foot-long females were released.

C. Other White Sturgeon Items – Hillman shared an email from Bob Dach, BIA, regarding White sturgeon information sent to the Policy dispute. Consider how to move the program in out years. Hillman will distribute the email.

VI. Next Meeting – 2 July 2014 at Grant PUD's Wenatchee office.

Fall Chinook Work Group

Tuesday, 10 June 2014

Wanapum Maintenance Center

Beverly, WA

Technical members

Paul Wagner, NMFS
Jeff Fryer, CRITFC
Holly Harwood, BPA
Keith Truscott, CPUD
Bill Tweit, WDFW
Patrick McGuire, WDOE
Russell Langshaw, GCPUD
Steve Hemstrom, CPUD
Joe Skalicky/Don Anglin, USFWS
Paul Ward/Bob Rose, YN
Brett Swift, American Rivers
Tom Kahler, DPUD
Paul Hoffarth, WDFW
John Clark, ADFG
Todd Pearsons, GCPUD

Attendees: (*Denotes Technical member)

Russell Langshaw, GCPUD*
John Clark, ADFG*
Bob Clark, ADFG
John Carlile, ADFG
Paul Hoffarth, WDFW*
Jeff Fryer, CRITFC*
Tracy Hillman, Facilitator
Peter Graf, GCPUD
Paul Wagner, NMFS* (Phone)
Dani Evenson, ADFG
Pat McGuire, WDOE*
Tom Skiles, CRITFC (Phone)
Todd Pearsons, GCPUD

Action Items:

1. **Russell Langshaw will send his comments on the Predation Report to Blue Leaf.**
2. **Russell Langshaw will provide the FCWG with a draft study plan for assessing density dependence in the Hanford Reach.**
3. **Russell Langshaw will prepare a summary report on Phase II studies.**

4. **Russell Langshaw will conduct retrospective analysis on historical stranding and entrapment work.**

Meeting Minutes

I. Welcome and Introductions – Tracy Hillman welcomed attendees to the meeting. Attendees introduced themselves.

Tracy informed the FCWG that Russell Langshaw will be leaving Grant PUD and moving to Arizona. Russell will contract with Grant PUD and therefore will be involved with the FCWG for at least the next six month. Russell shared with the group the accomplishments made by the FCWG and described future activities of the group as it moves into Phase III of the Study Plan. Russell indicated that Peter Graf will be representing Grant PUD on the FCWG and the HRWG.

II. Agenda Review – The agenda was reviewed and approved.

III. Approval of Meeting Minutes

- The May Meeting Minutes were reviewed and approved with edits.

IV. Review of Action Items - Action items identified during the May meeting were discussed.

- Russell Langshaw will send his comments on the Predation Report to Blue Leaf. **Ongoing.**
- Tracy Hillman will send the FCWG a Doodle Poll so they can identify a date for the next meeting and tour of the Wanapum ladders and fish hatchery. **Complete.**
- Russell Langshaw will provide the FCWG with a draft study plan for assessing density dependence in the Hanford Reach. **Ongoing.**
- Paul Hoffarth will prepare a final memo that describes egg retention of fall Chinook in the Hanford Reach through 2013 by mid-April. **Complete.**
- Russell Langshaw will prepare a summary report on Phase II studies. **Ongoing.**
- Russell Langshaw will conduct retrospective analysis on historical stranding and entrapment work. **Ongoing.**

V. Phase I Study Updates

Production Simulation Model – Russell Langshaw indicated that there are no new updates on the production simulation model. Cedar Morton will revisit funding opportunities in 2014. Cedar is also looking at PATH as a modeling tool.

VI. Phase II Study Plan Updates

Predation Report – Russell Langshaw said that Grant PUD will be providing Blue Leaf with a PO so Blue Leaf can finalize the predation report. Russell also said that he will send his comments to Blue Leaf as soon as he can. Russell is hoping that Blue Leaf will have the report finalized in July.

Density Dependence – Russell Langshaw said that he is still working on a study plan to address the density dependence that was identified in the productivity assessment. He is proposing to sample otoliths from juvenile Chinook that die during the CWT/PIT tagging efforts. He intends to look at growth and condition factor at time of tagging. These data would then be compared to otoliths collected from returning adults, which are sampled on the spawning grounds. Russell indicated that Jeff Fryer has saved juvenile Chinook that died during his tagging work. Otoliths will be extracted from these fish and analyzed.

Russell indicated that he will try and provide the FCWG with a draft study plan in July or August 2014.

Redd Superimposition – Paul Hoffarth discussed his work on the number of eggs retained by fall Chinook in the Hanford Reach through 2013 (see Attachment 1). Paul indicated that in 2013, spawn success declined to 90% with 78% of the Chinook categorized as completely spawned. During the period 2004 to 2012, spawn success averaged 98% with 97% of the female Chinook categorized as completely spawned. Paul noted that the 2013 escapement was the largest escapement to the Hanford Reach on record dating back to 1964. In addition, 28% of the fall Chinook escapement in 2013 were hatchery origin, and that led to an increase in the proportion of age-3 females (24%), which is atypical for the Hanford Reach population. The reduction in spawn success in 2013 was likely a combination of the two factors, high escapement and a large percentage of hatchery-origin fall Chinook in the escapement.

Paul also indicated that the spawning success of natural-origin Chinook in 2013 was 94.5%, compared to the four-year mean (2009 through 2012) of 98.4% (range 97.5% - 98.8%). The spawn success for hatchery-origin Chinook in 2013 averaged 81.3%, declining by 16% from the four-year mean of 96.9% (range 96.2% - 98.9%). These data indicate the presence of density dependence on the spawning grounds in 2013.

This work satisfies the egg-retention objective of Phase II studies. Egg retention work will continue in the future and the results will be reported in the annual Priest Rapids Hatchery Monitoring and Evaluation reports.

VII. Phase III Studies

Tracy Hillman asked if the FCWG had given additional thought to Phase III studies. No one identified any additional studies; however, John Clark said that he would like to spend time during a future meeting discussing Phase III studies. Russell Langshaw indicated that these discussions would occur once he completed a summary report on Phase II studies (similar to the Phase I summary report). The current Phase III list includes: (1) fall Chinook productivity modeling every five years, (2) ongoing egg retention sampling to address density dependence effects, and (3) updating the models used in stranding and entrapment assessments.

VIII. HRWG Activities

Update on Protection Flows – Russell Langshaw said that all temperature and flow data are displayed in the Fixed Site Monitoring – Monthly Summary files on the Grant PUD Water Quality Website (http://www.gcpud.org/naturalResources/fishWaterWildlife/waterqualityMonitoring.html). The temperature unit tracking spreadsheet is found under "Fixed Site Monitoring – Monthly Summary."

Russell reported that emergence ended on 20 May and rearing will end around 20 June. He also said that CJADII constraints began last month. CJADII constraints are the weekend minimum flows (CJAD = Chief Joseph Accumulated Deficiency).

Russell noted that there were no violations in protection flows during the incubation and emergence periods. In addition, there have been no violations in protection flows during the rearing period. Even with the issues at Wanapum Dam, Russell stated that Grant PUD has been able to maintain protection flows in the Hanford Reach. Grant PUD will be discussing Reverse Load Factoring and its effects on maintaining protection flows in the Hanford Reach.

2014 Juvenile Chinook Tagging Efforts – Jeff Fryer reported that his crew successfully tagged 193,000 juvenile Chinook with CWTs during the period 29 May through 9 June 2014. Jeff indicated that the size of fish tagged was comparable to past years. This is likely because the fish tagged are always between 48 and 80 mm. He noted that the small, presumably recently emerged fish appeared skinny and there were several of them at the end of the project. This may be a density-dependent response to the large spawning escapement in 2013. Jeff also noted that the fish experienced lower mortalities during holding and marking than last year.

As a final note, Jeff said that about 10,000 juvenile Chinook were PIT tagged and 200 were tagged with JSATs. The JSATs will be used to

help address predation issues in McNary Reservoir (Battelle predation study). Biomark was hired to PIT tag the fish.

Stranding and Entrapment Retrospective Analysis – Russell Langshaw reported that he did not have time to work on the retrospective analysis in May. He said that he may not have time to work on this assignment until later this summer. He intends to explore the use of hurdle models. The hurdle model is a two part process. The first part models the presence/absence of Chinook within entrapment sites. This is usually accomplished with multiple logistics regression or discriminant analysis. If a pattern is found (successfully jumped the first hurdle), then the second part is to model the numbers of fish entrapped in sites with fish presence. This could be accomplished with regression techniques. The hurdle model may be a simpler and more easily explainable approach than the zero-inflated negative binomial distribution model.

IX. Wanapum Dam Spillway Issues

Peter Graf, Grant PUD, gave a presentation on the current status of Wanapum Dam issues (see Attachment 2). Peter started by giving a brief project overview including the location of the fracture in the dam, modifications to the adult fish ladders, and contingency planning (e.g., trap and haul). He discussed the current monitoring and evaluation plan for assessing adult fish passage at Wanapum Dam and described the criteria used to evaluate passage success. The criteria included conversion rates (>80%), travel time from Priest Rapids to Rock Island Dam (90% of the fish travel the distance in less than 356 hours), and ladder exit mortality (<5%). Peter described all the PIT tag and acoustic arrays throughout the project area that are used to help evaluate passage success. The most recent data indicate that the conversion rate from Priest Rapids Dam to Wanapum Dam is 99% and from Priest Rapids Dam to Rock Island Dam is 94%. Median travel time of tagged fish to Wanapum was 94 hours and to Rock Island Dam it was 167 hours. He noted that no Chinook have been stunned or killed exiting the Wanapum ladders.

Peter talked briefly about juvenile fish passage. He said that Wanapum and Priest Rapids fish bypass units are operational and that Chinook and steelhead survival and passage evaluations will be available mid-summer.

Finally, Peter discussed next steps, which include installation of the spiral chutes, approach ramps, and apron; monitoring the passage of steelhead, Chinook, and sockeye salmon; trap-and-haul contingency for steelhead, Chinook, and sockeye; and implementation of a Pacific lamprey passage strategy. The Priest Rapids Fish Forum is currently

reviewing the proposed strategy for passage of adult lamprey at the dam.

Russell Langshaw indicated that Grant PUD will request an interim reservoir elevation of 560 feet, which would allow normal operation of the adult fish ladders at Wanapum Dam. The interim elevation must be approved by the Board of Consultants and FERC. If approved, the interim elevation would likely occur later this year.

X. Field Tours

Following the FCWG meeting, members and participants toured the left-bank adult fish ladder at Wanapum Dam and the flume. They also observed the juvenile bypass at Wanapum Dam. They then toured the Priest Rapids Hatchery facilities and the Off-Ladder Adult Fish Trap (OLAFT) at the left-bank ladder at Priest Rapids Dam.

XI. Next Meeting: Tuesday morning, 1 July 2014 at Grant PUD in Ephrata, WA.

Attachment 1

Report from WDFW on Spawning Success of Fall Chinook Salmon in the Hanford Reach

Spawning Success of URB Fall Chinook in the Hanford Reach

2000 – 2013

Prepared by
Paul Hoffarth

Washington Department of Fish and Wildlife
Pasco, Washington

Hanford Reach Fall Chinook Stream Surveys

The Columbia River Coded Wire Tag Program (CRCWTP) in conjunction with the Priest Rapids and Ringold Springs Hatcheries Monitoring and Evaluation Programs conducts stream surveys of post spawn Up River Bright Fall Chinook in the Hanford Reach. This area is an integral component of the coded wire tag (CWT) recovery effort in the Columbia River. The Hanford Reach is sampled from Richland, Washington, river kilometer 538 upstream to Priest Rapids Dam, river kilometer 639, a distance of approximately 100 kilometers. Technicians sample the Hanford Reach natural spawning areas from outboard jet boats or by walking the Columbia River shorelines. Prior to 2010, the survey crew typically consisted of two boats with a two-person crew operating seven days a week. In 2010, WDFW, under the funding and cooperation from Grant County PUD and the US Army Corps of Engineers, began a robust monitoring and evaluation plan (M&E) to assess the influence of Priest Rapids Hatchery and Ringold Springs Hatchery fall Chinook releases and adult returns on the natural population of the Hanford Reach. A third boat and additional staff have been added to the stream sampling effort since 2010. Each boat surveys approximately 16 km of river per day. Carcasses are retrieved from water depths up to four meters and along shoreline areas de-watered by the daily operations of Priest Rapids Dam. The Hanford Reach fall Chinook stream survey is conducted annually from November 1 through the first week of December. The goal of the stream survey is to collect and sample 10% of the naturally spawning fall Chinook in the Hanford Reach (escapement) for coded wire tag recovery and to collect biological samples to determine age, gender, and origin of the Hanford Reach population.

All fish are visually inspected for fin clips and scanned for the presence of coded wire tags. The snout is collected from all coded wire tagged Chinook along with the biological data. Sampling of the population for run reconstruction is obtained through random, systematic design (i.e., every k^{th} fish). Data is recorded on length, gender, age (scales), origin (otolith), and spawning

success (egg retention) in females for all "in-sample" fish (k^{th} fish). Over the most recent 24 years adult fall Chinook escapement in the Hanford Reach has varied from 13,887 adults (2007) to 157,484 adults (2013). The "in sample" goal was originally established at 510 to ensure that the sample size is statistically valid (Thompson 1987) but has been increased in recent years to meet the objectives of the M&E Programs.

During the past 14 years Hanford Reach stream survey crews have sampled between 7.5% and 23.4% of the estimated escapement (Table 1). Survey crews only scanned adipose clipped fall Chinook to determine the presence of coded wire tags prior to 2011. In 2011, all fish were scanned to recover CWTs. For the most recent 14 years an average of 20% of the carcasses collected during the stream surveys were sampled for run reconstruction (gender, age, and length). All "in-sample" females are sampled for egg retention (spawn success).

Table 1. Summary of annual fall chinook escapement, biological sampling, and coded wire tags recoveries from the Hanford Reach fall Chinook stream surveys, 2000 - 2012.

Year	Escapement	Carcass Recovered		Biological Samples	
		#	% of Escapement	#	% Sampled
2013	174,841	13,071	7.5%	2,150	16.4%
2012	57,715	6,810	11.2%	1,657	24.3%
2011	75,256	8,391	11.1%	2,210	26.3%
2010	87,016	9,791	11.3%	2,385	24.4%
2009	36,720	5,318	14.5%	849	16.0%
2008	29,058	5,455	23.4%	1,061	19.5%
2007	22,272	3,115	14.0%	748	24.0%
2006	51,701	5,972	11.6%	565	9.5%
2005	71,967	8,491	11.8%	2,096	24.7%
2004	87,696	11,030	12.6%	1,807	16.4%
2003	100,840	13,573	13.5%	2,227	16.4%
2002	84,509	8,402	9.9%	1,414	16.8%
2001	60,576	6,072	10.1%	1,465	24.1%
2000	47,960	10,556	22.0%	2,557	24.2%
Mean	**70,581**	**8,289**	**13.2%**	**1,657**	**20.2%**

Spawn Success

All "in-sample" females recovered during stream surveys in the Hanford Reach are dissected to determine egg retention. This provides an indication of spawn success. Eggs are not counted or weighed during this process. Egg retention is based on a rough estimate of the proportion of eggs remaining in the female, 0%, 25%, 50%, 75%, or 100%. If no eggs or minimal numbers of eggs are retained, the Chinook is recorded as 100% spawned. If all eggs are retained, the chinook is recorded as "unsuccessful". From 2004 to 2012, spawn success averaged 98% with 97% of the female Chinook categorized as completely spawned. Spawn success for fall Chinook in the Hanford Reach has been very high and very consistent between years ranging from 97.4% to 99.2% with a large proportion of the fish sampled having little to no egg retention.

In 2013 spawn success declined to 90% with 78% of the Chinook categorized as completely spawned. The 2013 escapement was the largest escapement to the Hanford Reach on record dating back to 1964. In addition, 28% of the fall Chinook escapement was hatchery origin that also led to an increase in the proportion of Age 3 females (24%), both atypical for the Hanford Reach population. The reduction in spawn success in 2013 was likely a combination of the two factors, high escapement and a large percentage of hatchery origin fall Chinook in the escapement.

Table 2. Annual summary of egg retention and spawning success for fall Chinook in the Hanford Reach, 2004-2013.

Year	Females Sampled	Egg Retention					Spawn Success	
		0%	25%	50%	75%	100%	No Egg Retention	Escapement
2013	685	536	90	20	16	23	78.2%	90.1%
2012	771	747	14	5	1	4	96.9%	98.6%
2011	1,264	1,203	1	52	5	3	95.2%	97.4%
2010	1,173	1,147	6	13	1	6	97.8%	98.7%
2009[1]	499	484	0	5	0	10	97.0%	97.5%
2008	584						na	na
2007	454	443	0	8	0	3	97.6%	98.5%
2006	352	343	0	8	0	1	97.4%	98.6%
2005	1,323	1,310		6		7	99.0%	99.2%
2004	1,176	1,151		21		4	97.9%	98.8%
Mean	828						**97.3%**	**98.4%**

[1] Prior to 2010, egg retention was only categorized as fully spawn, partial spawn, or did not spawn in the database.

Comparison of Spawning Success for Natural Origin and Hatchery Origin Fall Chinook

For brood year returns 2001 through 2012 approximately 12% of the escapement has been comprised of hatchery origin fall Chinook in the Hanford Reach, range 5.9% - 16.6%. Based on sampling of post spawn female fall Chinook carcasses in the Hanford Reach, spawning success for natural origin fall Chinook has been slightly higher than hatchery origin fall Chinook. Mean spawning success was 98.4% for natural origin fall Chinook compared to 96.9% for hatchery origin fall Chinook that spawned in the Hanford Reach. Spawning success was very high for both groups and the minor difference in spawn success could be attributed to the small sample size for hatchery origin spawners. Hatchery origin fall Chinook could only be identified by adipose clips and coded wire tags for all return years except 2012. As the majority of Priest Rapids Hatchery returns are not adipose clipped a portion of the fish identified as natural origin in the Hanford Reach may be hatchery origin. In 2012 and 2013, otoliths were collected from all "in-sample" fish to determine origin in addition to CWTs and adipose clips. All Priest Rapids Hatchery releases have been otolith marked for broodyears 2007 to present.

As presented in the prior section, in 2013 there was a record escapement coupled with a two fold increase in the proportion of hatchery fall Chinook that spawned in the Hanford Reach. Spawn

success was lower than typical for both hatchery and natural origin fall Chinook in 2013. Natural origin fall Chinook spawn success in 2013 was 94.5% compared to the four-year mean for 2009 through 2012 of 98.4%, range 97.5% - 98.8%. Spawn success for hatchery origin fall Chinook in 2013 averaged 81.3% declining by 16% from the four-year mean of 96.9%, range 96.2% - 98.9%.

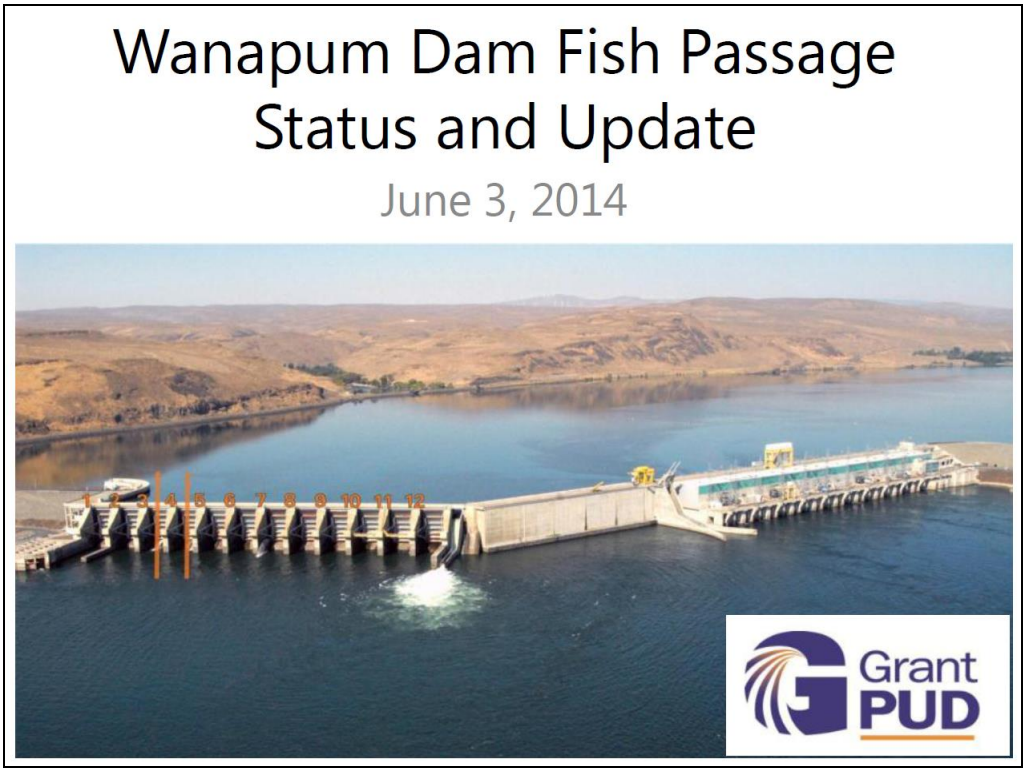
Table 3. Comparison of spawn success of fall Chinook spawning in the Hanford Reach for natural origin and hatchery origin returns, 2009-2013.

Year	Origin	Females Sampled	Egg Retention					Spawn Success	
			0%	25%	50%	75%	100%	Escapement	No Egg Retention
2013[1]	Natural	461	392	51	9	3	6	94.5%	85.0%
	Hatchery	224	144	39	11	13	17	81.3%	64.3%
2012[1]	Natural	681	658	14	5	1	3	98.6%	96.6%
	Hatchery	90	89	0	0	0	1	98.9%	98.9%
2011	Natural	1,176	1,121	1	48	4	2	97.5%	95.3%
	Hatchery	88	82		4	1	1	95.7%	93.2%
2010	Natural	1,125	1,101	6	12	1	5	98.8%	97.9%
	Hatchery	48	46		1		1	96.9%	95.8%
2009	Natural	494	482		12		0	98.8%	97.6%
	Hatchery	13	12		1		0	96.2%	92.3%
Mean	Natural	**787**						**97.6%**	**94.5%**
	Hatchery	**93**						**93.8%**	**88.9%**

[1] Otoliths were used to determine origin in addition to adipose clips and CWTs

Attachment 2

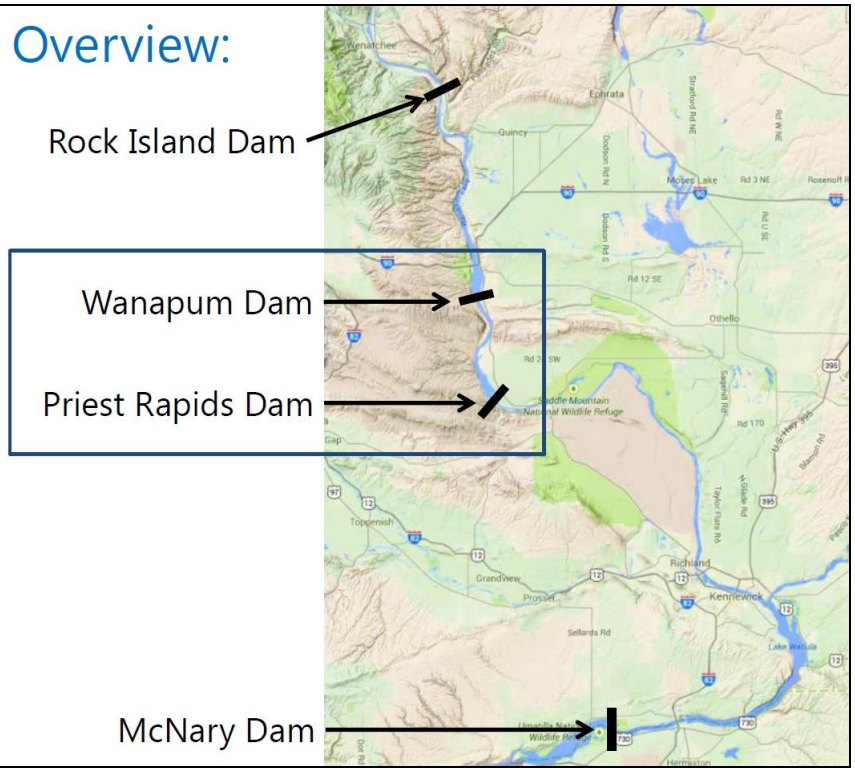
Presentation by Peter Graf on Wanapum Dam Fish Passage Status and Update



Outline:

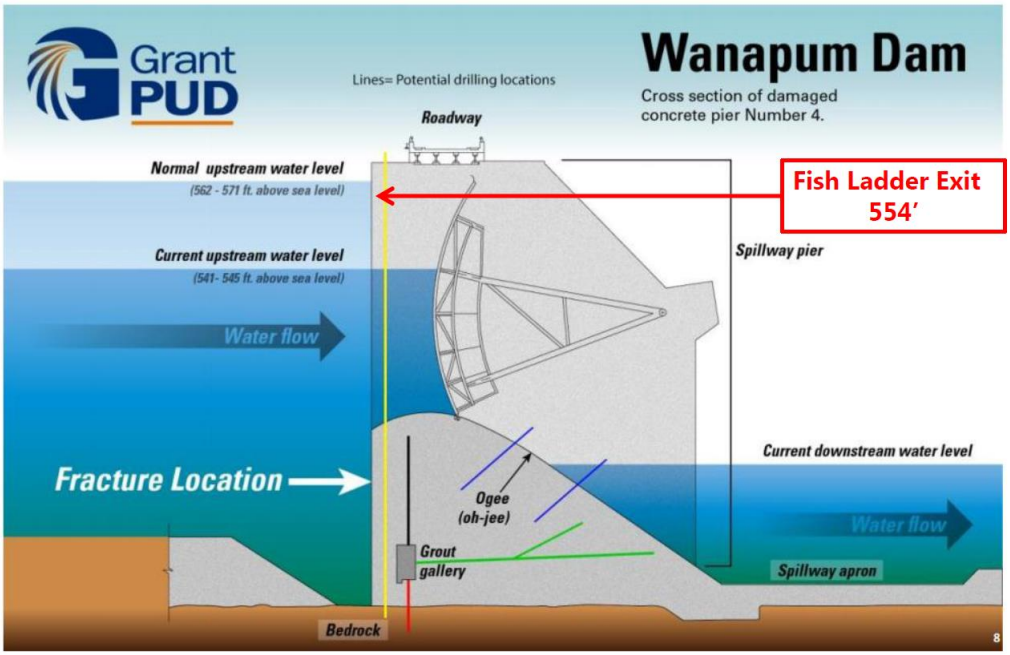
1. Project Overview and Fracture
2. Impacts to Adult Fish Passage & Interim Fish Passage Plan
3. Monitoring and Evaluating Adult Passage
4. Observations To-Date
5. Juvenile Passage & Next Steps

Project Overview:

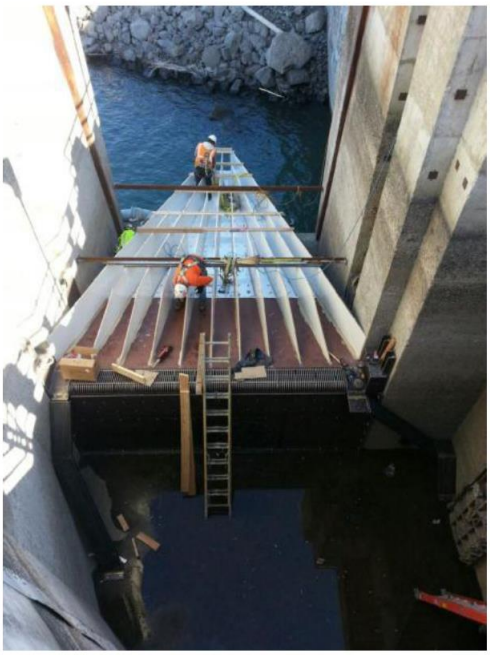


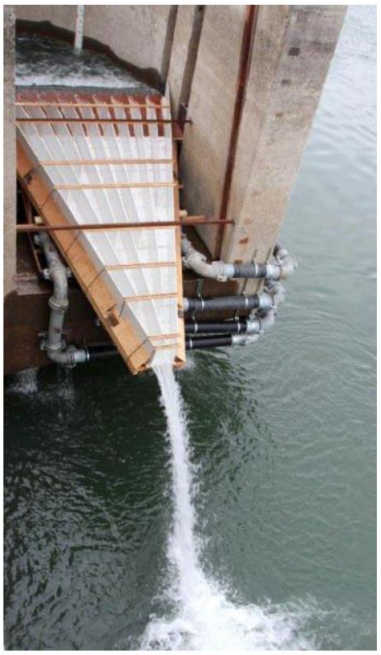
Wanapum Dam

Wanapum Dam

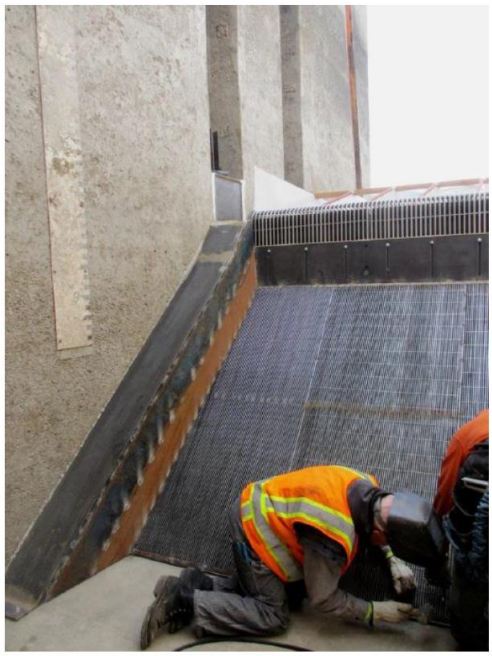


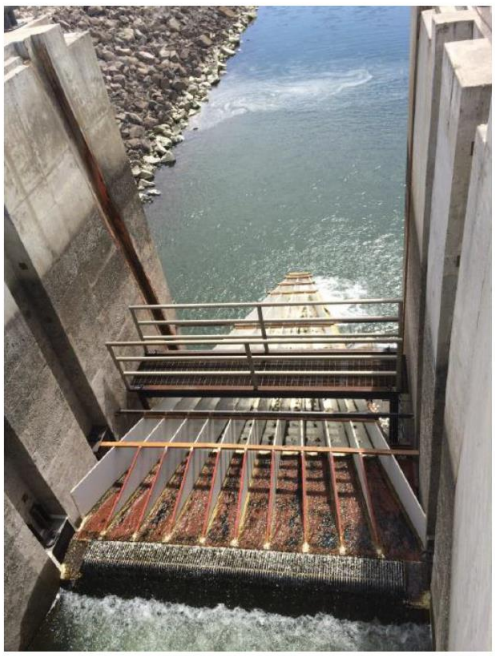
Fish Ladder Modifications:



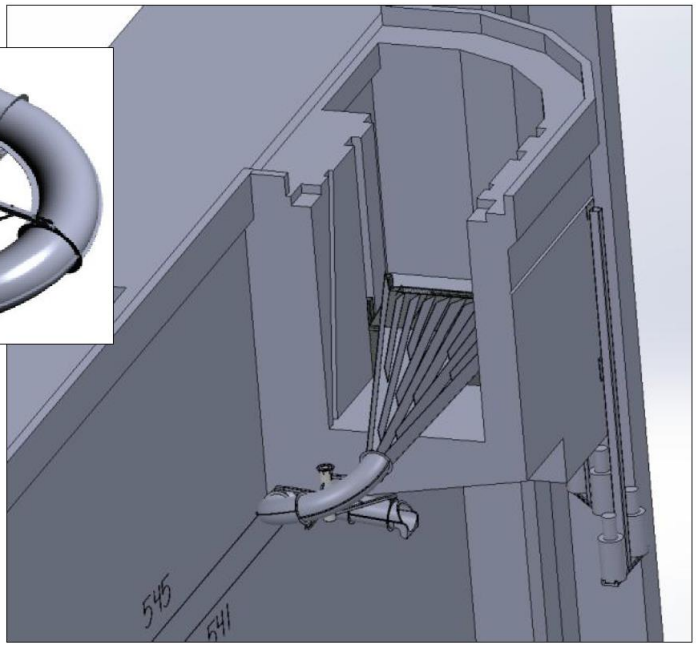


Fish Ladder Modifications:





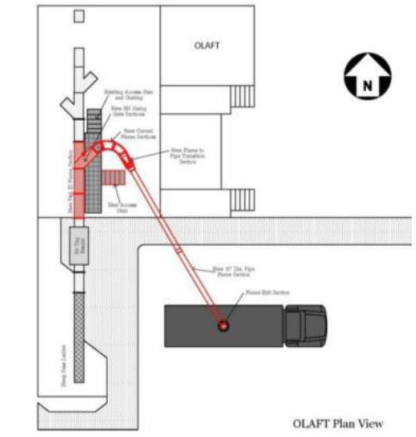
Fish Ladder Modifications:



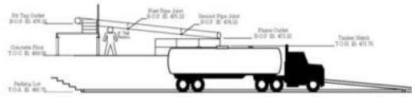
Fish Ladder Modifications:

Contingency planning

- Trap and haul from Priest Rapids Off Ladder Trap (OLAFT)

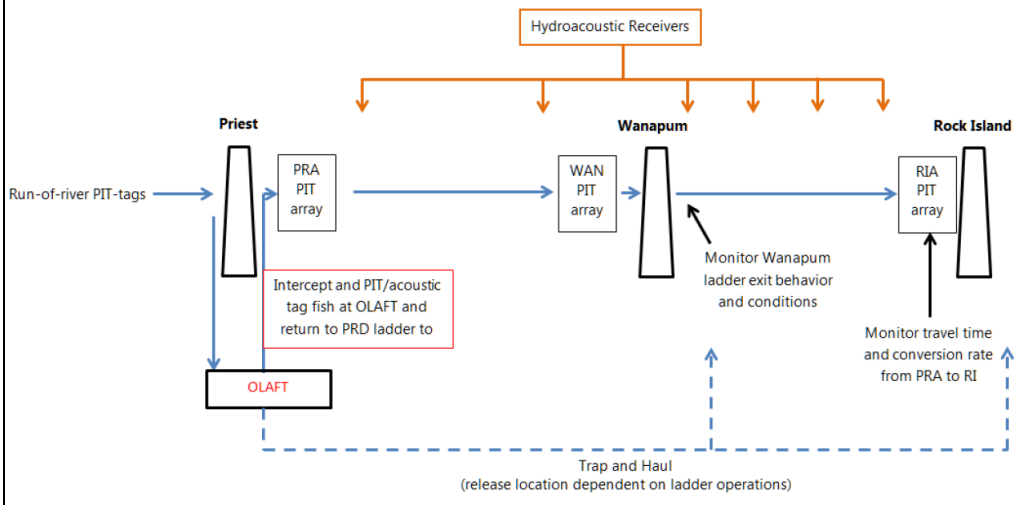


OLAFT Plan View



OLAFT Elevation
View Looking North

Monitor and Evaluate Passage:



Passage Criteria:

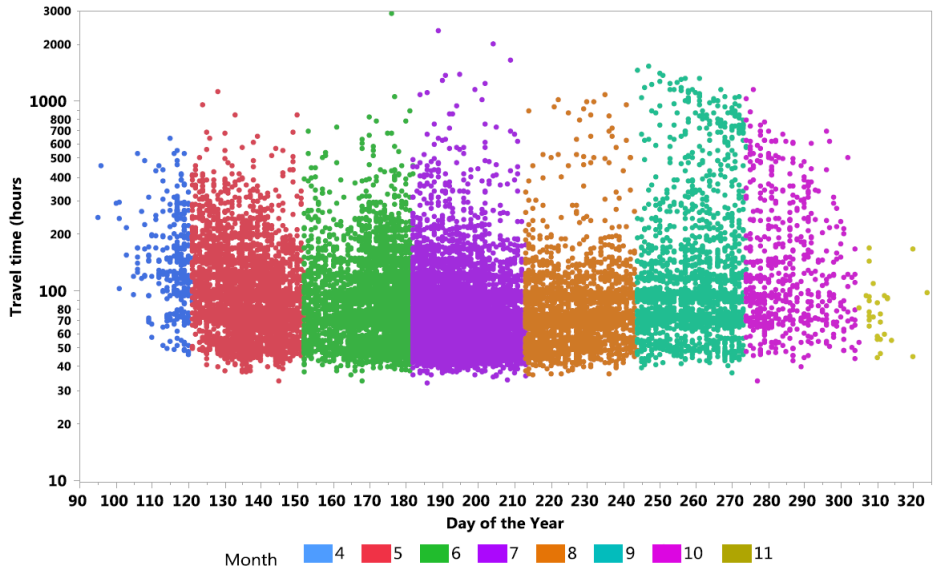
1. Conversion Rate → greater than 80%

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.

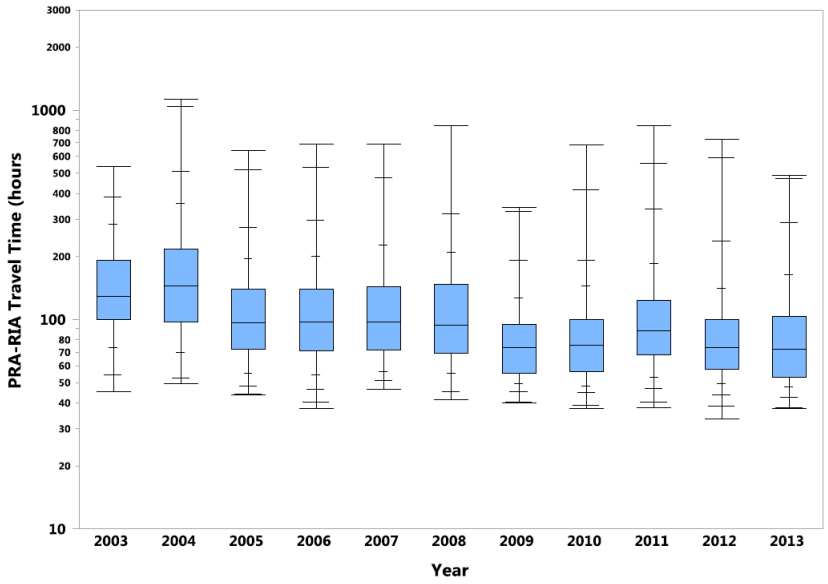
Passage Criteria:

2. Travel Time – Priest Rapids to Rock Island



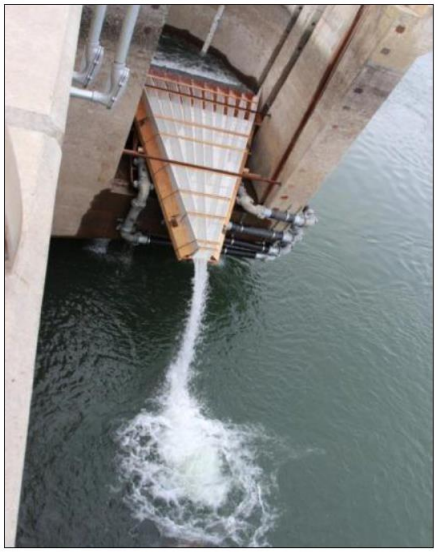
Passage Criteria:

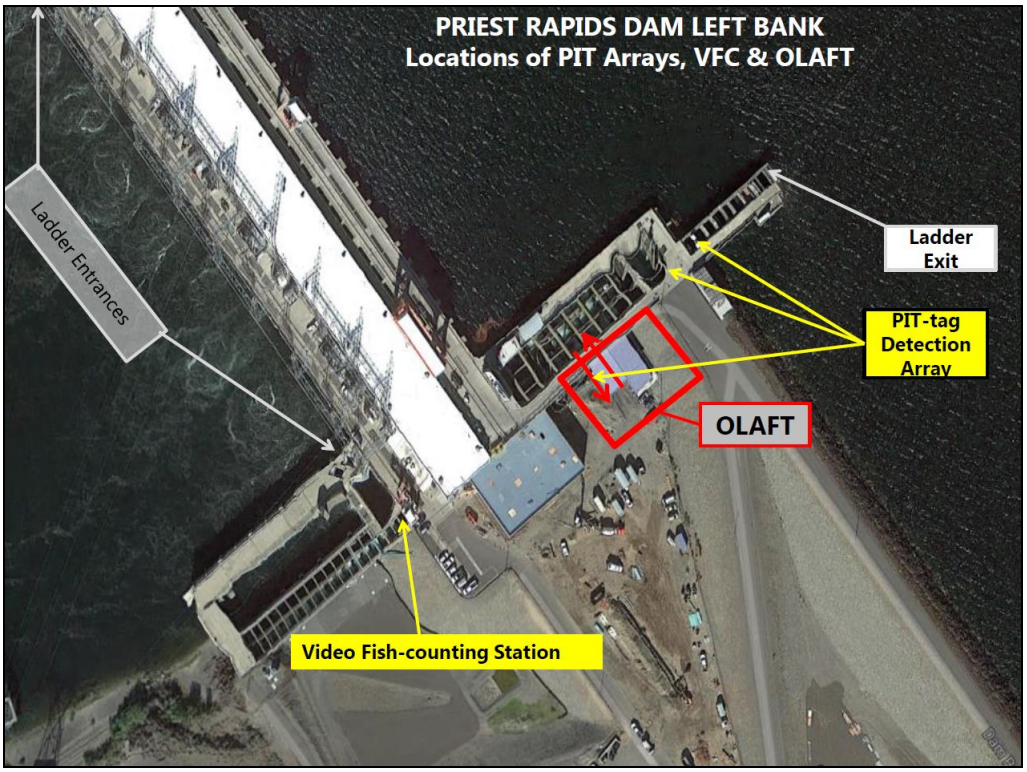
2. Travel Time → 90% of fish less than 356 hours

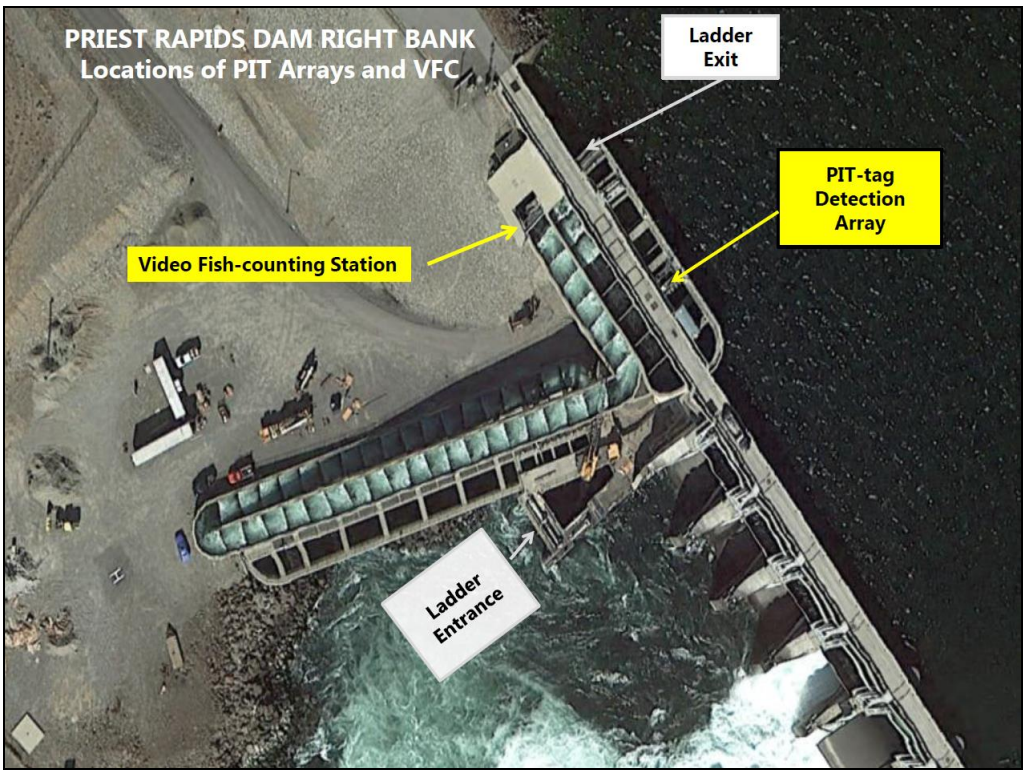


Passage Criteria:

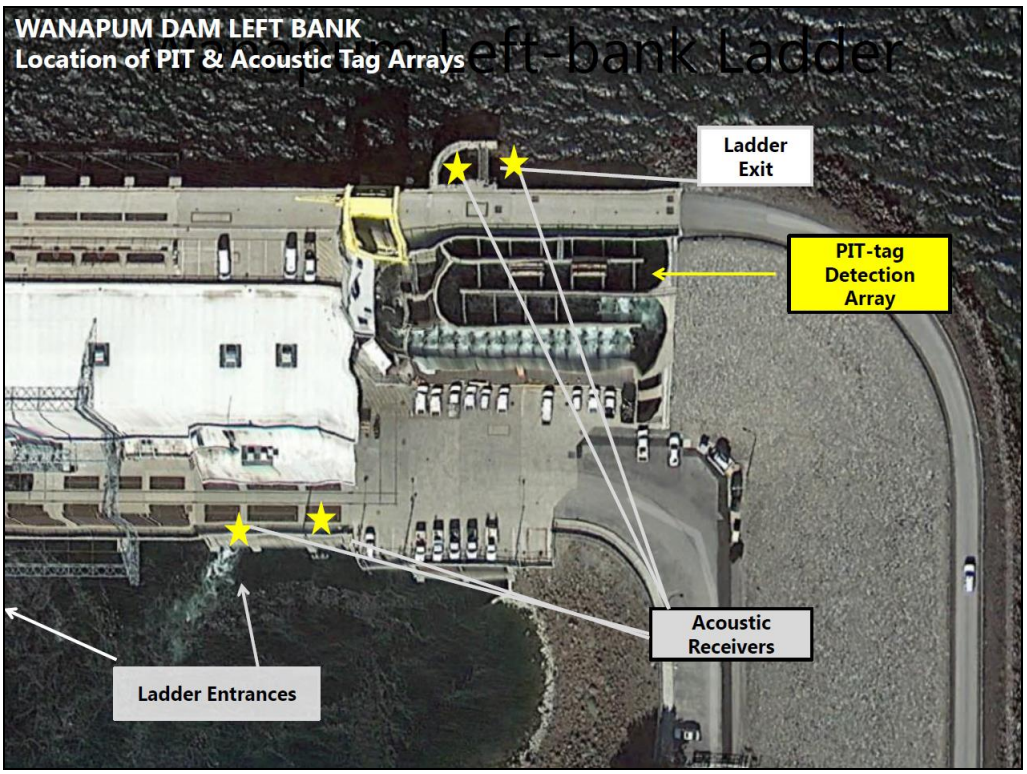
3. Ladder Exit → less than 5% mortality




PRIEST RAPIDS DAM LEFT BANK
Locations of PIT Arrays, VFC & OLAFT
Ladder Entrances
Ladder Exit
PIT-tag Detection Array
OLAFT
Video Fish-counting Station


PRIEST RAPIDS DAM RIGHT BANK
Locations of PIT Arrays and VFC
Ladder Exit
PIT-tag Detection Array
Video Fish-counting Station
Ladder Entrance


WANAPUM DAM RIGHT BANK
Location of PIT Array
Ladder Exit
PIT-tag Detection Array
Ladder Entrance
Acoustic Receiver


WANAPUM DAM LEFT BANK
Location of PIT & Acoustic Tag Arrays
Ladder Exit
PIT-tag Detection Array
Acoustic Receivers
Ladder Entrances

Adult Passage Data:

1. Conversion Rate:
   - Priest to Wanapum = 248/250 = 99%
   - Priest to Rock Island = 234/250 = 94%
   - Acoustic tagged fish to Rock Island = 50/50 = 100%

2. Travel Time:
   - Median TT to Wanapum = 94 hours (3.9 days)
   - Median TT to Rock Island = 167 hours (7.0 days)
     - 90^{th} percentile = 313 hours

3. Ladder Exit:
   - No stunned fish, no mortalities (17k spring chinook to RI)
   - Video

Juvenile Passage:

- Wanapum & Priest Fish Bypass Units are operational
- Yearling Chinook & steelhead survival and passage evaluations
- Data available mid-summer

Next Steps:

- Installation of spiral chute, approach ramp, and apron
- Monitor passage for steelhead/sockeye/summers
- Trap & haul contingency for steelhead/sockeye/summers
- Pacific lamprey passage strategy
  - Draft plan to Priest Rapids Fish Forum last week
    1. Volitional passage at Priest and Wanapum
    2. Collection and trap and haul

CCA

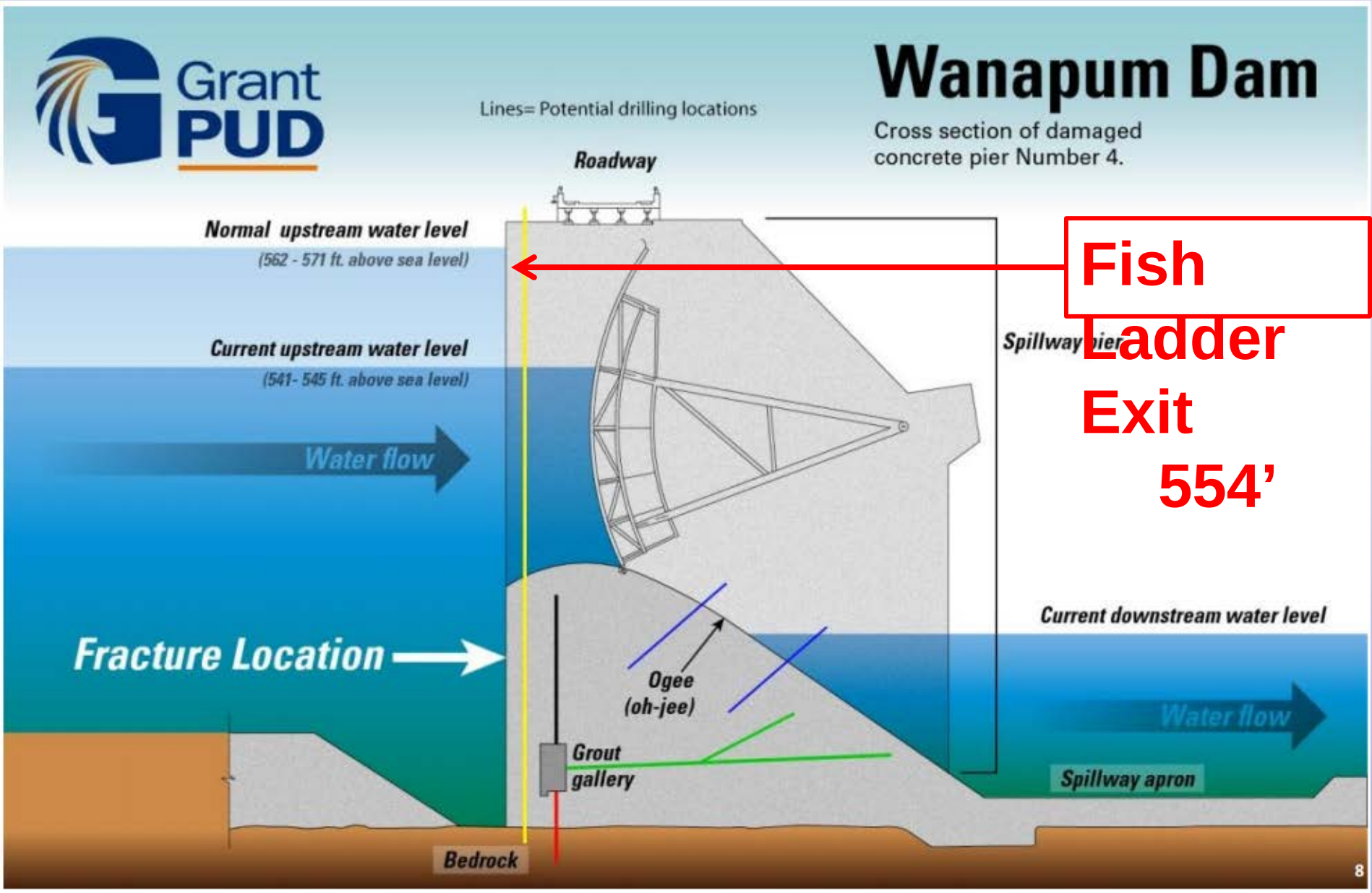
June 12, 2014

Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

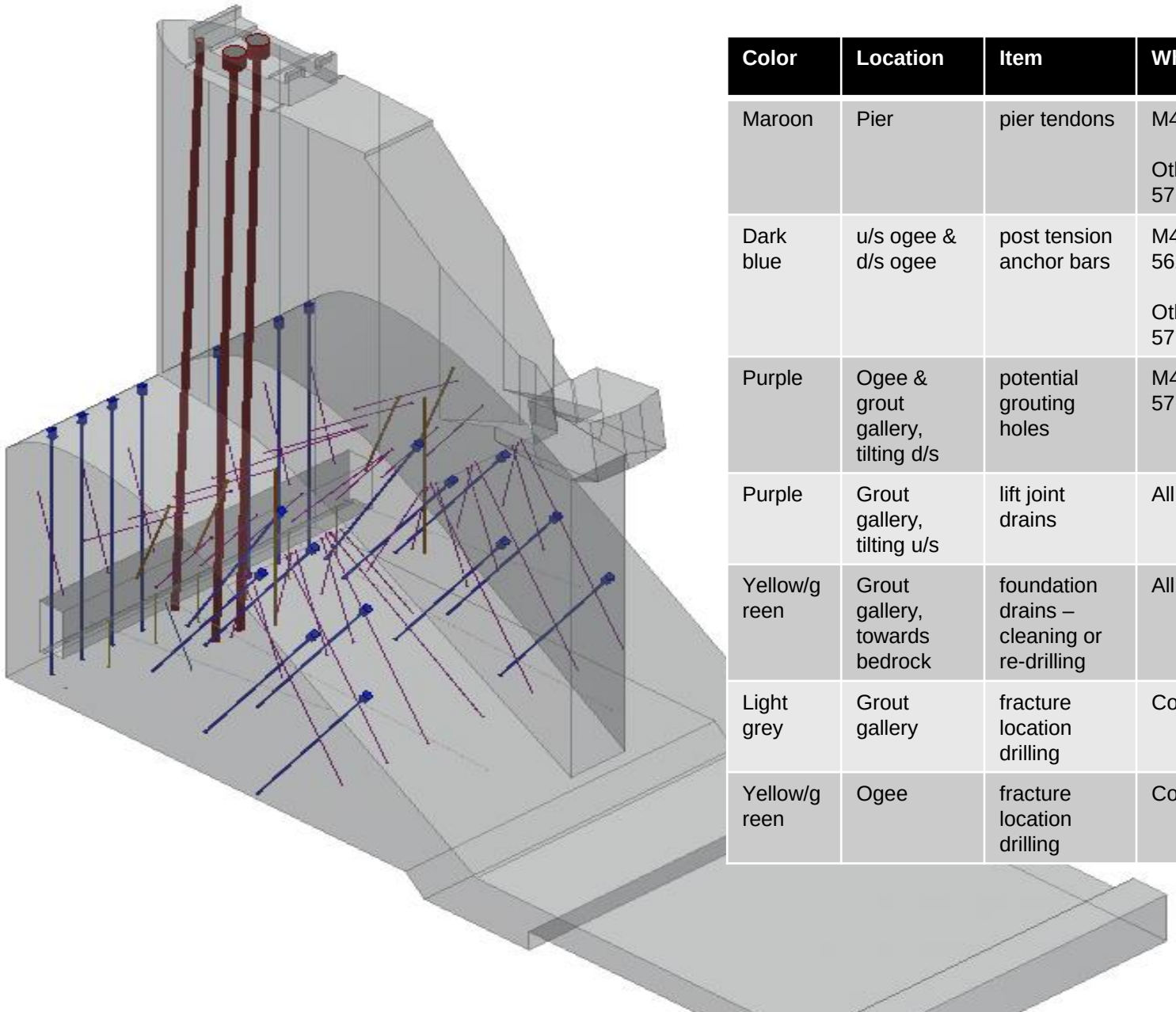
Outline

1. Project Overview and Fracture
2. Impacts to Fish Passage
3. Interim Fish Passage Plan
4. Monitoring and Evaluating Passage
5. Observations To-Date
6. Next Steps

Wanapum Dam


Grant PUD
Wanapum Dam
Cross section of damaged concrete pier Number 4.
Lines= Potential drilling locations
Roadway
Normal upstream water level
(562 - 571 ft. above sea level)
Current upstream water level
(541- 545 ft. above sea level)
Water flow
Fracture Location
Spillway pier
Fish Ladder Exit 554’
Current downstream water level
Ogee (oh-jee)
Grout gallery
Water flow
Spillway apron
Bedrock
8

Conceptual Diagram of PROPOSED Spillway Repairs

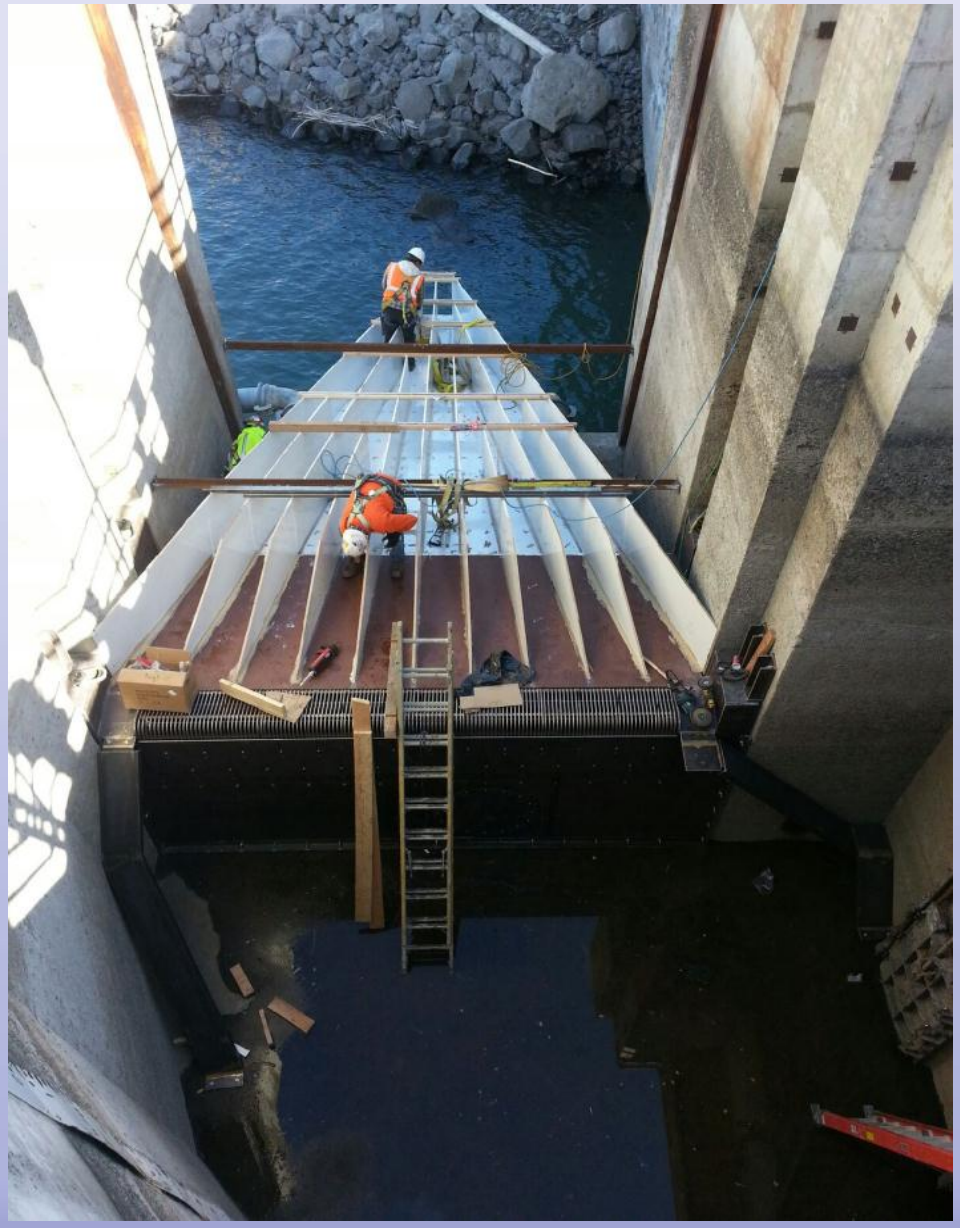


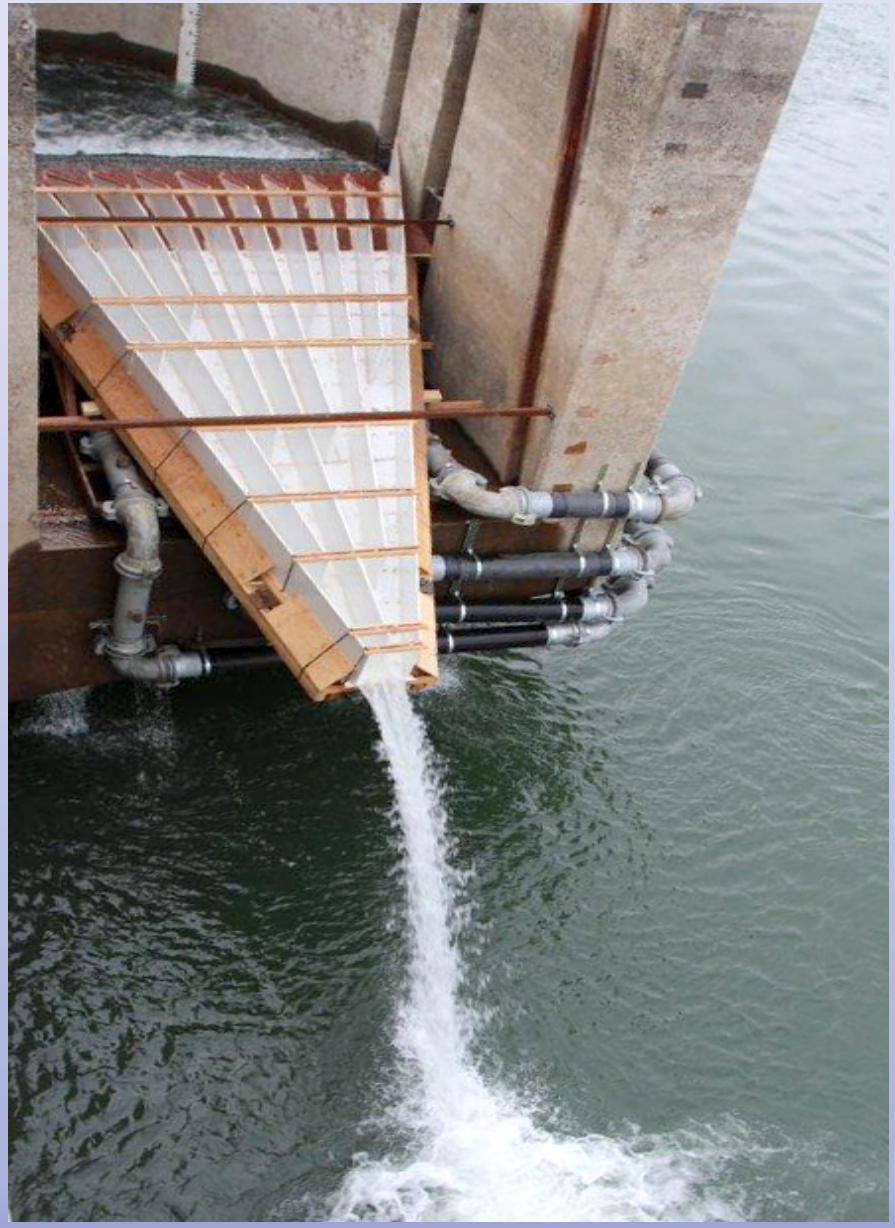
Color	Location	Item	When
Maroon	Pier	pier tendons	M4 – before 562 Others – before 571.5
Dark blue	u/s ogee & d/s ogee	post tension anchor bars	M4 – 4 u/s before 562 Others – before 571.5
Purple	Ogee & grout gallery, tilting d/s	potential grouting holes	M4 only – before 571.5
Purple	Grout gallery, tilting u/s	lift joint drains	All – before 562
Yellow/green	Grout gallery, towards bedrock	foundation drains – cleaning or re-drilling	All before – 571.5
Light grey	Grout gallery	fracture location drilling	Complete
Yellow/green	Ogee	fracture location drilling	Complete

Wanapum Dam - Drill Work

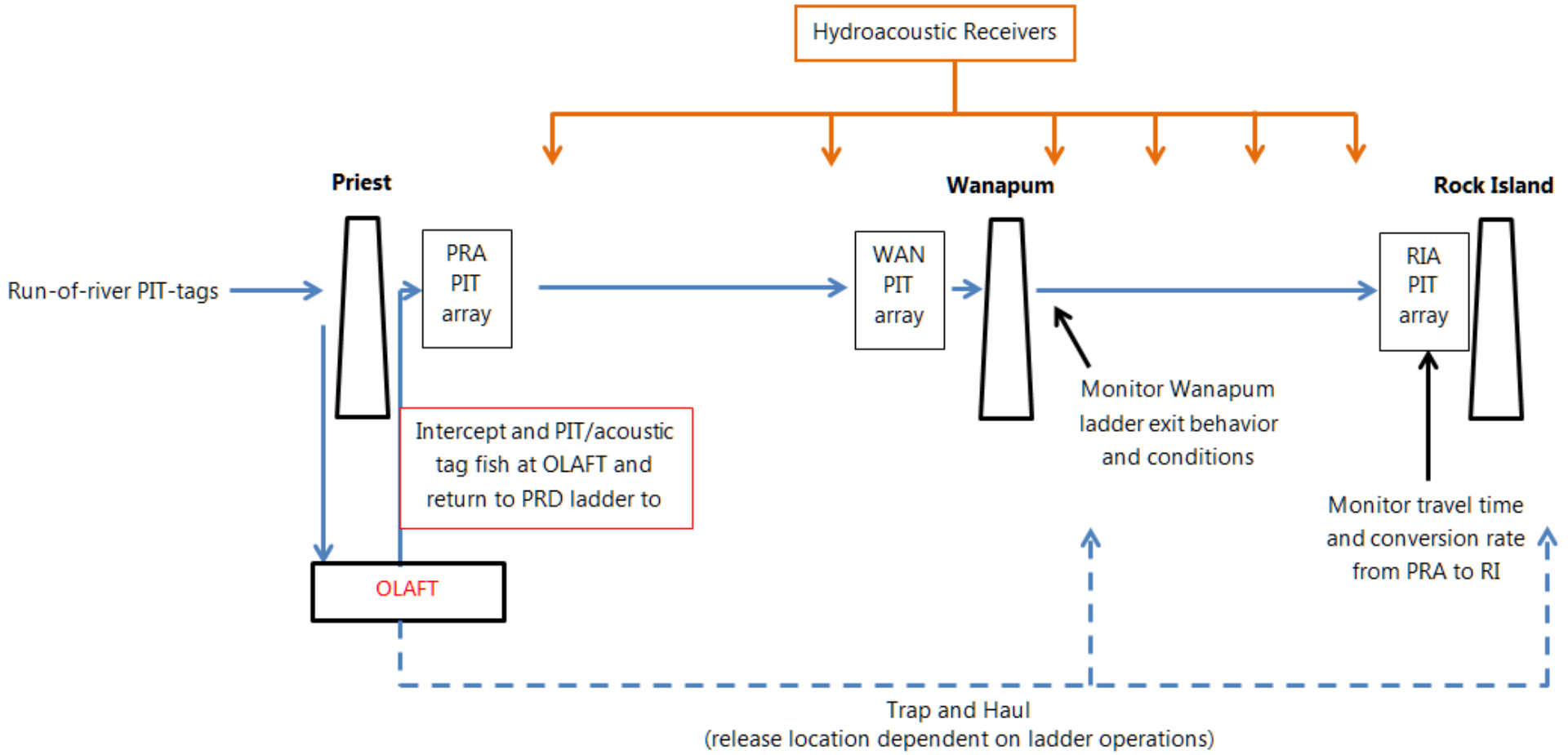
Fish Passage

Fish Ladder Modifications





Monitor and Evaluate Passage



Passage Criteria

1. Conversion Rate → greater than 80%

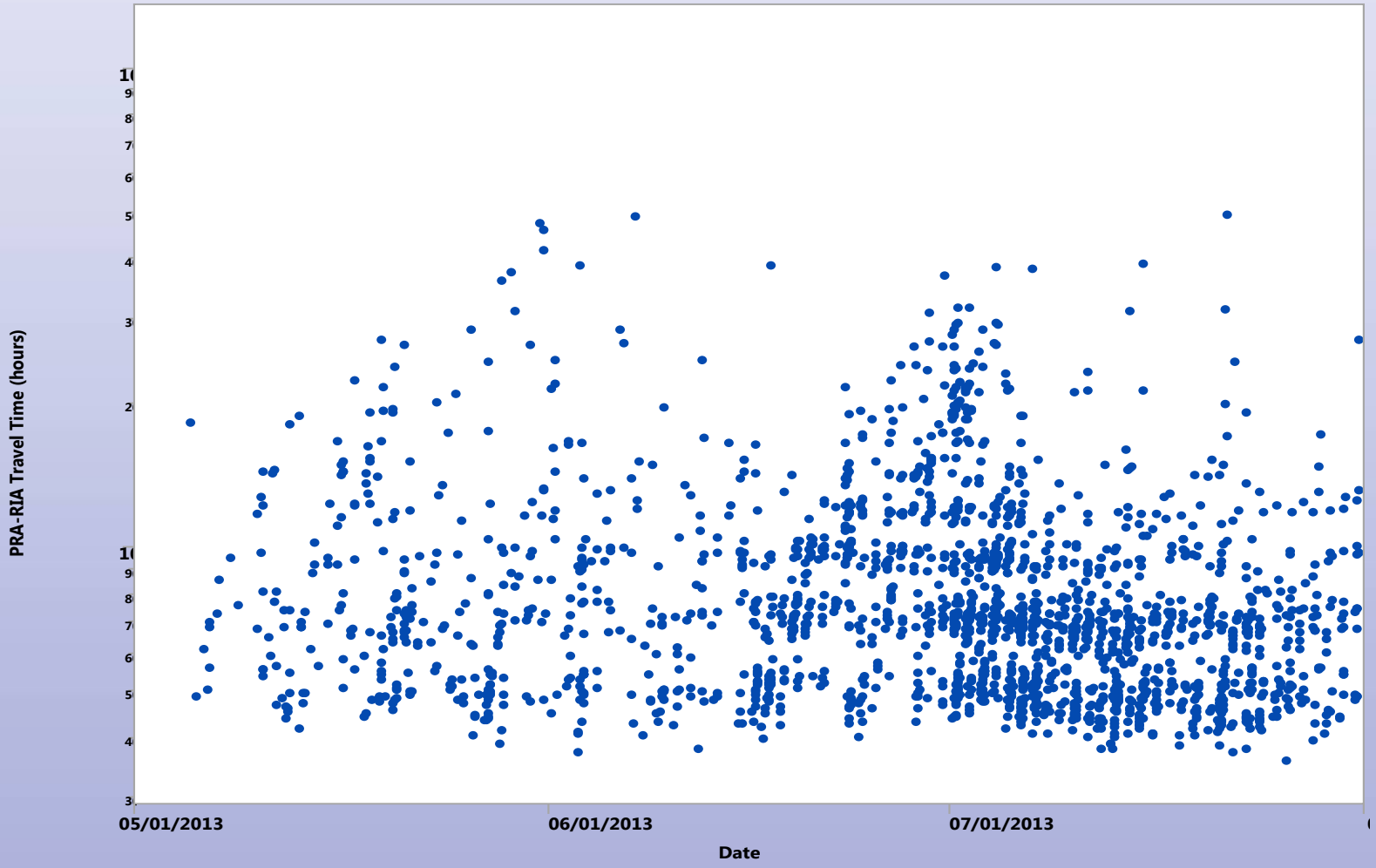
Observation Year	Priest Rapids Observations	Rock Island Observations	Conversion Rate
2013 Total	333	308	92%
2012 Total	372	349	94%
2011 Total	631	506	80%
2010 Total	491	469	96%
2009 Total	190	176	93%
2008 Total	129	117	91%
2007 Total[2]	110	103	94%
2006 Total[2]	500	441	88%
2005 Total[2]	641	479	75%
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.

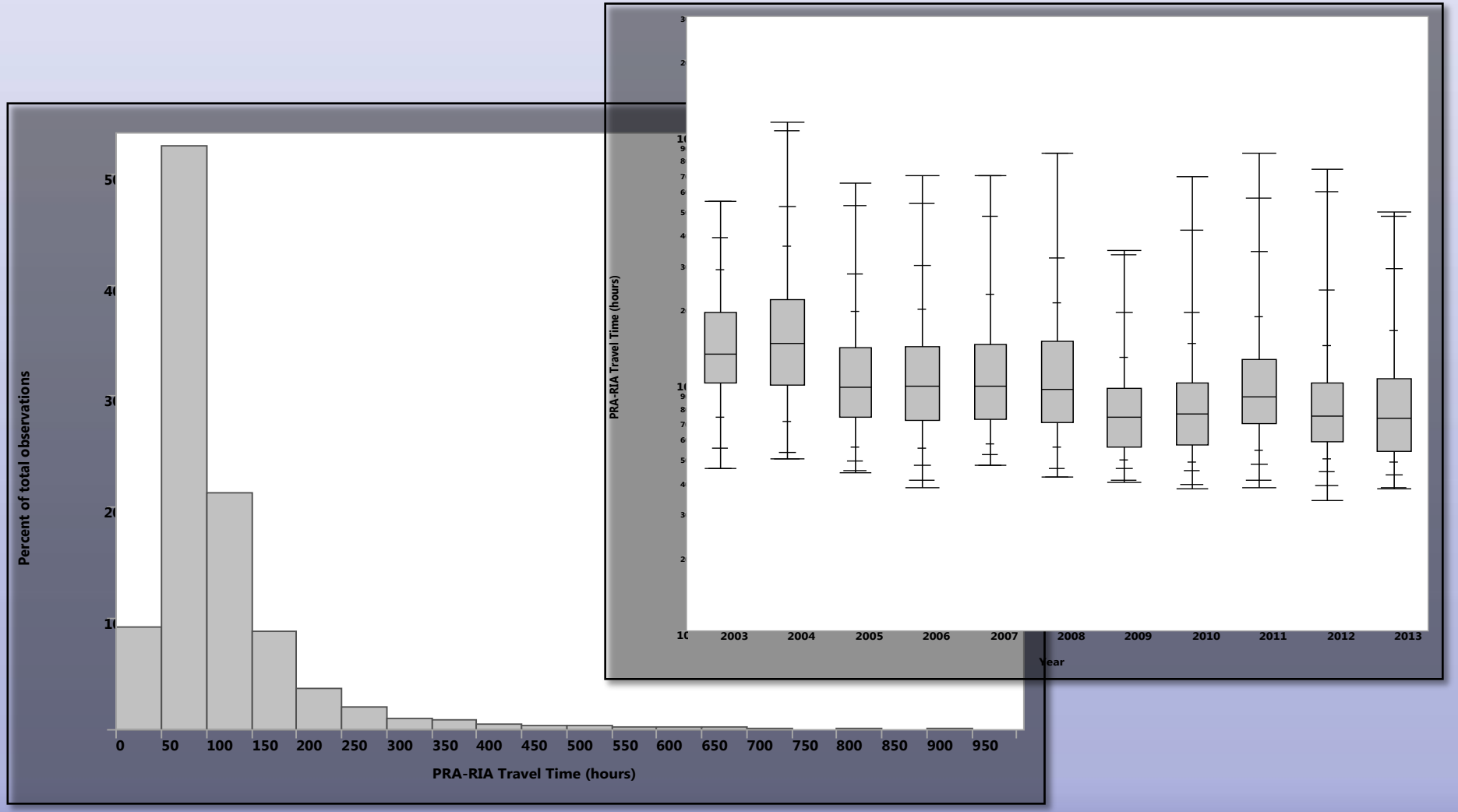
Passage Criteria

2. Travel Time → 90% of fish less than 356 hours



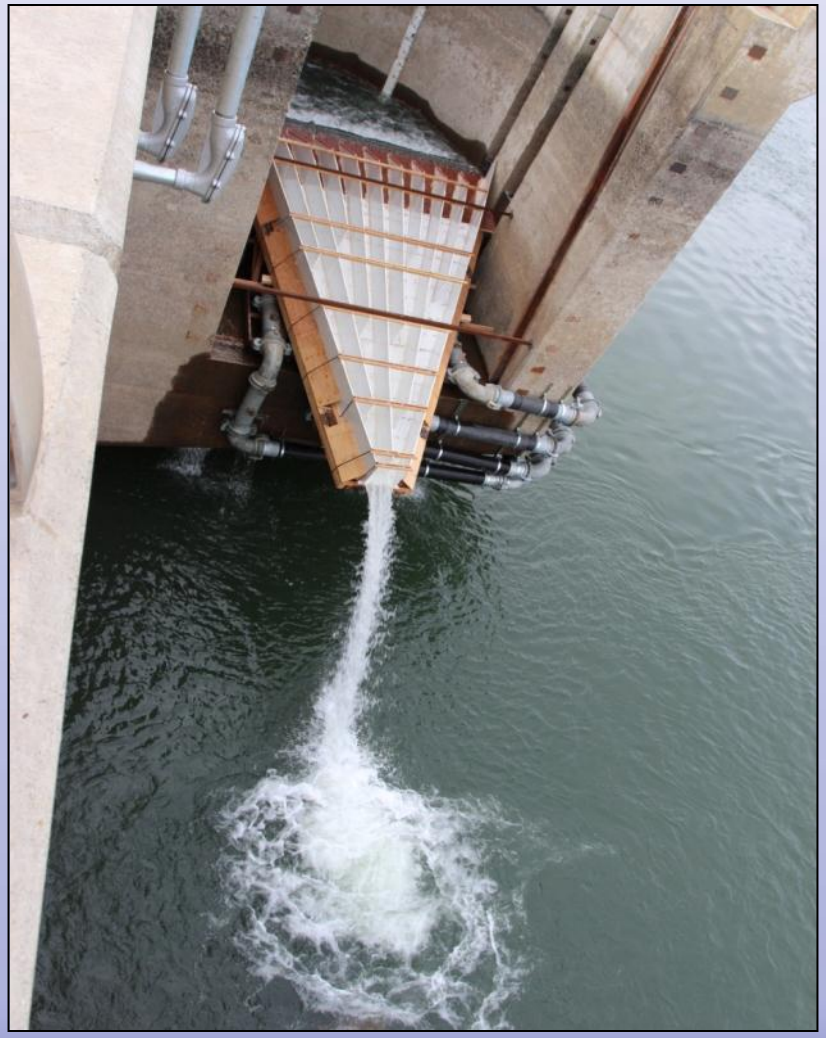
Passage Criteria

2. Travel Time → 90% of fish less than 356 hours



Passage Criteria

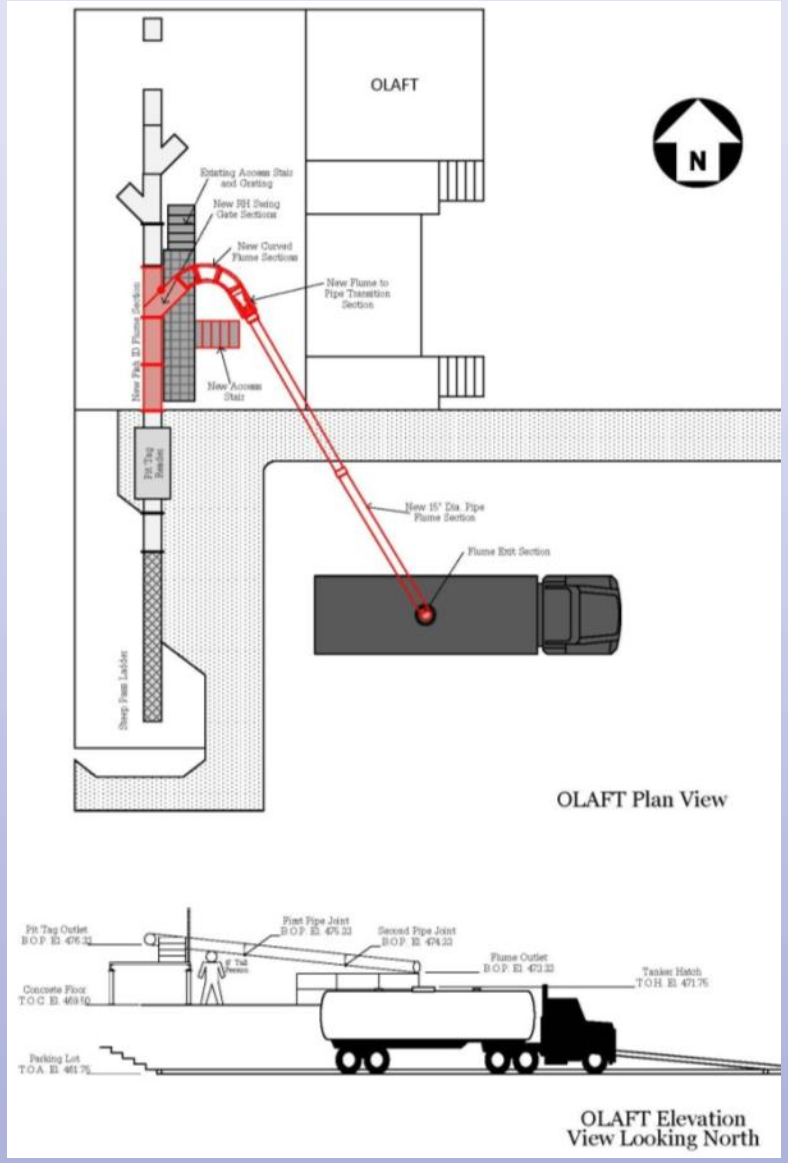
3. Ladder Exit → less than 5% mortality



Priest Rapids Off-Ladder Adult Fish Trap

Contingency planning

- Trap and haul from Priest Rapids Off Ladder Trap (OLAFT)



Trap-N-Transport Activities Officially Suspended by PRCC for Spring Chinook on May 9, 2014

- **Initially concerns over potential delay between VFC station at Priest Rapids Dam and OLAFT (5/4-5/5)**

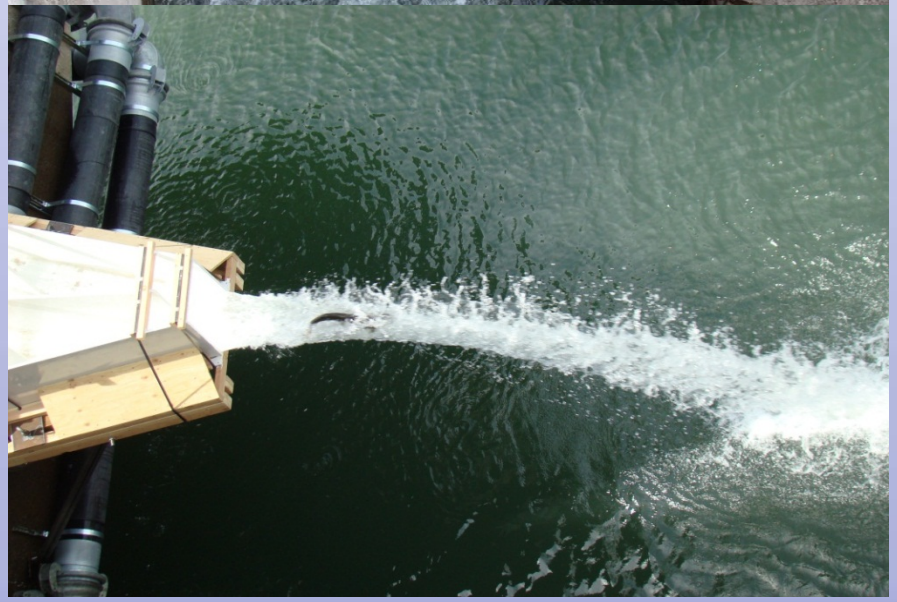
- **Data trends continues to indicate no travel time or passage issues at Wanapum or Rock Island Dam**

- Priest Rapids OLAFT Summary
  - **Spring Chinook = 605**
  - **Steelhead = 42**
  - **Bull trout = 0**

- Number PIT Tagged and Released
  - **Spring Chinook = 197**
  - **Steelhead = 3**

- Number Acoustic Tagged & PIT Tagged & Released from OLAFT
  - **Spring Chinook = 50 (PRCC Agreed tagging number – completed 4/29)**

Wanapum Fishway Exit Passage System Right & Left Bank



- **Based on Rock Island fish counts over 22,698 spring Chinook have successfully passage the Wanapum Fishway Exit Passage Systems (as of June 10).**
- **No Instantaneous Mortalities or stunned spring Chinook (left or right banks);**
- **All fish passing through the Wanapum Fishway Exit Passage Systems swam away.**

Travel Time & Conversion Rate
Spring Chinook Salmon

Includes Only PIT Tag Evaluation Fish
N=200 (Includes 3 steelhead)

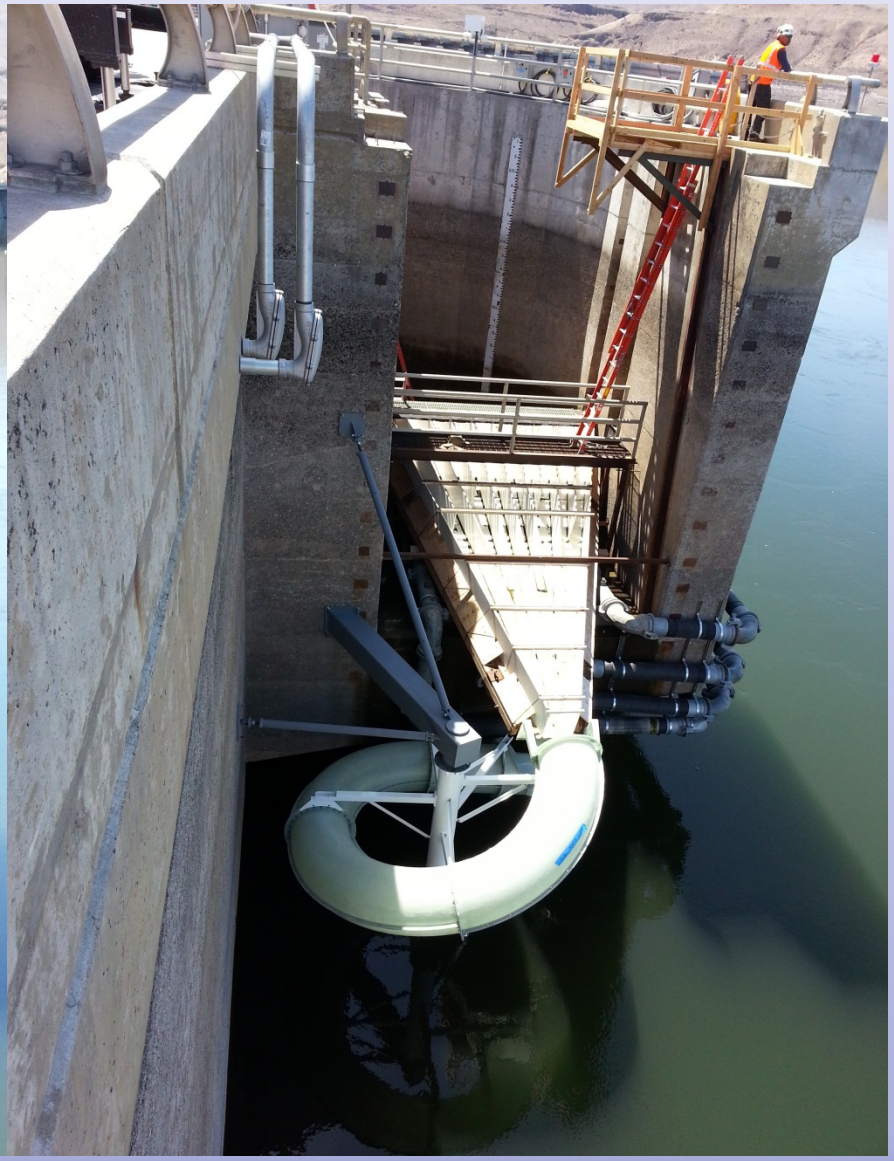
Travel Time & Conversion Rates	
Median Travel Time From Priest to Wanapum (days); n=197	3.9
Conversion Rate From Priest Rapids to Wanapum (percent); n=197	99.0
Median Travel Time From Priest to Rock Island (days); n=184	6.4
Conversion Rate From Priest Rapids to Rock Island (percent); n=184	92.0

Travel Time & Conversion Rate
Spring Chinook Salmon

Only Acoustic Evaluation Fish
N=50

Travel Time & Conversion Rates	
Median Travel Time From Priest to Wanapum (days); n=50	4.5
Conversion Rate From Priest Rapids to Wanapum (percent); n=50	100.0
Median Travel Time From Priest to Rock Island (days); n=50	8.8
Conversion Rate From Priest Rapids to Rock Island (percent); n=50	100.0

Wanapum Fishway Exit Passage System Enhancements (Spiral Chute)



Wanapum Fishway Exit Passage System enhancements (Approach Ramp & Perforated Plate)

Next Steps/Planned Activities

- Installation of Spiral Chute on right bank at Wanapum Fishway Exit Passage Systems;
- Adult Pacific Lamprey Passage Plan;
- Direct observations to evaluate adult sockeye, summer Chinook and steelhead passage at Wanapum Fishway Exit Passage Systems
- WDFW & Grant PUD in process of developing trap and transport protocol for sockeye and summer Chinook as a contingency only;
- Juvenile steelhead & yearling Chinook evaluation
- Interim Fish Passage Operation Plan due to FERC – July 11, 2014

PRCC Hatchery Subcommittee Meeting

Thursday, June 19, 2014

Via Teleconference

Meeting Summary

Meeting Attendees

PRCC HSC Members

Casey Baldwin, CCT
Bill Gale, USFWS
Lynn Hatcher, NMFS
Keely Murdoch, YN
Peter Graf, GPUD
Mike Tonseth, WDFW

Other Participants

Elizabeth McManus, Ross Strategic (facilitator)
Andy Chinn, Ross Strategic (facilitator)

Decisions

1. HSC members voted to approve objectives 1 through 9 of the draft Priest Rapids Hatchery 2014-2015 implementation plan, with the exception of objective 5 (stray rate), pending resolution of the question of additional otolith sampling (see notes below for discussion).

Actions

2. NMFS will check with Mike Ford to see if the draft genetics manuscript can be distributed.
3. NMFS will contact USFWS staff to notify them of an impending consultation for bull trout related to the composite broodstock effects analysis.
4. YN will circulate a clean version of the draft composite broodstock collection SOA and will discuss internally whether to call for an e-mail vote on the draft SOA.
5. NMFS will circulate the letter confirming 1347 coverage to GPUD following review.
6. CCT will circulate its proposal for expanded otolith sampling in the draft Priest Rapids Hatchery 2014-2015 implementation plan.
7. GPUD will clarify the status of the 2013 Wenatchee M&E Plan Report with CPUD.
8. GPUD will submit the draft 2015 Wenatchee M&E implementation plan prior to the July HSC meeting.
9. GPUD will circulate the draft 2015 White River temporary acclimation plan prior to the July HSC meeting for review and discussion (status: carried over from May meeting).
10. WDFW will draft a letter summarizing its concerns around the draft SOA on composite broodstock collection and circulate it with the HSC (status: carried over from May meeting).
11. WDFW will continue to work with NMFS to resolve the permit coverage situation for GPUD fall Chinook produced at Priest Rapids Hatchery and released from Ringold (status: carried over from May meeting).
12. CCT will circulate its Chief Joseph hatchery program workshop report with the HSC (status: carried over from April meeting summary).

13. GPUD will look into options for HSC document storage and access (status: in progress).

Meeting Summary

I. Composite Broodstock Collection

A. Internal NOAA Discussions on Effects Analysis – NOAA circulated a summary of internal discussions to date on the effects analysis from composite broodstock collection. NOAA believes that compositing is a practical approach, and genetic approaches used to date have not proven practical. For the effects analysis, NOAA will consider long term and short term risks and benefits to listed fish. NOAA is considering a schedule to notify other affected parties of the timeline and permitting implications for the effects analysis, including consultation with USFWS on bull trout. NOAA's goal is to complete this work by the end of 2014 in order to inform 2015 broodstock collection protocol.

- USFWS noted that if NOAA's position is that Nason Creek and Chiwawa spring Chinook cannot currently be differentiated because they are genetically similar, the benefit of operating the Chiwawa weir becomes questionable. Operating the Chiwawa weir would not produce a different result than collecting only at Tumwater Dam. Increasing the number of broodstock collection sites will increase the number of bull trout spawning aggregates affected.
- NMFS commented that operation of the Chiwawa weir could still potentially provide some fish with historic Chiwawa genetic traits. The draft manuscript from Andrew Murdoch and Mike Ford would probably help explain questions such as this.
- USFWS noted that consultation requires a three month time frame (at minimum) and recommended NMFS begin discussions as soon as possible. USFWS has been uncomfortable with previous consultations, as NMFS has issued biological opinions prior to completing the consultation process.
- WDFW is currently in Section 7 consultation with USFWS and anticipates receiving a biological opinion soon.

B. Path Forward and Next Steps

- NMFS will check with Mike Ford to see if the draft genetics manuscript can be distributed.
- NMFS will contact USFWS staff to notify them of an impending consultation for bull trout related to the composite broodstock effects analysis.

II. Composite Broodstock Collection

A. Draft Composite Broodstock Collection SOA – The most recent version of the draft composite broodstock collection SOA was circulated on 6/10. There were no additional changes to the document since then.

- YN noted that it does not support the current SOA as written and reiterated that the intent of the SOA is to provide a simple means by which broodstock could be collected annually while meeting recovery needs.

- WDFW emphasized the importance of excluding White River and Little Wenatchee fish to the greatest extent possible, if a composite collection is used at Tumwater Dam. WDFDW is interested in maintaining as much genetic diversity as possible in addition to meeting population abundance goals. WDFW suggested that fish collection at Tumwater should still include a genetic approach, with the baselines re-evaluated to include the most recent SNPs panels. Additionally, if the parameters under which composite broodstock collection can occur will be included in the biological opinion and Section 10 permit, it is unclear why an SOA is necessary.
- GPUD noted that clarity is important and if HSC members feel that Nason Creek and Chiwawa fish should be targeted using a genetic approach, the SOA should clearly state this.

B. Path Forward and Next Steps

- YN will circulate a clean version of the draft composite broodstock collection SOA and will discuss internally whether to call for an e-mail vote on the draft SOA.

III. Fall Chinook Permit Coverage

A. Coverage for ACOE Activities at Priest Rapids – WDFDW reported that broodstock collection, holding, and (likely) spawning are covered by existing permits. GPUD is comfortable with NMFS issuing a letter recognizing that adult holding, spawning, and eyed egg incubation does not mean that GPUD is assigned liability for fish on-station. NMFS has drafted a letter noting that 1347 coverage includes take and use of excess for other hatcheries; the letter will specify that once the eggs or fish leave the facility, they are no longer GPUD's responsibility. The draft letter will likely be circulated during the week of 6/23.

B. Path Forward and Next Steps

- NMFS will circulate the letter confirming 1347 coverage to GPUD following review.

IV. Priest Rapid Hatchery

A. 2014-2015 Implementation Plan – CCT circulated an e-mail outlining concerns with the draft implementation plan on 6/18:

> "CCT has concerns related to Priest Rapids Hatchery (PRH) strays to UCR populations and to the Chief Joseph Hatchery Program (broodstock collection of known natural origin late arriving summer/fall Chinook). 2013 was a large run escapement for Columbia River fall Chinook and 2014 is predicted to be even larger. While operating the Chief Joseph Hatchery (CJH) ladder for the first time in 2013, CCT staff observed a high abundance of adipose present Chinook in and around the ladder during October and November. In 2013 the fall Chinook count at Wells Dam (+17,000) was considerably higher than the normal of 3-4,000. The Wells Dam counts have no way to distinguish PRH strays from Upper Columbia natural origin fish because the PRH fish do not all have an external mark. Also, WDFW sampling at the Eastbank Hatchery outfall in 2013, reported at large

percentage of the fish sampled as PRH origin. If PRH adipose present hatchery-origin Chinook are present in large numbers in the Okanogan River and/or in the vicinity of the CJH ladder, collection of known natural origin late-run broodstock for the CJH integrated program could be compromised. Additionally, contribution on the spawning grounds of PRD hatchery-origin Chinook could negatively affect stock genetics for the Okanogan summer/fall population."

CCT proposes an expanded otolith analysis where otolith samples would be collected from late arriving broodstock in the Okanogan River (after the breakdown of thermal barriers). This would be combined with sampling of fish collected in the CJH ladder. The analysis would be an expansion of WDFW's current contract to look at PRH otoliths.

- GPUD noted that strays are typically monitored through CWT recovery and expansion by tag rate.
- WDFW commented that the current CWT is a double index (600,000 adipose clipped and 600,000 non adipose clipped) and is only intended to look at contribution to fisheries, not as a tool with which to evaluate other programs. There is not much fishery for fall Chinook once they pass the dam, and CCT believes there is a higher rate of hatchery fish at the ladder than in the fishery.
- WDFW requested additional time to comment on stray rate M&E.
- GPUD requested more specific information on CCT's proposed expansion of otolith sampling.

B. Voting

- HSC members voted to approve objectives 1 through 9 of the draft Priest Rapids Hatchery 2014-2015 implementation plan, with the exception of objective 5 (stray rate), pending resolution of the question of additional otolith sampling.

C. Path Forward and Next Steps

- CCT and WDFW will circulate their comments and/or a proposal for expanded otolith sampling in the draft Priest Rapids Hatchery 2014-2015 implementation plan.

V. Wenatchee M&E Plan Report

A. Approval Status – GPUD noted some confusion about the report's status; GPUD's understanding is that no comments were received during the review period, which ended in May, and the report is now final. The main issue is that GPUD's contractors (primarily Bioanalysts) believe the report is final.

- WDFW noted that the report was not issued for committee review until 6/2 and is still under 30 day review. The last draft of the report did not have a necessary Methow spring Chinook component.
- YN concurred that it was under the impression that the document was issued for review on 6/2.

B. Path Forward and Next Steps

- GPUD will clarify the status of the Wenatchee M&E Plan Report with CPUD.

VI. Draft 2014 M&E Implementation Plan

A. Status of Draft Plan – During the 6/18 HCP-HC meeting, CPUD requested a due-date extension for the 2014 M&E implementation plan in order to make changes in the interest of adaptive management. GPUD requests the same consideration.

- YN commented that one of CPUD's rationales for a revised deadline was that their streamlined contracting procedures allow for more rapid execution. Because the HSC has less experience working with GPUD on M&E issues, YN suggested that earlier GPUD delivery of the draft M&E implementation plan would be better.
- GPUD recognized YN's concerns and noted that, overall, GPUD would prefer to be able to make adaptive changes to the M&E implementation plan depending on what is occurring during the field season. However, in the interest of alleviating concerns, GPUD is comfortable with the July HSC meeting deadline for the draft plan.

B. Path Forward and Next Steps

- GPUD will submit the draft 2014 Wenatchee M&E implementation plan prior to the July HSC meeting.

VII. Wanapum Dam

A. Update on Ladder Improvements – GPUD installed a spiral chute on the left bank during the week of 6/9. The left bank fish ladder was shut down for 36 hours during installation, during which time GPUD also installed an approach ramp, a perforated plate to prevent adherence of Pacific Lamprey, and a jump curtain to prevent fish from jumping outside of the ladder. The right bank received the same renovations during the week of 6/16. GPUD's goal is an interim pool raise by fourth quarter 2014. Spring Chinook numbers are beginning to slow, and summer Chinook and sockeye are beginning to appear. Injury rate observations at the Priest Rapids and Rock Island video count stations and Leavenworth NFH appear to be within normal ranges, according to a recent Fish Passage Center memo.

VIII. Wrap Up and Next Steps

A. Next Meeting: Thursday, July 19, 2014

B. Potential July Meeting Agenda Items

- PRH M&E 2014-2015 Implementation Plan
- Nason Creek broodstock collection
- Status of NMFS discussions on compositing
- 2015 WR Acclimation Plan
- 2014 Wenatchee M&E implementation plan
- Wanapum Dam update

<u>Meeting Materials</u>

The following documents were provided to HSC members in advance of this meeting:
Priest Rapids Hatchery

- Draft Nason Creek SOA
- 2013 Annual Hatchery Report (link)
- May 2014 Summary of NOAA Fisheries Internal Discussion on Spring Chinook Broodstock Compositing in the Wenatchee Basin
- Nason Creek May Rotary Trap Summary
- White River May Rotary Trap Summary
- PRH May M&E Summary
- Final June Meeting Agenda
- 2013 Nason Creek juvenile abundance report
- 2013 White River juvenile abundance report

Fall Chinook Work Group

Tuesday, 1 July 2014

Grant PUD (USBOR Building)

Ephrata, WA

Technical members

Paul Wagner, NMFS	Joe Skalicky/Don Anglin, USFWS
Jeff Fryer, CRITFC	Paul Ward/Bob Rose, YN
Holly Harwood, BPA	Brett Swift, American Rivers
Keith Truscott, CPUD	Tom Kahler, DPUD
Bill Tweit, WDFW	Paul Hoffarth, WDFW
Patrick McGuire, WDOE	John Clark, ADFG
Peter Graf, GCPUD	Todd Pearsons, GCPUD
Steve Hemstrom, CPUD	

Attendees: (*Denotes Technical member)

Russell Langshaw, EI (Phone)	Peter Graf, GCPUD*
John Clark, ADFG* (Phone)	Paul Wagner, NMFS* (Phone)
Tom Kahler, DPUD*	Ryan Harnish, Battelle
Tom Skiles, CRITFC (Phone)	Todd Pearsons, GCPUD
Tracy Hillman, Facilitator	

Action Items:

1. **Russell Langshaw will send his comments on the Predation Report to Blue Leaf.**
2. **Russell Langshaw will provide the FCWG with a draft study plan for assessing density dependence in the Hanford Reach.**
3. **Russell Langshaw will prepare a summary report on Phase II studies.**
4. **Russell Langshaw will conduct retrospective analysis on historical stranding and entrapment work.**

5. **Ryan Harnish will work with Grant PUD on providing more detail on the five density dependence studies identified in John Clark's Phase III study suggestions.**

Meeting Minutes

I. Welcome and Introductions – Tracy Hillman welcomed attendees to the meeting. Attendees introduced themselves.

II. Agenda Review – The agenda was reviewed and approved.

III. Approval of Meeting Minutes

- The June Meeting Minutes were reviewed and approved with edits.

IV. Review of Action Items - Action items identified during the June meeting were discussed.

- Russell Langshaw will send his comments on the Predation Report to Blue Leaf. **Ongoing.**
- Russell Langshaw will provide the FCWG with a draft study plan for assessing density dependence in the Hanford Reach. **Ongoing.**
- Russell Langshaw will prepare a summary report on Phase II studies. **Ongoing.**
- Russell Langshaw will conduct retrospective analysis on historical stranding and entrapment work. **Ongoing.**

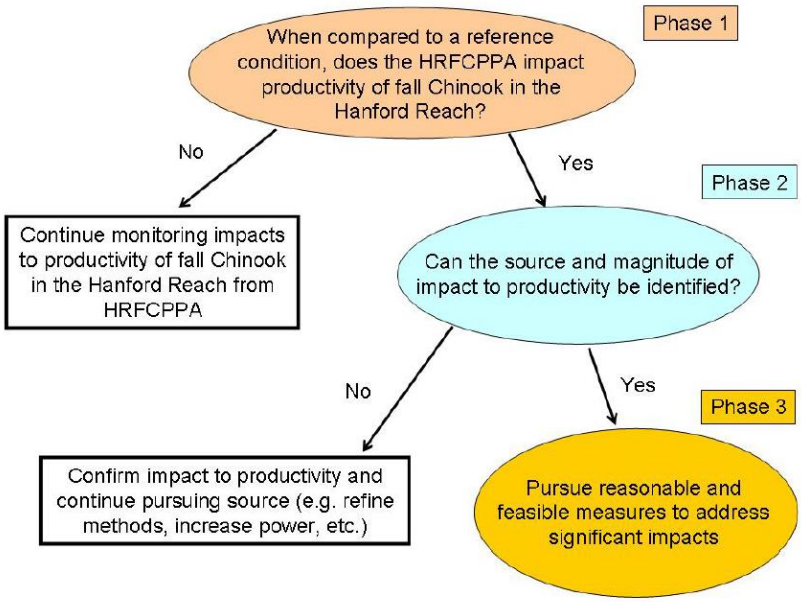
V. Update on Wanapum Dam Issues

Peter Graf gave a brief update on the current status of Wanapum Dam issues. Peter noted that the engineers have successfully installed the spiral chutes to the flumes and have modified the approach ramps. In addition, they have added perforated plates to the left and right ends of the flume to prevent adult lamprey attachment. The engineers have installed a "jump curtain" to prevent sockeye from jumping out of the flume. Peter indicated that the Wanapum ladders were down (not at the same time) for roughly 30 hours while the engineers modified the flumes. Peter said that several summer Chinook have passed the dam and sockeye are starting their passage. He said that all passage criteria are being met. Observers are on site 12 hours per day to track anomalies in fish passage at the flumes.

Peter Graf indicated that Grant PUD will request an interim reservoir elevation of 560-562 feet, which would allow normal operation of the adult fish ladders at Wanapum Dam, but could create problems with meeting reverse load factoring requirements. The interim elevation must be approved by the Board of Consultants and FERC. If approved, the interim elevation would likely occur later this year.

VI. Study Plan Discussion

The discussion began with a review of Figure 5 in the Hanford Reach Study Plan (see Figure below).



The figure provides a conceptual framework for a phased study to identify and adaptively manage effects of hydro operations on fall Chinook in the Hanford Reach. Because no negative effects were identified in Phase I, it was questioned why the FCWG moved into Phase II, which is intended to identify the source and magnitude of negative effects revealed in Phase I. Russell Langshaw explained that the FCWG elected to do addition studies that would help explain some of the findings identified in Phase I. For example, they wanted to see if predation and density dependence played a significant role in the loss of pre-smolts. In addition, Phase II studies would also help to explain some of the uncertainties identified during Phase I and would provide additional information for adaptive management. To that end, the FCWG identified Phase II studies that would help address those questions. Ecology supported the approach and approved the Phase II studies.

As a refresher, Russell Langshaw gave a presentation on the phased study plan for the Hanford Reach Fall Chinook Protection Plan (See Attachment 1). Russell began the presentation by providing an overview and history on protection and mitigation for the Hanford Reach, including a discussion on operations and constraints. He then identified the Phase I studies and provided a brief summary of results for each study. He then followed with a discussion on Phase II

implementation and the studies associated with it. He concluded by discussing Phase III implementation, which included a review of protections and mitigations.

VII. Phase II Study Plan Updates

Predation Report – Russell Langshaw and Peter Graf said that Grant PUD will be providing Blue Leaf with a PO so Blue Leaf can finalize the predation report. Russell indicated that he will send his comments to Blue Leaf as soon as he can. Russell is hoping that Blue Leaf will have the report finalized in July.

Density Dependence – Russell Langshaw said that he is still working on a study plan to address the density dependence that was identified in the productivity assessment. He is proposing to sample otoliths from juvenile Chinook that die during the CWT/PIT tagging efforts. He intends to look at growth and condition factor at time of tagging. These data would then be compared to otoliths collected from returning adults, which are sampled on the spawning grounds. Russell has otoliths from juvenile fall Chinook that died during recent tagging studies.

Russell indicated that he will try and provide the FCWG with a draft study plan in August or September 2014.

VIII. Phase III Studies

During the past few months, the FCWG has been discussing the implementation of Phase III studies. Once Russell Langshaw completes a summary report on Phase II studies (similar to the Phase I summary report), which should be completed later this year, the FCWG will have a better idea of what to implement in Phase III. Some of the studies identified earlier by the Working Group include: (1) fall Chinook productivity modeling every five years, (2) ongoing egg retention sampling to address density dependence effects, and (3) updating the models used in stranding and entrapment assessments.

John Clark provided the FCWG with a brief write up on studies he believes should be implemented during Phase III (see Attachment 2). His first suggestion was to continue to conduct the productivity analyses every five years. This has been supported by the FCWG and will be included in Phase III. His second suggestion was to do additional egg to fry survival studies. This did not get as much support from the FCWG, but will be evaluated in the summary report prepared by Russell Langshaw. Finally, the Working Group spent some time discussing John's third suggestion, which is to conduct opportunistic high-escapement studies in 2014. With the anticipated record-level escapement of fall Chinook in 2014, there are unique opportunities to evaluate potential density dependent factors. Based on discussions

with Battelle, John identified about five studies that could take advantage of the record escapement. Todd Pearsons indicated that Grant PUD, through their hatchery M&E program will be collecting a lot of useful information to inform density dependence. It was suggested that Ryan Harnish work with Grant PUD (Todd Pearsons and Peter Graf) on fleshing out the five suggested studies associated with density dependence. Ryan will provide the FCWG with more information on the suggested studies in August. Grant PUD and Russell Langshaw will evaluate how much of this work is related to the Priest Rapids Project. It is likely that funding may have to be secured from other sources (e.g., Northern Fund).

IX. HRWG Activities

Update on Protection Flows – Russell Langshaw said that all temperature and flow data are displayed in the Fixed Site Monitoring – Monthly Summary files on the Grant PUD Water Quality Website (http://www.gcpud.org/naturalResources/fishWaterWildlife/waterqualityMonitoring.html). The temperature unit tracking spreadsheet is found under "Fixed Site Monitoring – Monthly Summary."

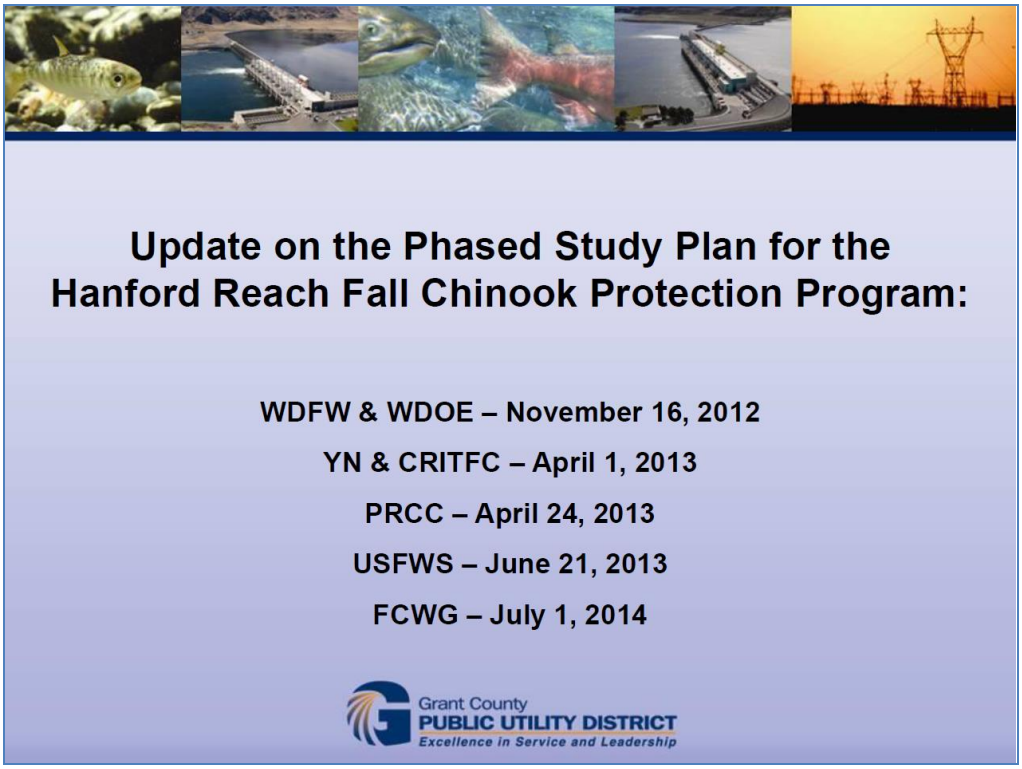
Peter Graf reported that rearing ended on 19 June. He also said that there were no violations in protection flows during the incubation, emergence, or rearing periods. Even with the issues at Wanapum Dam, Grant PUD was able to maintain protection flows in the Hanford Reach. Grant PUD will be discussing Reverse Load Factoring and its effects on maintaining protection flows in the Hanford Reach.

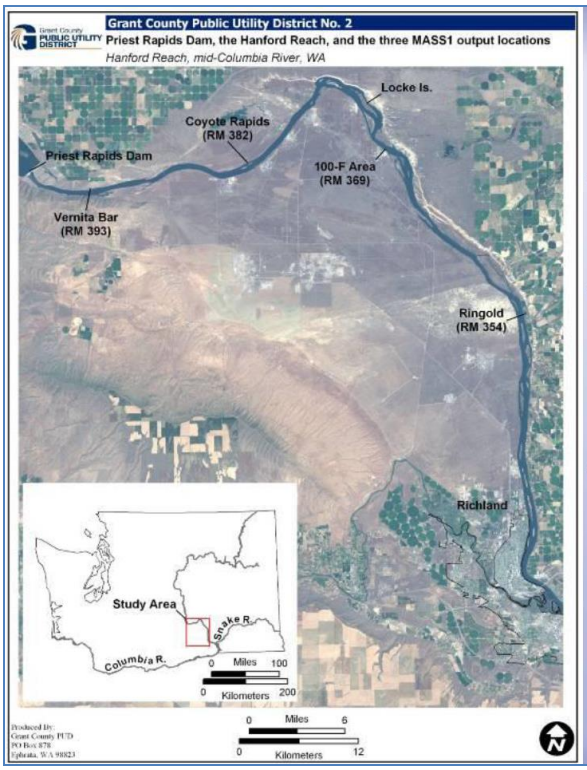
Stranding and Entrapment Retrospective Analysis – Russell Langshaw reported that he did not have time to work on the retrospective analysis in June. He said that he will work on this assignment later this summer. He intends to explore the use of hurdle models. The hurdle model is a two part process. The first part models the presence/absence of Chinook within entrapment sites. This is usually accomplished with multiple logistics regression or discriminant analysis. If a pattern is found (successfully jumped the first hurdle), then the second part is to model the numbers of fish entrapped in sites with fish presence. This could be accomplished with regression techniques. The hurdle model may be a simpler and more easily explainable approach than the zero-inflated negative binomial distribution model.

X. Next Meeting: Tuesday morning, 5 August 2014 at Grant PUD in Ephrata, WA.

Attachment 1

Presentation by Russell Langshaw on the Phased Study Plan for the Hanford Reach Fall Chinook Protection Program





Hanford Reach

- Unimpounded for 52 river miles
- Largest naturally spawning Chinook population in Columbia River
- Limited access/development because of USDOE Hanford Site and is now a National Monument protected by Presidential Proclamation

Overview of protections and mitigation

- HRFCPPA
  - Continue current protections
  - Monitor and estimate fry losses (2011-13)
- Priest Rapids Hatchery
  - Continue 5M smolt production
  - Add 345K smolts and 1M fry (2013)
  - New M&E plan (2010)
  - Hatchery renovation (2013-14)
- Article 405 – Habitat in Wanupum tailrace (2011)
- 401 WQ Certification (2008-15)

History of protections

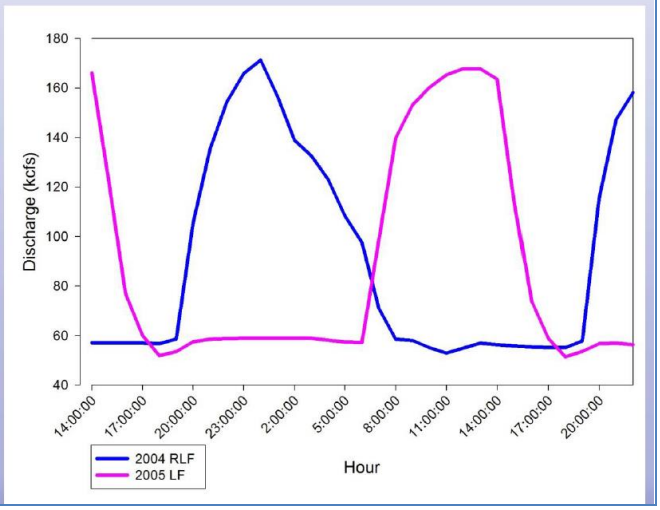
- Foundation of research and adaptive management
- Vernita Bar Settlement Agreement
  - Objective was to prevent redd desiccation
  - Initial studies early 1980's
  - Interim protections mid-1980's
  - Final agreement 1988
- Hanford Reach Fall Chinook Protection Program
  - Maintain desiccation protections and add early rearing
  - Initial studies late 1998-2003
  - Interim protections early 2000's
  - Final agreement 2004
  - Subsequent studies 2006-2014

HRFCPPA protections

- Accumulated temperature units
- Spawning Period
  - Timing and shape of discharge
- Incubation and Hatching
  - Discharge minimums
- Emergence and Rearing Periods
  - Discharge minimums and deltas

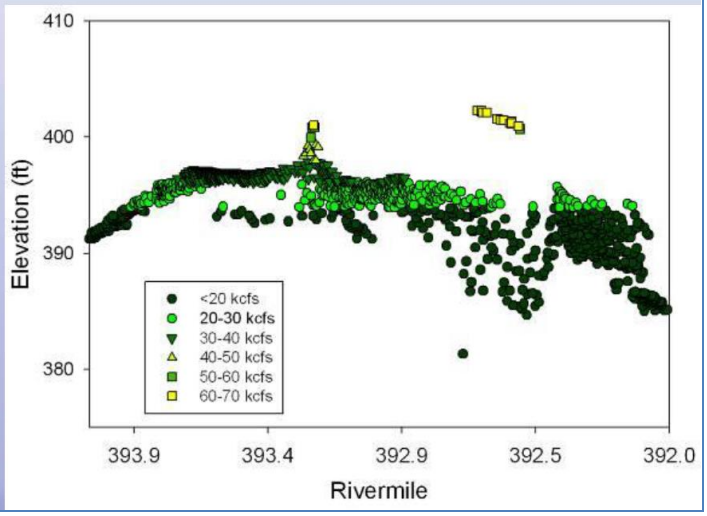
Spawning Period

- Limit high elevation spawning
  - Reverse Load Factor
- Redd counts



Pre- and Post-hatch Period

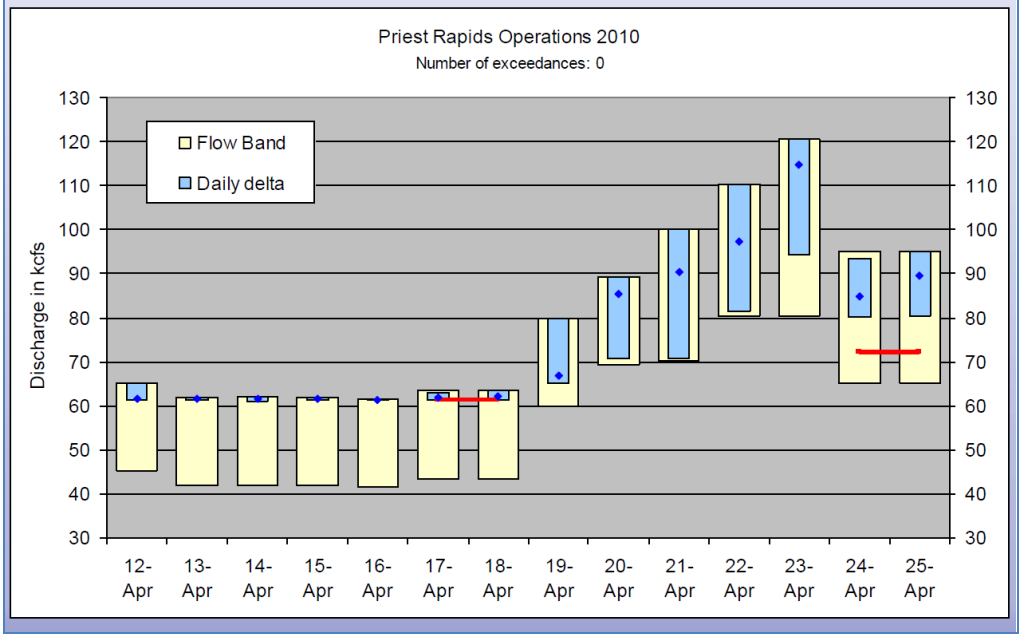
- Prevent dewatering
  - Discharge minimums
- ATUs



Emergence and Rearing Period

- Prevent dewatering
  - Discharge minimums
- Reduce stranding and entrapment
  - Discharge Delta
    - Maximum - minimum discharge
  - Operational flexibility increases with inflows
- ATUs

Operations and Constraints

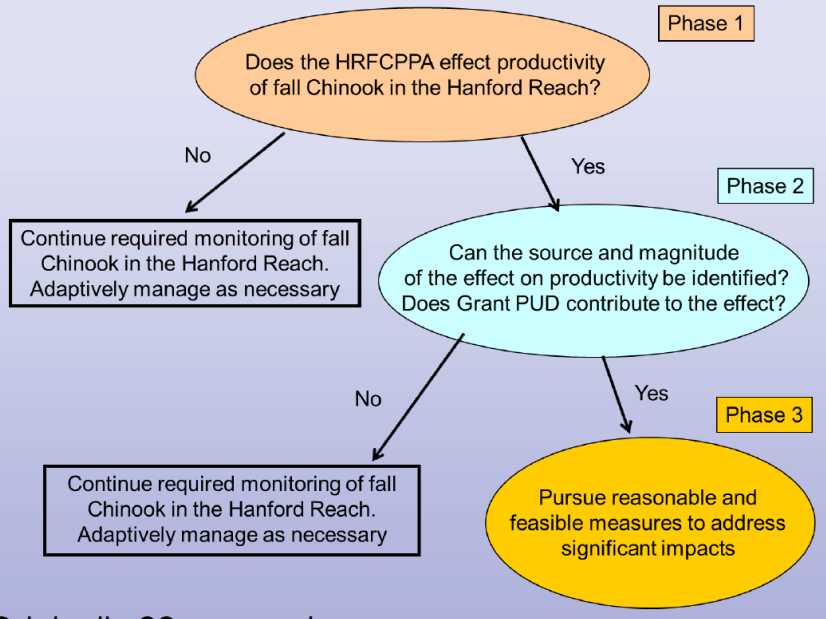


401 WQ Certification

6.3.4) Fall Chinook Work Group
6.3.5) Contribution to flow fluctuations
6.3.6) Monitoring to understand impacts
- a) Study identification
- b) Prioritization
- c) Study Plan
- d) Funding
- e-f) Study Designs
- g) Report

6.3.7) Potential implementation measures
- A) Feasibility Study and Report
- B) Implementation Plan

Phased Study Plan

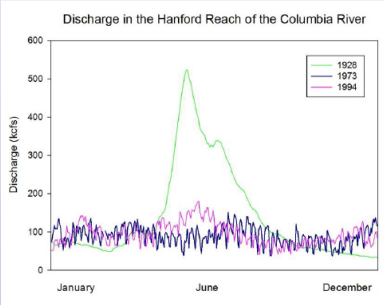


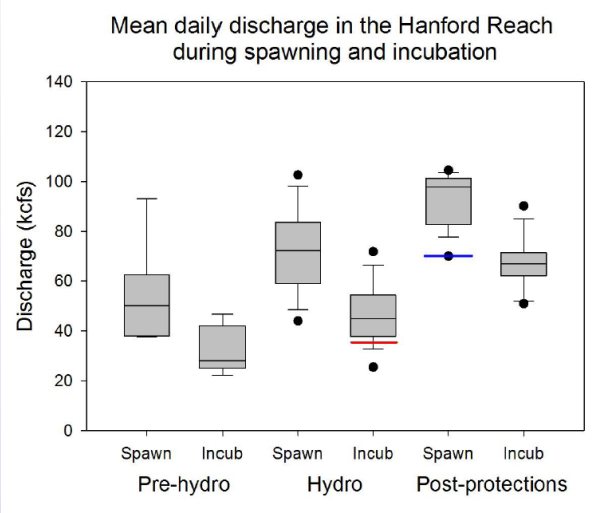
- Originally 22 proposals

Phase I

- Productivity factors assessment
  - Final report completed
- Fallback assessment
  - Final report completed
- IBM - Production simulation model
  - Version 1.0 completed and available
- Hydrodynamic model synthesis
  - Completed and used for many ongoing and completed studies
- Egg-to-fry survival
  - Final report completed and fine-tuning fertilization timing model

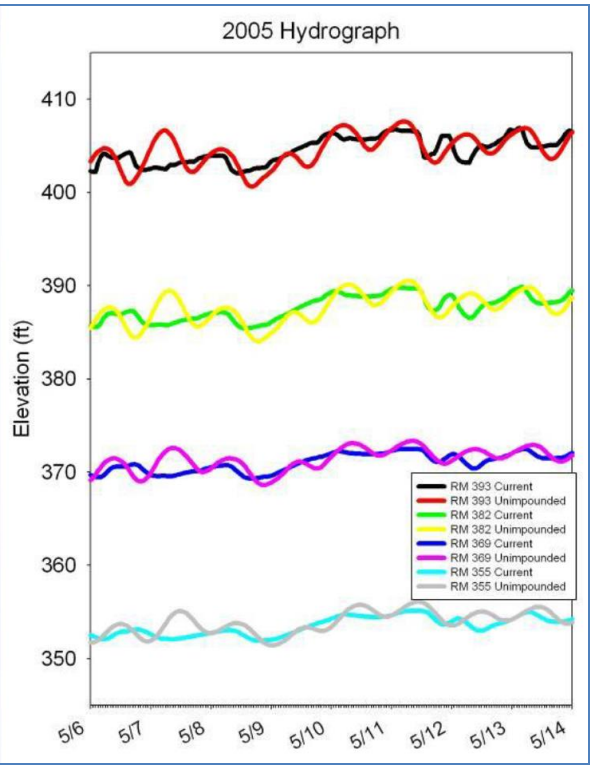
Hydrodynamic modeling



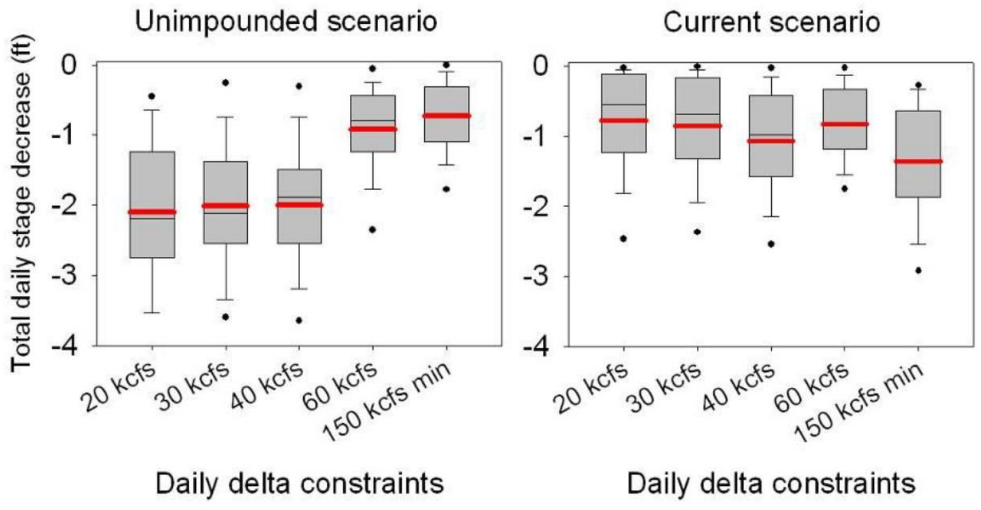


Flow Fluctuation Report

- Modeled 2004-08
  - HRFCPP scenario
  - Hypothetical unimpounded scenario



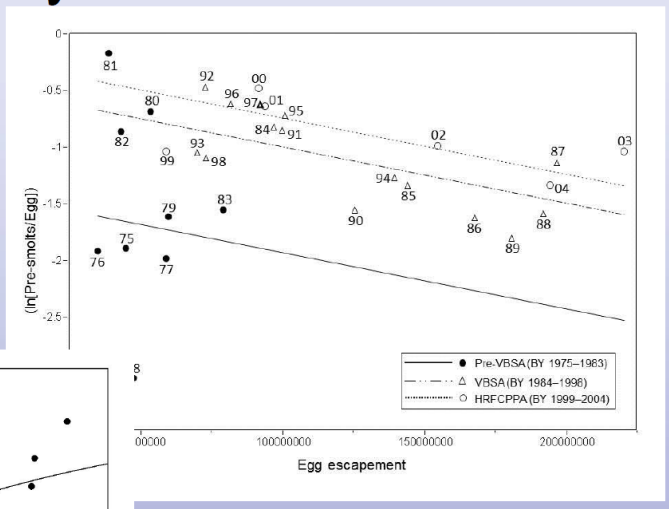
Total daily stage decrease (ft) at 100-F Area (2004-2008)

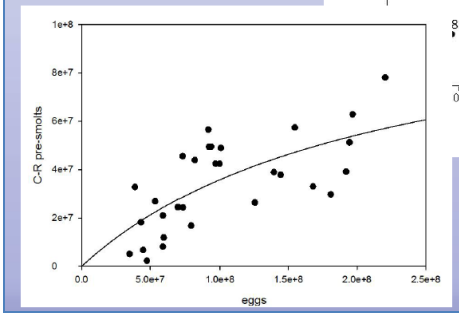


Productivity Assessment results

- Very high productivity
  - Significant difference pre- and post-VBSA
  - Post-VBSA
    - Adult α = 10.3
    - Pre-smolt α = 0.48
    - Density dependence > 42,000 adult escapement
- Variables correlated with productivity
  - Variation in discharge during incubation
  - Discharge decrease between spawning and incubation

Productivity Assessment results

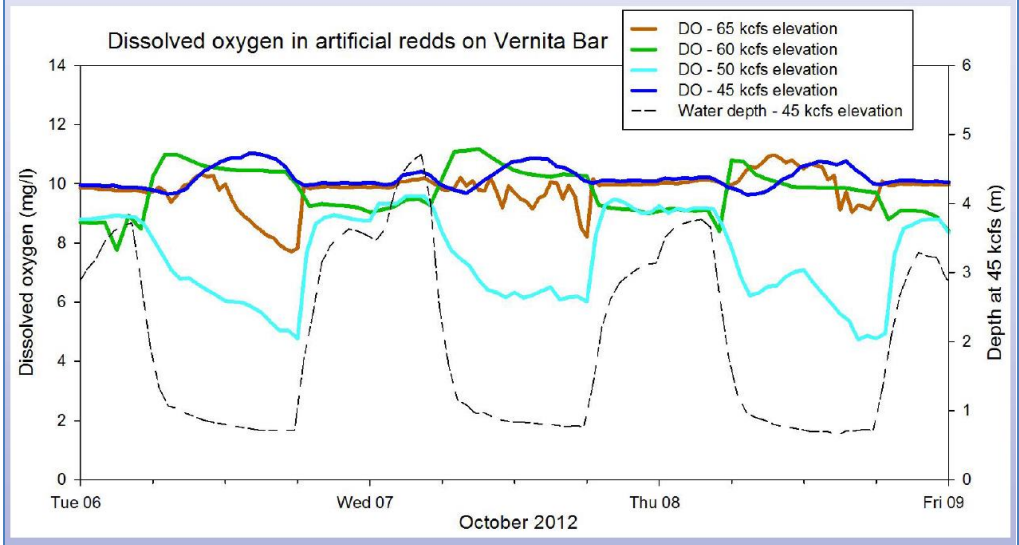




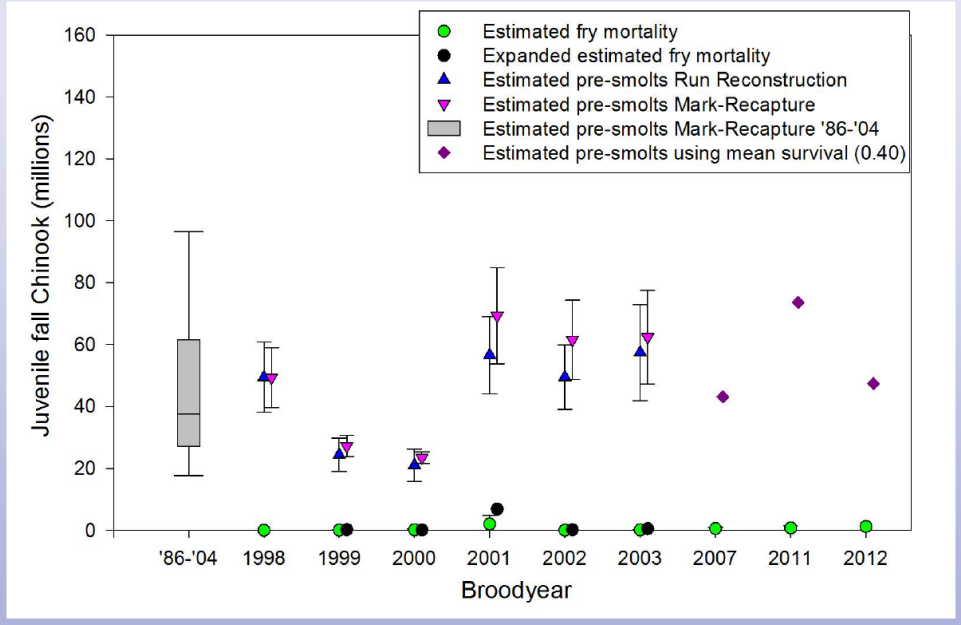
Egg-to-fry survival results

- Fertilization to 378 degree days
  - Excavated natural redds (n=52)
  - 97.6% ± 5.6% survival
  - 78% fertilized at night
- 378 dd to 900 dd
  - Cylindrical egg tubes
  - 63.9% and 84.5%
  - Low dissolved oxygen likely source of mortality
- Overall 71.2%

Dissolved oxygen in redds



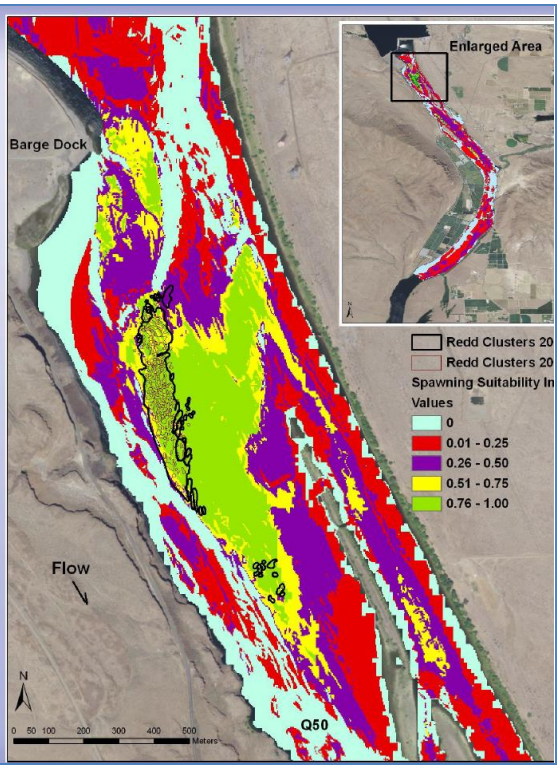
Stranding and Entrapment



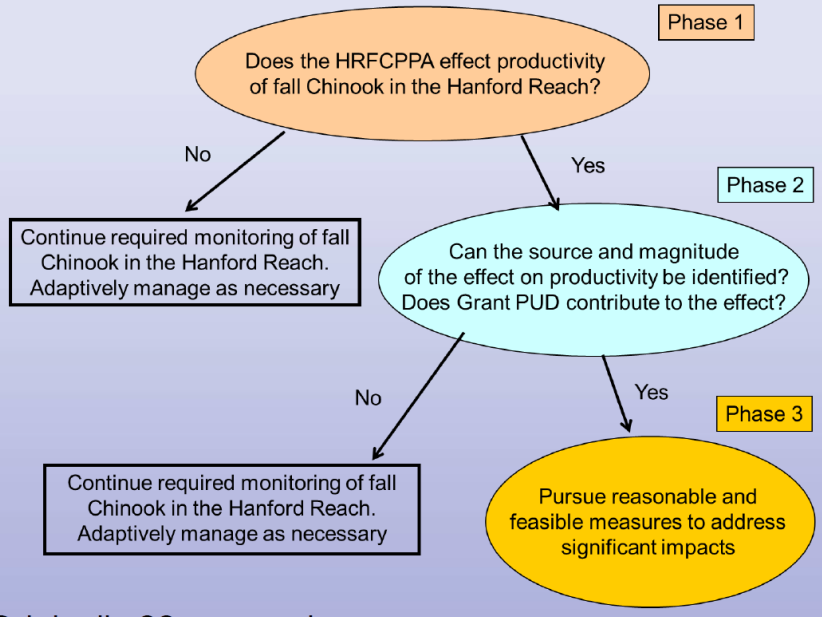
(Data from McMichael et al. 2003, Anglin et al. 2006, Skalicky pers. comm., Harnish et al. 2012, and Hoffarth et al. 2012)

Miscellaneous studies

- Individual-based production simulation model
- Fallback assessment
- Priest Rapids Hatchery M&E
- Article 405



Phased Study Plan



- Originally 22 proposals

Phase II – Original Plan

- If significant negative effect on productivity is identified
- Eleven potential proposals identified
  - Spawning Period
  - Emergence and Rearing Periods
- Potential controlled flow fluctuation study
  - Considered as method for Phase II studies

Phase II – Implementation

- Consistent with original plan
- No evidence that HRFCPP is limiting productivity
- Assess superimposition
  - Slightly increased egg retention during 2013 (Hoffarth 2014 memo).
- Data mining for stranding and entrapment
  - ongoing

Phase II – Implementation

- Support CRITFC Juvenile PIT-tagging
  - Approximately 10,000 PIT-tagged in 2014
- Develop plan to examine density dependence
  - Identify methods that can capitalize on previous and ongoing data collection
- Predation Report
  - Report to be finalized by September
  - JSATS draft report completed by September
- Continue monitoring productivity with PRH M&E

Phase III

If flow fluctuations under the HRFCPPA "*are causing significant harm… and the Project contributes to such flow fluctuations, then the Grant PUD shall to the extent reasonable and feasible adaptively manage Project operations to address its contribution.*"

- Implementation Feasibility Study
  - Investigate reasonable and feasible measures to avoid, reduce or mitigate for adverse effects
- Implementation Feasibility Plan
  - Plan to implement approved measures

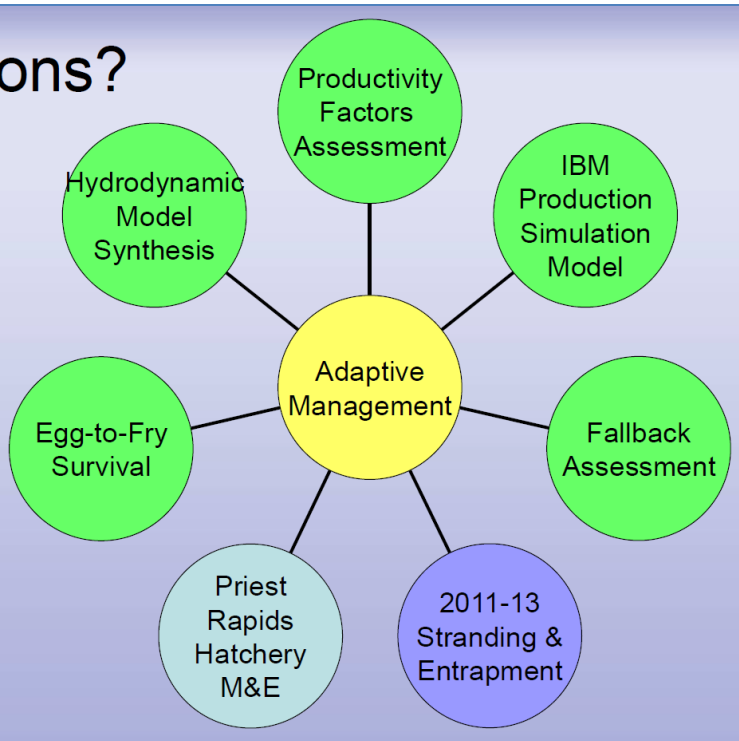
Phase III – Plan & Implementation

- Consistent with original plan
- No evidence that HRFCPP is limiting productivity
- Aren't anticipating operational changes
- Plan distributed to FCWG in December
  - Final due to FERC April 17, 2015
- Likely expanded monitoring
  - Egg retention
  - Stranding and entrapment estimate
  - Productivity assessment

Review of protections and mitigation

- HRFCPPA
  - Continue current protections
  - Monitor and estimate fry losses (2011-13)
- Priest Rapids Hatchery
  - Continue 5M smolt production
  - Add 345K smolts and 1M fry (2013)
  - New M&E plan (2010)
  - Hatchery renovation (2013)
- Article 405 – Habitat in Wanupum tailrace (2011)
- 401 WQ Certification (2008-15)
  - Phase I complete
  - Phase II 2012-14
  - Aren't anticipating any changes to HRFCPPA

Questions?



Attachment 2

FCWG Phase III Study Suggestions by John Clark

The June 23rd agenda for the Fall Chinook Work Group scheduled for July1, 2014, as distributed by Tracy Hillman lists potential phase 3 studies as a topic. The topic of Phase III studies is one that I have recently discussed with Battelle scientists. Suggestions provided below are the result of these exchanges and are Phase III studies I recommend the Fall Chinook Work Group consider.

Suggestion Number 1; Productivity Updates:

Regularly scheduled updates of the productivity analyses should be included in the Phase III study plan. The plan should clearly articulate the dates when additional analyses would be conducted (every 5 years). This is not a trivial effort to implement. The data must be thoroughly vetted and will require wide collaboration with folks involved with Chinook salmon harvest sectors such as the Chinook Technical Committee of the Pacific Salmon Commission, among others. Battelle completed the initial analysis and completed a high quality job in doing so and are, therefore, a logical choice to continue this work. The first update should be initiated soon and completed in 2015 (after all data became available from the 2014 return of age-5 fish). This update would add brood years 2005–2009 to the productivity analysis and is highly important due to the presence of several years of low escapement (2007–2009) during this time period coupled with high returns. As pointed out by several reviewers as a potential shortcoming of the BY 1975–2004 productivity analysis, years of low escapement were not well represented during the HRFCPPA period in the previous productivity analysis. Further, the current operational agreement was only represented by one prior brood year, an update would include 6 such years and can drop the brood years prior to the Vernita Bar Agreement period. The second update would need to occur in 2020. This update would add brood years 2010–2014 to the productivity analysis and is also highly important due to the addition of several years of very high escapement with current unknown returns. The addition of these years may help to identify potential limiting factors of freshwater productivity. The pattern of continuing updates each five years should continue thereafter.

Suggestion Number Two; Egg to Fry Survival:

Additional egg-to-fry survival work to increase geographical coverage and cover additional years would be very useful and valuable. The current data set is compelling, but is so far outside the reported values from other systems that additional work should take place. A small-scale follow-up study could focus less on elevation influences and just cover a range of habitats within areas where fish spawn. Something like 5 tubes (100 eggs each) in 10 different areas (2 would be the same areas studied in 2012 to have replication in time) should give a good range and provide the data necessary to bolster the existing information. Additionally, an attempt to estimate egg-to-fry survival in low elevation (i.e., deep water) redds could be made to better represent survival in the most commonly used habitats. Alternatively, a larger-scale follow-up study could attempt to estimate egg-to-fry survival on more of a population-level scale. High replication (i.e., multiple egg tubes at many elevations and geographic areas) would provide egg-to-fry survival estimates that could be expanded to the proportion of redds constructed at each elevation/area.

Suggestion Number Three; Opportunistic High Escapement Studies in 2014:

The forecast for extremely high escapement in the Hanford Reach in 2014 provides the opportunity to examine potential density dependence factors associated with the anticipated record level of natural spawning of fall Chinook salmon. If Grant County decides not to directly fund some or all of these ideas, it could help lead an inter-agency effort to secure funding and assist with some of the implementation. The FCWG represents just about the only scientific effort that provides a sharp focus on this stock of Chinook salmon that is vitally important to users ranging from Alaska to the Reach itself. Potential ideas along this line include:

- Use acoustic tags seeded in spawning areas before/during spawning season to determine area and timing of substrate disturbance to egg pocket depth. An injection method could be developed with a probe and pumped water to place the transmitters (in slightly positively buoyant media) into redds that are judged to be complete (spent female defending).
- Take underwater video of pre-established transects in major spawning areas (e.g., Vernita Bar) throughout the spawning season to document and enumerate the number of fall Chinook salmon eggs present on the substrate. Because the total number of eggs successfully deposited in a spawning area approaches carrying capacity of the area as the number of spawners increases, the expectation is a high rate of superimposition and potentially, a large number of eggs on the substrate should occur in 2014.
- The relationship between the number of eggs observed on the substrate (from above) and redd abundance could be evaluated using aerial redd surveys (potentially using a fixed camera overlooking the spawning area or by using video taken during frequent flights by a drone).
- Pre-smolt carrying capacity studies could include an examination of physical characteristics (e.g., length, weight, isotope data, fat content, etc.) of post-emergent fry through the smolt stage in spring 2015 and again in a subsequent year following lower escapement to address the question of whether the rearing habitat may be limiting productivity in years following high escapement. This could be accomplished by sub-sampling the fall Chinook salmon juveniles collected via seining by the CRITFC crews. This could be coupled with an examination of daily growth increments in otoliths in adults that returned from years of high vs low fry abundance. The downside of simply using the otolith approach is that the samples only represent the 'survivors' of the fry-smolt stage.
- A data-mining exercise to look at smolt index data from McNary and Ice Harbor to try to determine relationships between the productivity analyses output already available and escapement (e.g., estimated number of eggs deposited) to see whether there is a signal that would indicate a threshold above which smolt output is affected. Such an approach might also incorporate a model to try to isolate the influence of escapement on fish size and number (smolt index) of fish produced.

Priest Rapids Fish Forum

Wednesday, 2 July 2014
Grant PUD Wenatchee Office

PRFF Members

Stephen Lewis, USFWS
Bob Rose, YN
Carl Merkle, Umatilla Tribe
Tom Dresser, GCPUD
Aaron Jackson, CTUIR
Patrick Verhey, WDFW
Keith Hatch, BIA
Pat McGuire, WDOE
Mike Clement, GCPUD
Jason McLellan, CCT

Attendees:

Pat McGuire, WDOE
Patrick Verhey, WDFW
Aaron Jackson, CTUIR (Via phone)
Tom Skiles, CRITFC (Via phone)
Steve Lewis, USFWS (Via phone)
Brian McElroy, CRITFC (Via phone)
Debbie Williams, GCPUD
Doris Squeochs, Wanapum
Bob Rose, YN
Chad Jackson, WDFW (Via phone)
Jim Powell, BC Center for Aquatic Health Sciences (Via phone)
RD Nelle, USFWS (Via phone)
Mike Clement, GCPUD
Tracy Hillman, Facilitator

Final Meeting Minutes

I. Welcome and Introductions

II. Agenda Review

A. Action Items from last meeting – Complete

B. Meeting Minute Approval – 04 June, 2014 – Additional review time was requested.

C. Additional agenda items – No additions were made to the agenda.

III. Update on Wanapum Dam and Fish Passage – Grant PUD provided a PowerPoint presentation on Wanapum Dam.

- Spiral chutes have been installed on both the right and left bank Wanapum Fishway Exit Passage System, and are working very well. Large numbers of Chinook and sockeye have been observed passing the flume head down.
- Fracture repairs continue; 15 of the 30 pilot holes have been drilled and 1.5 of the 16" diameter tendon holes is complete.
- Reverse Load Factoring and an intermediate pool raise by the end of 2014 is being discussed by the Fall Chinook Work Group.
- Adult Pacific Lamprey SOP has been approved.

- Still waiting for LiDar information to complete the Benthic Fauna Survey & Evaluation; expected by end of summer 2014.

IV. Update on PLMP

A. NNI Update – The PRFF discussed the next steps needed to address Pacific lamprey assessments and recovery actions for NNI. The PRFF and RRFF have agreed to attend a joint meeting, but it's unknown if Douglas PUD will participate at this time, other than maybe contribute telemetry equipment and a location for translocation of lamprey. Rose will send out the original document with examples of tasks.

B. Lamprey Passage and Trap-n-Transport – Grant PUD incorporated comments received into their lamprey Standard Operating Procedures (SOP). Traps were seasoned for two weeks before trapping was initiated on July 1st at Priest Rapids Dam. Lamprey passage remains slow. No lamprey has been observed ascending the phase weir (observations only occur during daylight hours). Grant PUD agreed to release 20-40 fish collected by the Umatilla's at John Day Dam. They will be tagged with HD tags and released 10 weir walls before the false weir. Infrared observation cameras will be placed on the false weir and slide. Blue Leaf Environmental will be downloading HD detectors daily. Time stamps will be compared to infrared continuous video for the first 4-6 days after release on the upper left bank ladder. Clement and Jackson will work out logistics of the transfer.

C. Lamprey Regional Implementation Planning Process – Nelle reported that regional meetings have been held and that USFWS representatives will meet to discuss the Pacific Lamprey Regional Implementation Planning process at the end of July.

D. Other Lamprey Items - None

V. Update on WSMP

A. Update on Dispute Resolution and Stocking Decision for 2014 – Hillman reported that the PRFF Policy Committee met via conference call on June 26th to discuss the number of juvenile white sturgeon to release into the Priest Rapids Project in 2014. To date, 4,332 fish have already been released this year. An additional 2,168 remain on station at the Yakama Nation sturgeon hatchery at Marion Drain. The Policy group was unable to agree with the fate of the remaining fish, so Grant PUD will submit a letter to WDOE, asking them to make the final decision. All parties will review the letter by July 10th. A statement of agreement will be drafted to determine future release numbers; equal ranking will be given to genetics and numbers. If it's decided that the remaining fish will be released, they will be tagged by Grant PUD. Hillman said Parker was going to check with Donella Miller as to the drop dead date for release of fish on station, but he hadn't heard anything yet. The PRFF will be asked to review developed criteria on an annual basis.

B. Broodstock Collection – A 5x4 cross was achieved with the initial spawning. A second 5x3 cross could also possibly occur, for a total of 35 half family groups. Clement said Grant PUD is considering not fishing below Rock Island Dam next year because of the success experienced below McNary Dam while augmenting Chelan PUD efforts. 12 fecund males and 9 females caught below McNary Dam in two weeks while efforts below Rock Island Dam didn't' produce anything near that. Powell said larval collection efforts need to be discussed in the near future. Rose reported that while Mike Parsley was showing Donella Miller, YN, they successfully collected larvae. The YN will start their pilot larval collections early next week. Juvenile collection efforts need to be coordinated between Oregon and Washington to assure the comfort level of future juvenile collection plans.

C. Spawning and Rearing – See above.

D. Other White Sturgeon Items – None

VI. Next Meeting – 6 August 2014 at Grant PUD's Wenatchee office.

PRCC Hatchery Subcommittee Meeting

Thursday, July 24, 2014

Wenatchee, Washington

Meeting Summary

PRCC HSC Members

Bill Gale, USFWS
Peter Graf, GPUD
Lynn Hatcher, NMFS
Keely Murdoch, Yakama Nation
Todd Pearsons, GPUD
Mike Tonseth, WDFW
Kirk Truscott, CCT

Other Participants

Mike Ford, NOAA*

Elizabeth McManus, Facilitator
Andy Chinn, Facilitator

* For agenda items II and III only

Decisions

A. Approved the May meeting summary and June conference call summary.
B. Approved the 2014-2015 Priest Rapids Hatchery M&E implementation plan.
C. The following reports were finalized: Wenatchee M&E report, NTTOC report, Screw trap reports

Actions

1. GPUD will present both the gene flow based pNOB and conventional pNOB calculations in the Priest Rapids Hatchery Monitoring and Evaluation Report.
2. GPUD will discuss a pilot mating strategy for this year with NOAA and will develop a proposal for HSC consideration in September.
3. HSC members will provide comments on the Mike Ford et al. draft manuscript on estimating rates of straying of wild salmon using parentage based tagging.
4. YN will consider whether to elevate the draft SOA on composite on Nason Creek composite broodstock collection to the PRCC through the dispute resolution process.
5. GPUD will instruct tangle netting crews to begin keeping record of number of fish that escape during netting.
6. GPUD will discuss internal staffing capacity to convene or participate in a smolt trap meeting.
7. GPUD will draft an SOA on the NTTOC report to fulfill Objective 10 of the M&E plan.
8. HSC members will provide comments on the draft 2015 Wenatchee M&E implementation plan by 8/21.
9. GPUD will circulate the draft 2015 White River acclimation plan with the HSC.
10. CCT will circulate its Chief Joseph hatchery program workshop report with the HSC (status: carried over from April meeting summary).
11. GPUD will look into options for HSC document storage and access (status: in progress).

HSC Meeting Summary

I. Updates and Meeting Summary Review

A. PAC Update – ACOE is working on a letter in response to GPUD and CCT questions about John Day and Dalles mitigation.

B. PRCC Update – The PRCC decided to dismantle and remove the release pipe and infrastructure at Rocky Coulee, so that the smaller holding pond can be used to hold for NORs and fish collected through hook and line. Given this year's passage of spring Chinook, sockeye, and summer Chinook, the PRCC does not anticipate a need for trap and haul operations around Wanapum Dam.

C. Fall Chinook Working Group – Peter Graf is the new GPUD lead for the Fall Chinook Working group.

D. Meeting Summary Review – HSC approved the May meeting summary and June conference call summary.

II. Priest Rapids Hatchery

A. Alternative Mating Strategies – GPUD requested feedback on two central questions to inform alternative mating strategies. These questions and background information about the need for balancing genetic risks at Priest Rapids Hatchery were distributed to the HSC and their respective geneticists. The questions are listed below, and comments specifically related to each question are listed below the question.

Is the gene flow based Proportion of Natural Brood (pNOB) metric described in this document a better metric than the conventional pNOB for inclusion in the calculation and reporting of PNI for Priest Rapids Hatchery?

- NOAA commented that using gene flow based pNOB sounds like a reasonable approach. However, if the mating strategy focuses on wild by hatchery mating then there will be two matings, with the possibility for epigenetic environmental paternal or maternal effects that could vary depending on the directionality of the cross; if the strategy will be based on a single direction with respect to the sex of the fish, GPUD should note this.
- YN stated that based on YN geneticists review, gene flow based pNOB appears to be a valid alternative pNOB calculation. Whether it is a better calculation is difficult to determine.

What ratio of natural origin male to hatchery origin female spawners (e.g., 1:1, 1:2, 1:4, 1:6, 1:10) would pose the best balance of genetic risks at Priest Rapids Hatchery (e.g., domestication, effective population size, Ryman-Laikre, other) when access to natural origin spawners is limited?

- NOAA commented that it was not possible to answer this question at this time. Based on available data for wild populations where PBT has been used to look at

mating patterns, a 1:10 has not been observed. Normally both males and females mate with multiple partners; a female might mate with up to 6 males. In terms of emulating what is happening in the wild, it is best to avoid high ratios as this would quickly result in loss of effective population size.

- GPUD noted that most of the reproductive success literature has been on spring Chinook, which might have different dynamics than the mass spawning that occurs in the Hanford Reach. GPUD has run preliminary estimates of effective population size and it is massive, which is why the risk balance comes into play; for a "normal" spring Chinook program size, a high spawner ratio would not be considered. GPUD is interested in the genetic risks associated with high spawner ratios.
- NOAA commented that balancing genetic risks would be difficult to quantify. For effective size, one approach is to determine the spawner ratio needed to meet PNI goals and estimate the consequence on effective size. If there is little effect, it is probably worth implementing in order to increase PNI.
- YN stated that based on experience with parentage studies, wild males will mate with multiple females. YN could support a 1:4 spawner ratio but not 1:10. YN suggested looking into a factorial mating scheme to increase the number of genetic combinations.
- GPUD is considering an operational pilot implementation of using a higher spawning ratio. During 2014 there will be a real-time pilot of otolith reading at the hatchery for one week during peak spawning, so the pilot could be concurrent with that activity.
- CCT noted that, with an integrated program, the running average PNI in the Hanford Reach should be higher than 0.5, on the assumption that for any number above 0.5, wild genes are driving gene flow. However, it is difficult to quantify how much "better" a PNI of 0.8 is (for example) than 0.5. Also, factorial spawning can be extremely difficult, especially given the large numbers of fish observed at Priest Rapids.
- NOAA commented that in theory it is more advantageous to maximize the number of wild fish in a broodstock; the problem is that there is no molecular genetic marker to differentiate wild from domesticated genes.

B. 2014-2015 M&E Implementation Plan – After further discussion with GPUD, CCT is satisfied with the M&E plan as written, provided that GPUD includes the 100 otolith samples from Chief Joseph with sufficient time to sort any natural origin Priest Rapids fall Chinook. GPUD will provide a table that identifies mark and tag combinations by brood year so that CCT can notify staff on the spawning grounds and at the Chief Joseph ladder.

C. Path Forward and Next Steps

- GPUD will present both the gene flow based pNOB and conventional pNOB calculations in the Priest Rapids Hatchery M&E report.
- GPUD will discuss a pilot mating strategy for this year with NOAA and will develop a

proposal for HSC consideration in September.

III. Composite Broodstock Collection

A. Draft Straying Manuscript – Mike Ford provided a presentation on a draft manuscript on estimating rates of straying of wild salmon using parentage based tagging. Key points included:

- Every natural origin stray in the study had at least one hatchery origin parent.
- Out of 170 inferred wild by wild crosses in the study, all of the fish returned to their natal spawning area.
- Stray rates among spawning areas are highly variable (1% - 100% depending on area). This could be due to factors such as habitat quality or proportion of hatchery fish.
- Natural offspring of hatchery parents strayed more than second generation natural fish. Potential causes include spawning location effects and epigenetic effects.
- There is consistency between direct and indirect estimates of gene flow.
- The study did not examine the statistical interaction between parental origin and spawning tributary, as there was not enough data for that analysis.
- Heritability of homing is not known and there is likely not enough data to compare differences in homing and straying rates among families.
- Strays from Nason Creek tended to stray to the Chiwawa more than any other area, but this could be simply due to geography.
- Chiwawa hatchery fish stray at a significantly higher rate than natural origin Chiwawa fish, but they stray almost entirely to Nason Creek.
- The straying analysis is a side project to the overall goal of evaluating reproductive success of natural versus wild fish. The next question to address is whether there is a fitness cost to straying. NOAA and others are working on that and will develop a manuscript analyzing factors influencing relative reproductive success and whether a fish is a stray or not. There will also be more detailed information on the effect of habitat and density on reproductive success.

B. Discussion

- YN commented that size and age at which fish leave their spawning tributary could be a factor; fish that spawn near the mouth of a river may leave earlier than fish farther upstream.
- GPUD asked whether the samples were analyzed to see if patterns remained consistent across years or if the pattern was being driven by a single anomalous year. NOAA replied that this was not done but could be statistically calculated with the available information.
- GPUD noted that during the Grand Coulee fish maintenance project, all fish were spawned in Nason Creek; this would imply that all other spring Chinook in the upper Wenatchee are strays and the Nason Creek fish should have the highest homing fidelity.

- WDFW noted that in 2014 the Chiwawa weir is operating under a schedule of 24 hours up, 24 hours down, so the maximum potential delay for any individual fish is about 24 hours. It appears that wild fish will wait for the weir to drop, while hatchery fish appear to have much lower tolerance for a barrier to be up. This could be a result of imprinting, where hatchery origin fish might need stronger imprinting cues to improve fidelity.
- USFWS commented that the manuscript does not discuss concerns with hatchery fish straying into small receiving populations.

C. SOA on Nason Creek Composite Broodstock Collection – HSC members voted on the most recent version of the draft SOA on Nason Creek composite broodstock collection.

- CCT, YN and USFWS voted to approve.
- NOAA voted to approve and also noted that the final Section 10 permit could be highly prescriptive.
- WDFW reiterated concerns that the SOA lacked language indicating that all efforts to minimize impacts to other spawning aggregates would be made, if compositing were to move forward. WDFW voted against approving the SOA.
- YN noted that adding language as WDFW indicated would limit the options that NOAA could evaluate, and NOAA's intent is to look at the populations as a whole.
- GPUD commented that it is still seeking clarity as to whether compositing will be automatically implemented if found permissible by NOAA, or if further HSC discussion would be required. GPUD chose to abstain from voting on the SOA.

D. Path Forward and Next Steps

- HSC members will provide comments on the Mike Ford et al. draft manuscript on estimating rates of straying of wild salmon using parentage based tagging.
- YN will consider whether to elevate the draft SOA on Nason Creek composite broodstock collection to the PRCC through the dispute resolution process.

IV. Fall Chinook Permit Coverage

A. ACOE Fall Chinook Production at PR Hatchery – A final NMFS letter confirming permit coverage should be issued during the week of 7/28.

V. Nason Creek Tangle Netting

A. Update on Activities – GPUD is generally tangle netting on Mondays, Tuesdays, and Thursdays and will notify HSC members if the schedule changes.

- YN commented that Chewuch tangle netting seemed to be relatively harmless, with some de-scaling and a small amount of time in nets. However, some fish escaped and there is the possibility of harassing the same fish if tangle netting is performed in the same pools.

B. Path Forward and Next Steps

- GPUD will instruct tangle netting crews to begin keeping record of number of fish that escape during netting.

VI. Wenatchee M&E Plan Report

A. Report Status – The schedule for the Wenatchee M&E Plan Report was clarified via e-mail with HSC members prior to the meeting, additional time for review was provided, no comments were received, and the report is now final.

VII. Rotary Trap Reports

A. Report Status – There were no comments on the 2013 rotary trap reports, so they are now considered final.

- YN noted that there is still interest in convening a smolt trap meeting to discuss additional analysis that can be performed to fill data gaps.
- CCT commented that tribal staff would also benefit from participation in a smolt trap meeting.
- YN commented that the Nason Creek trap was relocated downstream on 6/25 and the number of fish trapped increased dramatically; a direct efficiency comparison should be possible by fall 2014.

B. Path Forward and Next Steps

- GPUD will discuss internal staffing capacity to convene or participate in a smolt trap meeting.

VIII. NTTOC Report

A. Report Approval – The HSC approved the NTTOC report that was previously approved by the HCP committees.

B. Schedule for SOA Approval – GPUD would prefer a parallel approval path with the HCP for approving an SOA about fulfilling objective 10 of the hatchery M&E plan; the report was approved by the HCP and CPUD will draft an SOA stating that the report fulfills objective 10, subject to change if new information or analysis warrants. A similar SOA will be prepared for the HSC.

- USFWS requested that the background section of the GPUD SOA note that cutthroat and lamprey were not fully evaluated as NTTOC due to lack of information.
- GPUD agreed to the addition from USFWS and noted that risks for cutthroat are low and cutthroat have been demonstrated to be within the containment objective.

C. Path Forward and Next Steps

- GPUD will draft an SOA on the NTTOC report fulfilling objective 10.

IX. Wenatchee Implementation Plan

A. Schedule for Report Approval – The draft 2015 Wenatchee implementation plan was circulated to the HSC on 7/24. The primary difference between the 2014 plan and the 2015 plan is inclusion of Methow summer Chinook. HSC members agreed to a slightly less than 30 day approval schedule for the plan in order for final approval to coincide with the August HSC meeting.

B. Path Forward and Next Steps

- HSC members will provide comments on the draft 2015 Wenatchee implementation plan by 8/21.

X. White River Acclimation

A. Draft 2015 Acclimation Plan – The draft 2015 White River acclimation plan is under development. Survival estimates from the previous year indicate 95,000 smolts on hand, 34,000 of which are in the low titer group. All of the low titer group will serve as part of the size target study and be placed in tanks at the Bridge site; the remaining high BKD fish will be placed in four net pens in Lake Wenatchee. The acclimation plan will include a table detailing PIT tag distribution among these groups.

B. Path Forward and Next Steps

- GPUD will circulate the draft 2015 White River acclimation plan with the HSC.

XI. Wanapum Dam

A. Status of Fish Passage – Summer Chinook appear to be doing well. 580,000 sockeye have passed over Priest Rapids and 525,000 at Rock Island Dam. GPUD was concerned that the large number of sockeye, combined with summer Chinook passage, would lead to a stack up of fish at the modified ladders, but this did not occur. Lamprey have been using the ramps; some slid down and some attached to the ramp. GPUD tagged and released some lamprey in the Wanapum ladder and GPUD is also trapping and hauling lamprey from Priest Rapids and Wanapum, and hauling them above Rock Island Dam.

XII. Wrap Up and Next Steps

A. Next Meeting: Thursday, August 21, 2014

B. Potential August Meeting Agenda Items

- Composite broodstock collection
- Nason Creek tangle netting
- Wenatchee implementation report
- NTTOC report SOA
- White River 2015 acclimation plan
- Wanapum Dam update

<u>Meeting Materials</u>

The following documents were provided to HSC members in advance of this meeting:

- July meeting agenda
- Revised Nason Creek SOA
- Draft 2015 Hatchery M&E Implementation Plan
- Appendix G for draft 2013 Hatchery M&E Report
- Draft manuscript: “Using parentage analysis to evaluate factors influencing rates of straying and

homing in Chinook salmon

- June Nason Creek rotary trap summary
- June White River rotary trap summary
- June PRH M&E update

PRFF
Briefing

August 6, 2014

Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

Wanapum Fishway Exit Passage System

- **Wanapum Fishway Exit Passage Systems continue to <u>successfully</u> pass adult salmonids;**

- **More than 600,000 Chinook salmon, sockeye and steelhead have successfully passed the modified fish ladders.**

Adult Pacific Lamprey - Passage Plan

- Key Components of the Plan
  - Collection and Trap-N-Transport
  - Volitional passage via the Priest Rapids fishways and Wanapum Fishway Exit Passage Systems;
  - Pilot passage testing & video monitoring

Adult Pacific Lamprey - Passage Plan

Collection and Trap-N-Transport

- Collection to occur in three sections of each of the fish ladders at Priest Rapids and Wanapum dams July 1 through September 1 (during the majority of the lamprey migration).

- The proposed locations at this time at each dam include the following;
  - Priest Rapids Dam – Left Bank Ladder
    - Above the Adult Video Fish Count Station, or
    - Turning Pool downstream of the Off-Ladder Adult Fish Count Station, or
    - Upper pools downstream of the fish exit.
  - Priest Rapids Dam – Right Bank Ladder
    - Second turning pool upstream of the fish ladder entrance, or
    - Turning Pool upstream of the Adult Fish Count Station, or
    - Upper pools downstream of the fish exit.
  - Wanapum Dam – Left Bank Ladder
    - Above the Adult Video Fish Count Station, or
    - Upper pools downstream of the fish exit, or
    - Pool immediately downstream of the false-weir.
  - Wanapum Dam – Right Bank Ladder
    - Above the Adult Video Fish Count Station, or
    - Upper pools downstream of the fish exit, or
    - Pool immediately downstream of the false-weir.

Adult Pacific Lamprey - Passage Plan

Trap-N-Transport & Volitional Passage - RESULTS

- **A total of 1634 adult lamprey have been documented via the video count system passing through Priest Rapids Dam (8/4/2014); 803 have been counted at McNary (day count only)**
- **60% (n=972) migrated up left bank;**
- **Eighty-six (n=289) have been collected at Priest Rapids and Wanapum dams;**
- **274 have been transported (Upstream of Rock Island and CPUD tagging/release).**

Adult Pacific Lamprey - Passage Plan

Passage Evaluation - RESULTS

- **A total of 28 adult lamprey have been tagged and released into the upper section of the Wanapum Fishway – Left Bank (Evening of 7/25/2014)**
- **All were tagged with HD PIT tags;**
- **Fish were collected and transported from John Dam, and Priest Rapids Dam (1 removed from study based on downstream movement, i.e., tag effect);**
- **Video Monitoring: Used to assess lamprey passage and behavior over the false weir and approximately the first 10 feet downstream of the slide (Daytime).**
- **Two infrared-equipped cameras will be used to monitor lamprey behavior at the false weir during the night, when most passage is likely to occur.**
- **Night time video monitoring will occur from approximately 20:00 to 8:00 hours for 4 days immediately following release of tagged lamprey**.

Wanapum Spillway Repairs

<u>Tendon Hole Drilling</u>: 30 Required.

- ✓ Twenty-Two of 30 - 4” pilot holes completed.
- ✓ First 6 of the 30 – 16” started.
  - ❖ Monolith 4 - 16” drilled to full depth
  - ❖ Monolith 5 - 16” drilled to bedrock
  - ❖ Monolith 7 - 16” drilled to full depth
  - ❖ Monolith 8 - 10” drilled to 22’
  - ❖ Monolith 9 – 10” drilled to full depth
- ✓ Temporary Upstream Anchors.
  - ❖ Monolith 3 – 2 of 7 holes completed
  - ❖ Monolith 4 – drill templates installed waiting on FERC approval
- ✓ Downstream Anchors.
  - ❖ Monolith 4 – Construction of downstream drilling platforms in progress

Preliminary Results - Yearling Chinook & juvenile steelhead Survival Evaluation

The survival standard requirement that Grant PUD is required to achieve per the NOAA Fisheries BiOp (for ESA listed species) and the Priest Rapids Settlement Agreement (non-ESA listed species) for the Priest Rapids Project (Rock Island to Priest Rapids Tailrace) **is 86.49%.**

PROJECT SURVIVAL

- **Yearling Chinook:**
  - Wanapum Reservoir + Dam = 95.2%
  - Priest Rapids reservoir + Dam = 95.0%
  - Project Survival (Rock Island to Priest Rapids Tailrace) = 90.4%

- **Steelhead:**
  - Wanapum Reservoir + Dam = 92.4%
  - Priest Rapids reservoir + Dam = 95.6%
  - Project Survival (Rock Island to Priest Rapids Tailrace) = 88.3%

"CONCRETE SURVIVAL"

- **Wanapum Dam:**
  - Yearling Chinook = 96.9%
  - Juvenile Steelhead = 96.8%

- **Priest Rapids Dam:**
  - Yearling Chinook = 95.3%
  - Juvenile Steelhead = 95.2%