Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

VIA ELECTRONIC FILING

April 12, 2013

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

RE: **Priest Rapids Hydroelectric Project No. 2114**
License Compliance Filing – Calendar Year 2012 Activities Under Priest Rapids Hydroelectric Project

- **Article 401(a)(1) - Downstream Passage Alternatives Plan**
- **Article 401(a)(2) - Progress and Implementation Plan**
- **Article 401(a)(3) - Habitat Plans**
- **Article 401(a)(4) - Artificial Propagation, Hatchery and Genetic Management and Monitoring and Evaluation Plans**
- **Article 401(a)(8) - Priest Rapids Dam Alternatives Spill Measures Evaluation Plan**
- **Article 404 - Fishery Operation Plan**

Dear Ms. Bose,

Please find enclosed the 2012 Calendar Year Activities Under Priest Rapids Hydroelectric Project consistent with the requirements of Article 401(a)(1) Downstream Passage Alternatives Action Plan, Article 401(a)(2) Progress and Implementation Plan, Article 401(a)(3) Habitat Plans, Article 401(a)(4) Artificial Propagation, Hatchery and Genetic Management, and Monitoring and Evaluation, Article 401(a)(8) Priest Rapids Dam Alternatives Spill Measures Evaluation Plan and Article 404 Fishery Operations Plan (collectively referred to as the Fishery Articles) of the Priest Rapids Hydroelectric Project License (Project).

On June 15, 2012 the Federal Energy Regulatory Commission (FERC) issued an Order modifying and approving Public Utility District No.2 of Grant County, Washington's (Grant

PUD's) May 1, 2012 request to modify the filing protocol and deadlines for the Fishery Articles. Under this Order, Grant PUD is required to file an annual report with FERC by April 15.

Grant PUD distributed this annual report to the Priest Rapids Coordinating Committee on March 4, 2013 for review and comment. After a 30 day comment and review period, comments were received from the U.S. Fish and Wildlife Service and National Marine Fisheries Service; these comments were addressed in this final report.

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

Respectfully,

Julie E. Pyper
License Compliance Manager

Enclosures: Calendar Year 2012 Activities Under Priest Rapids Hydroelectric Project

CALENDAR YEAR 2012

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

Public Utility District No. 2 of Grant County, Washington

April 2013

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 altogether 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 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) of 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.

This report is intended to fulfill the annual reporting requirement for the following License Articles:

- 401(a)(1) - Downstream Passage Alternatives Action Plan, including:
    - NMFS BiOp: 1.2 (Wanapum) and 1.11 (Priest Rapids)
    - NMFS and USFWS Fishway Prescriptions: 8 (Wanapum) and 14 (Priest Rapids);
- 401(a)(2) - Progress and Implementation (P&I) Plan, including
    - 401(a)(3) - Habitat Plan[1];
    - 401(a)(6) Avian Predation Control Program[1]
    - 401(a)(7) – Northern Pikeminnow Removal Program[1]
    - NMFS BiOp: 1.33
    - NMFS and USFWS Fishway Prescription: 24
- 401(a)(4) - Artificial Propagation, Hatchery and Genetic Management, and Monitoring and Evaluation (for all species)
- 401(a)(8) - Priest Rapids Dam Alternative Spill Measures Evaluation; and
- 404 - Fishery Operations Plan Report.

These license articles require that annual plans and reports be filed with FERC to document compliance with the requirements of the Project License and to propose plans for the coming year.

[1] In FERC's approval of the following individual management plans, FERC directed Grant PUD to provide an annual account of the respective implementation activities in the annual P&I Plan

On May 1, 2012, Grant PUD filed a request with FERC to combine these individual reports into one comprehensive report and change the filing deadline to April 15 annually. The combination of the reports and revised filing date would ease coordination with the natural resource agencies and result in a more efficient review and approval process. FERC issued an Order on June 15, 2012 approving Grant PUD's request.

This report provides a description of the activities related to the implementation of protection, enhancement and mitigation measures required within the FERC License and issued orders, BiOp (NMFS & USFWS), and SSSA for the Priest Rapids Project completed during the calendar year January 1, through December 31, 2012. Information incorporated into this report is based upon activities occurring within the Priest Rapids Coordinating Committee (PRCC) and related subcommittees (Hatchery and Habitat) associated with achieving performance standards for:

- juvenile salmonids, juvenile and adult salmonids passage measures;
- predator control programs;
- No-Net-Impact and habitat funds, and
- hatchery supplementation and monitoring and evaluation.

Specific details on the suite of activities covered by this report can be found in Sections 2 through 5 below.

The activities and plans covered in this report occurred in consultation with the PRCC and its hatchery and habitat subcommittees and the Priest Rapids Fish Forum (PRFF). The PRCC and its hatchery and habitat subcommittees are made up of representatives from NMFS, USFWS, Washington Department of Fish and Wildlife (WDFW), Yakama Nation (YN), Confederated Tribes of the Umatilla Reservation (CTUIR), the Colville Confederated Tribes (CCT) and Grant PUD.

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List of Acronyms

APP	Artificial Propagation Plan
BiOp	2008 National Marine Fisheries Service Biological Opinion for the Priest Rapids Project
BY	brood year
CDLT	Chelan Douglas Land Trust
CFD	computational fluid dynamics
CFS	cubic-feet per second
CORPS	U.S. Army Corps of Engineers
CWT	coded-wire tag
DPAAP	Downstream Passage Alternatives Action Plan
DPS	Distinct Population Segment
DVR	digital video recorder
ESA	Endangered Species Act
ESU	Evolutionary Significant Unit
FERC	Federal Regulatory Energy Commission
FPC	Fish Passage Center
FPE	fish passage efficiency
FSM	Fixed Site Monitoring Station
HCP	Habitat Conservation Plan
HETT	Hatchery Evaluation Technical Team
HGMP	Hatchery and Genetic Management Plan
GAP	Gas Abatement Plan
GIG	Gravity Intake Gate
kcfs	thousand cubic feet per second
LWD	large woody debris
LWSNFH	Little White Salmon National Fish Hatchery
M&E	Monitoring and Evaluation
NMFS	National Marine Fisheries Service
NNI	No Net Impact
O&M	Operations and Maintenance
OLAFT	Priest Rapids Dam Off-ladder Adult Fish Trap
ONA	Okanagan Nation Alliance

PIT-tag	passive integrated transponder tag
PRCC	Priest Rapids Coordinating Committee
PRFB	Priest Rapids Fish Bypass
PRFF	Priest Rapids Fish Forum
Project	Priest Rapids Project
PTAGIS	PIT-tag Information System
PUD	Public Utility District
RM	river mile
RPA	Reasonable Prudent Alternative
SAP	Standards Action Plan
SSSA	Priest Rapids Project Salmon and Steelhead Settlement Agreement
SOA	Statement of Agreement
T&C	Term and Condition
TDG	total dissolved gas
UCR	Upper Columbia River
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Service
VFC	video fish count
WFUB	Wanapum Fish Bypass
WDFW	Washington Department of Fish and Wildlife
WDOE	Washington Department of Ecology
Wildlife Services	USDA Wildlife Services

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

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This report is intended to fulfill the annual reporting requirement for the following License Articles:

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    - 401(a)(3) - Habitat Plan[2];
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1.1 Purpose of Report

This report provides a description of the activities related to the implementation of protection, enhancement and mitigation measures required within the FERC License and issued orders, BiOps (NMFS & USFWS), and SSSA for the Project completed during the calendar year January 1, through December 31, 2012. Information incorporated into this report is based upon activities occurring within the PRCC and related subcommittees (Hatchery and Habitat) associated with achieving performance standards for:

- juvenile salmonids, juvenile and adult salmonids passage measures;
- predator control programs;
- No-Net-Impact and habitat funds, and
- hatchery supplementation and monitoring and evaluation.

Specific details on the suite of activities covered by this report can be found in Sections 2 through 5 below.

1.2 Roles and Responsibilities of the Priest Rapids Coordinating Committee

As defined in the SSSA, the PRCC has the role and responsibility to coordinate the implementation of the adaptive management programs contained in the SSSA. Specific roles and responsibilities (but not limited to) identified within the SSSA include the following;

- Approve or modify annual Progress & Implementation (P&I) Plans; approve or modify the Performance Evaluation Program; review Performance Evaluation Reports;
- Advocate decisions of the Committee in all relevant regulatory forums;
- Establish such subcommittees as it deems useful;
- Coordinate adaptive management programs contained in the SSSA including Hatchery and Habitat subcommittees (Section 5.1);
- Make decisions (except for the implementation of the anadromous fish activities set forth in Appendix A of the SSSA) related to the implementation of SSSA (Section 5.4);

- Serve as a forum to coordinate the implementation of the SSSA and to consider issues that arise (Section 5.5.1);
- Assesses new information as it becomes available through the implementation of this Agreement or otherwise (Section 5.5.2);
- May from time to time recommend to FERC amendments to the new license to reflect the best available scientific information on means and measures to achieve the applicable performance standards for the Project (Section 5.5.2);
- Coordinate as appropriate the design and implementation of research and monitoring programs consistent with SSSA (Section 5.5.3);
- Coordinate activities listed above, the sharing of data and information, and the conduct of other activities under the SSSA with related activities associated with other hydropower operations on the Columbia River in order to promote efficiencies and the use of best available scientific information and analysis in the implementation of the SSSA, including, but not limited to, participation in studies relating to the assessment of project related juvenile and adult delayed mortality (Section 5.5.3);
- Seek to resolve disputes at the subcommittee level (Section 6.3); and
- Conduct other business as may be appropriate for the efficient and effective implementation of these measures.

1.2.1 Priest Rapids Coordinating Committee

Grant PUD continued to support the PRCC (per Term &Condition (T&C) 1.35). Over the course of 2012, the PRCC held a total of 12 meetings (Table 1). Meeting agendas and minutes can be viewed at PRCC Meeting Minutes. Two statement of agreements (SOA) were approved by the PRCC during 2012 and are listed in Table 2. SOA 2012-05 combined several reports (Downstream Passage Alternatives Action, Progress and Implementation, Fish Operation and Hatchery Monitoring and Evaluation Plans) into a single document and recommended a modified filing with FERC (from February 15th to April 15th of each year). SOA 2012-11 was related to a marking strategy for fall Chinook (brood year (BY) 2011) being reared at the Priest Rapids Hatchery. Both SOAs were approved by PRCC consensus and can be viewed at PRCC SOAs

PRCC Hatchery Subcommittee 2012 meeting schedule and approved statement of agreements are found in Section 5.1 and the PRCC Habitat Subcommittee activities can be found in Section 6.0.

Table 1 Priest Rapids Coordinating Committee 2012 meeting dates.

PRCC	January 11, 2012
PRCC	January 25, 2012
PRCC	February 29, 2012
PRCC	March 28, 2012
PRCC	April 25, 2012

PRCC	May 23, 2012
PRCC	June 27, 2012
PRCC	July 25, 2012
PRCC	August 29, 2012
PRCC	September 26, 2012
PRCC	October 24, 2012
PRCC	December 11, 2012

Table 2 Statement of Agreements approved by the Priest Rapids Coordinating Committee

Years	Title of Statement of Agreement	Date Approved
2012-05	Combing the Downstream Passage Alternatives Action, Progress and Implementation, Fish Operation and Hatchery Monitoring and Evaluation Plans and Reports into a single document and filing an annual report with FERC on April 15th of each year	2/29/12
2012-11	Marking Strategy for Priest Rapids Hatchery Program for Broodyear 2011	4/20/12

1.2.2 Priest Rapids Fish Forum

1.3 Adaptive Management

The protection, mitigation, and enhancement (PME) measures contained in the SSSA and BiOp are implemented according to the principals of adaptive management. 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 the Project is to achieve the passage performance standards by 2013.

The Grant PUD and the PRCC have been utilizing this approach over several decades and included such approach in the issued 2004 & 2008 NMFS BiOps, SSSA, WQC, the FERC License and Orders. Key examples of application of the approach include implementation of juvenile salmonid behavior and survival evaluations, calculation of No-Net-Impact (NNI) Funds, predator control programs, planning, designing, prototype testing, construction and biological testing as it relates to the Wanapum Future Unit Bypass (WFUB), design and current

construction of the Priest Rapids Fish Bypass (PRFB), and implementation of the various hatchery and habitat programs. Specific details are provided Sections 2 through 5 below.

1.4 Performance Evaluation Program

The 2008 NOAA-Fisheries BiOp, (T&C 1.33; T&C 1.33) requires Grant PUD to prepare an annual summary report (Performance Evaluation Program) which reflects all activities and progress during the previous calendar year. The purpose of this report is to provide a reliable technical basis to assess the degree to which Grant PUD is improving juvenile and adult passage survivals, habitat productivity improvements, and supplementation for the listed anadromous fishery resources affected by the Project. This annual report is also required to include results of monitoring, modeling, or other analyses that take place in the calendar year to evaluate the degree to which the actions are likely to improve juvenile and adult survivals. In addition, where appropriate, the Performance Evaluation Program is supposed to measure and evaluate individual actions within each category, assess the contribution of the action to the desired objective, and provide a basis for identifying new options and priorities among those options for further progress in meeting objectives. Grant PUD believes that this report fulfills the requirement of T&C 1.33, as specific programs and updates to those programs are illustrated below in Sections 2 through 5.

Grant PUD is required to coordinate the design of its Performance Evaluation Program with the development of relevant parallel monitoring or evaluation systems by other hydropower operators in the Columbia Basin and the Northwest Power Planning Council (T&C 1.34; 2008 NOAA BiOp). The purpose of this coordination is to promote technical consistency and compatibility among efforts to:

- contribute to a comprehensive evaluation of stock performances throughout the Columbia Basin
- promote the use of the best available science; and
- provide opportunities for the efficient sharing of monitoring activities, data management systems, analytical modeling, and other activities.

Grant PUD regularly and routinely participates in local forums to promote technical consistency and compatibility among efforts to contribute to a comprehensive evaluation of stock performances throughout the Columbia Basin. For example, technical and policy staff from the Public Utility Districts of Chelan, Douglas and Grant Counties (PUDs) meets regularly to discuss potential fish evaluations and resource issues. Grant PUD staff also participates in Chelan and Douglas PUD's respective Habitat Conservation Plan (HCP) Hatchery and HCP Habitat subcommittees to coordinate among the various programs. These meeting have led to the development of several hatchery sharing agreements among the PUDs as well as the development of consistent monitoring and evaluation programs related to hatchery supplementation.

Grant PUD staff also participates in several regional forums to discuss and share ideas on a broad spectrum of fish protection and enhancement issues. These forums include:

- Inland Avian Predation Working Group trying to address Caspian Tern predation on juvenile salmonids migrating through the mid-Columbia River and other areas of the Columbia River);

- Fish Tagging Forum;
- Washington/British Columbia Chapter, Western Regional, and National American Fishery Society conferences (as presenters);
- Hydro-Vision (national conference; presenter);
- Hydro Research Foundation Fellowship Program;
- Priest Rapids Fish Forum, Regional Lamprey and White Sturgeon Technical Workgroups;
- regional Bull Trout Recovery forums;
- Army Corps of Engineers (CORPS) year-end Total Dissolved Gas (TDG) monitoring meeting;
- 100th Meridian Columbia River Basin Team for aquatic invasive species;
- Fall Chinook Work Group;
- Upper Columbia Salmon Recovery Board meetings; and
- Wenatchee Watershed Planning Unit meetings.

2.0 Priest Rapids Project

2.1 Progress in Achieving Performance Standards

Grant PUD is required to make steady progress towards achieving a minimum 91 percent combined adult and juvenile salmonid survival performance standard at the Priest Rapids and Wanapum developments (i.e., each dam). The 91 percent standard includes a 93 percent Project-level (reservoir and dam) juvenile performance standard. NMFS recognized that it is not currently possible to measure the 91 percent combined adult and juvenile survival standard.

Over the last decade, Grant PUD has conducted dam and reservoir smolt survival evaluations, evaluating progress towards meeting a 93 percent juvenile Project passage survival. This standard can be measured at each development individually, or as a composite of survival at the two developments. To evaluate steady progress toward achieving the 93% juvenile salmonid project survival requirement and to strive toward achieving passage performance standards, Grant PUD has included a proposed decision process below (Figure 1). Although the PRCC and Grant PUD have not had detailed discussions on the proposed decision flow chart presented below, it has been the basic approach as Grant PUD strives to maintain and meet performance standards for the Priest Rapids Project. As discussed above and as defined in the SSSA, adaptive management is a key component for continually improving management policies and practices by sequential learning from the outcomes of operational programs, such as evaluation of juvenile salmonid passage survival at the Project

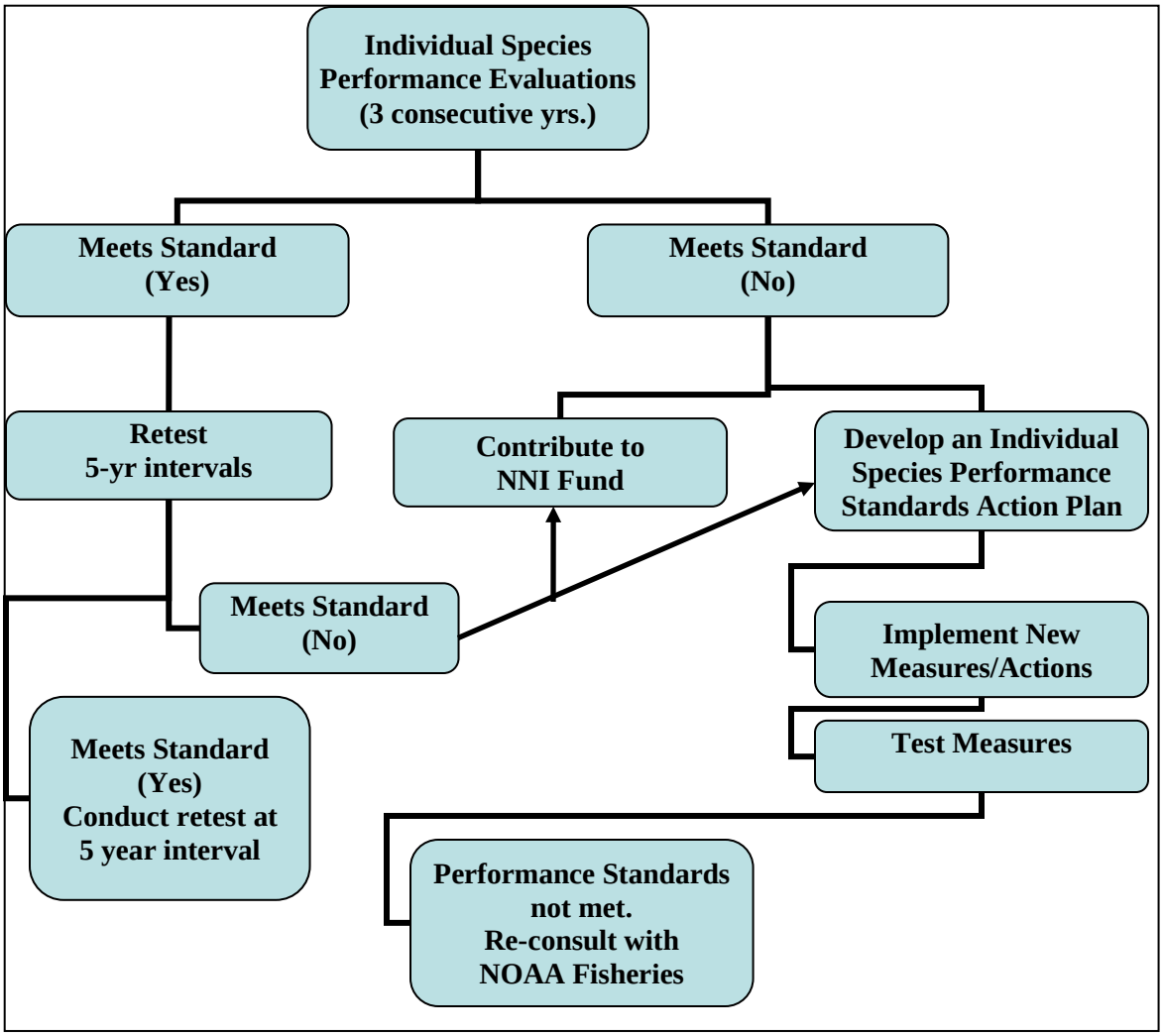

Figure 1 Flow chart showing proposed decision process used to achieve juvenile salmonid project survival requirements for the Priest Rapids Project.

2.1.1 Yearling Chinook

Performance standards for yearling Chinook were met for the Project in 2005. The three year (2003-2005) consecutive arithmetic average of 86.59% exceeded the standard of 86.49% (Anglea et al 2003, Anglea et al 2004, Anglea et al 2005). These results were formally accepted by the PRCC and approved by NMFS on September 28, 2005.

No survival studies for yearling Chinook were conducted in 2012, nor are any scheduled to occur in 2013. The next check-in is scheduled to occur during the spring outmigration of 2014 (SOA 2001-06). However, if the PRFB is not completed and operational by February 2014, the PRCC may need to modify the survival evaluation check-in for spring Chinook, by deferring it to the 2015 outmigration season.

2.1.2 Juvenile Steelhead

Grant PUD and the PRCC have been overseeing rigorous investigations on the downstream passage behavior and survival of juvenile steelhead through the Project since 2004

(Robichaud et al. 2005, Sullivan et al. 2009, Thompson et al. 2012, Timko et al. 2007, 2008, 2010, and 2011, Wright et al. 2010). The juvenile steelhead performance standards of the BiOp and SSSA were not met in 2008-2010 (81.05%) where mark-recapture detection histories of acoustic-tagged run-of-river (ROR) smolts in paired release studies were examined through the joint Wanapum-Priest Rapids Project (Skalski et al. 2009, 2010, and 2011). Timko et al. (2011) estimated that the performance standards of steelhead passing through the dams at both Wanapum and Priest Rapids dams were generally being met and exceeded 95% in all three years at Priest Rapids Dam and two out of three years at Wanapum Dam; however, survival through the reservoirs was poor.

Top-spill passage at both Wanapum and Priest Rapids dams were remarkably high during performance standard testing. All metrics for top-spill passage at Wanapum and Priest Rapids dams increased in 2010 from previous years, as the WFUB collected 77.3% (increase of 7.1% over 2009) of migrating steelhead. The prototype top-spill bulkhead bypass at Priest Rapids dam also collected a high proportion of the migrating steelhead (57.4%, increased 6.3% from 2009).

At Wanapum and Priest Rapids dams, fish are selecting limited surface collection flow rather than the predominant powerhouse flows. At Wanapum Dam, the WFUB on average passed 16.5% of the total river flow but entrained nearly 80% of the migrating steelhead and sockeye. Similarly, at Priest Rapids Dam, the prototype top-spill bulkhead passed 25% of the total river flow but entrained over half of the migrating study fish.

Based on recent studies performed, there is direct evidence of impacts on juvenile steelhead survival in the Project by predators, primarily Caspian terns and northern pikeminnow, which is likely a direct result of the species out-migration run-timing, size, health, rear-type, and overall behavior that increases steelhead susceptibility to predation (Sullivan et al. 2009, Timko et al. 2010 and 2011). In fact, steelhead are preferred and more likely to be predated upon by Caspian terns, compared to all other salmonids in the Columbia River basin (Evans et al. 2011, Hostetter 2009) and are being preyed upon in the Project area by a nesting colony on the Columbia Plateau, Goose Island, Potholes Reservoir (Roby et al.2011).

This nesting colony has grown by over 60% since 2007, last surveyed at approximately 600 breeding pairs in 2011. Recent studies have shown that this colony represents a large threat to the out-migration of listed Upper Columbia River (UCR) steelhead as annual consumption of UCR steelhead has averaged 10% (2006-2009, 95% CI 9.1-11.1%), with the highest take measured in 2009 at 15.7% (95% CI 13.6-18.2%) at this colony alone (Evans et al. 2011). Grant PUD is actively investigating the impacts of other migratory, piscivorous birds on juvenile steelhead in the Project. Furthermore, annual variability in river flow influences the level of avian predation in the Project area (Collis et al. 2009, Hostetter 2009). The same is true of piscivorous fishes, in particular northern pikeminnow appear to be of highest concern (Thompson et al. 2012).

Additional theories on the potential reasons why juvenile steelhead are being lost in the Project; other than dam passage and operations, potential reasons include:

- the effects of biotelemetry (such as tagging effects, tag burden, collection, handling, and release strategies, etc.);
- aquatic contaminants;
- environmental conditions;

- run-timing, fish size, and fish health;
- rear-type (hatchery versus native, wild origin of tagged fish);
- variations in species behavior (i.e., travel and forebay residence times);
- predation by both predatory birds and fish; and
- impacts of irrigation entrainment.

Following the proposed decision flow chart proposed in Figure 1 above, Grant PUD and the PRCC developed a juvenile steelhead performance standard action plan (SAP). The SAP is a planning and guidance document intended to assist NMFS, Grant PUD, and the representatives of the PRCC with directing progress toward achieving the juvenile steelhead survival standards through the Wanapum and Priest Rapids developments in the Project. The SAP was developed to address shortfalls in juvenile steelhead performance standards in the Project area, as required under Terms and Conditions 1.2 and 1.11 of the 2008 NMFS BiOp. The SAP is intended to be a living document, modified as appropriate in collaboration with the PRCC and approved by NMFS. Annual modifications to this plan will include updates, information, and implementation schedules for progress toward achieving juvenile steelhead performance standards. The SAP includes all comprehensive information regarding the measures being taken to achieve juvenile steelhead performance standards for the Project.

The next consecutive 3 year schedule for juvenile steelhead evaluations is anticipated to occur during 2014-2016 to coincide with completion of the PRFB. However, if the PRFB is not completed and operational by February 2014, the PRCC may need to modify the survival evaluation check-in for steelhead, by deferring it to the 2015 outmigration season.

2.1.3 Juvenile Sockeye

Grant PUD conducted two consecutive years of paired release-recapture evaluations to estimate juvenile sockeye survival through the Wanapum and Priest Rapids projects. The two year arithmetic average performance standard for sockeye smolt passage through the Project was 91.6% (Skalski et al. 2009b; Skalski et al. 2010).

As a result of the high survival observed for juvenile sockeye, the PRCC and Grant PUD to defer the third year of juvenile sockeye survival evaluation until 2016

The PRCC and Grant PUD agreed to conduct year three of the juvenile sockeye survival evaluation in 2016, which would also serve as the initial five year check-in study for sockeye. The PRCC and Grant PUD also agreed that for 2012 through 2016, the NNI Fund will be based on the current two year survival average for sockeye and for 2017 (and beyond), the NNI Fund will be based on a new three sockeye survival average, based on 2016 study results, if validated by the PRCC (SOA 2011-06).

2.1.4 Sub-yearling Chinook

The SSSA anticipated that survival evaluations for sub-yearling Chinook (three consecutive years) were to begin in 2009. Based on a two pilot sub-yearling acoustic tag survival studies conducted in the Priest Rapids Dam project (one dam and reservoir) in 2008 and 2009, the PRCC and Grant PUD agreed that technology and/or methodology is presently not available to conduct a sub-yearling summer Chinook survival evaluation. Technology issues, such as battery-life

issue related to the use of an active tag and variety of life-history strategies illustrated within a population of sub-yearling Chinook continue to be limiting factors.

Currently, the PRCC and Grant PUD agree that survival evaluations for sub-yearling Chinook in the Project will not be conducted until after the PRFB is completed and operational; the evaluations will occur over a three year consecutive timeframe of 2016-2018 (SOA 2011-06). The PRCC will determine the feasibility - does methodology exist - for conducting sub-yearling Chinook by September of 2015. Under SOA 2011-06, Grant PUD and the PRCC also agreed that if sub-yearling Chinook standards are met based on a 2 year consecutive average, the PRCC may consider deferring the third year of study, with a 5 year check-in occurring in 2023.

2.1.5 Coho

In August 2007, Grant PUD and the PRCC approved through a SOA 2007-5, Coho as an established "Covered Species." This SOA supersedes the criteria for such determination as discussed in the SSSA. As a "Covered Species," measures for implementing and evaluating the Coho protection program were agreed to and are defined below.

- The PRCC and its PRCC hatchery subcommittee HSC agree that through Grant PUD's early implementation in providing operation and maintenance (O&M) funding prior to a determination on whether a hatchery program and/or population of Coho exists in the Wenatchee, Entiat and Methow basins, development and expansion of existing facilities (either Grant PUD or facilities owned or operated by others) will not be considered. The use of future production facilities developed by Grant PUD will be considered for Coho use if consistent with the Yakama Nation's Master Plan.
- The PRCC and its HSC agree that O&M funds provided by Grant PUD for the Coho program also includes funding for all monitoring and evaluation (M&E) programs.
- The PRCC and its HSC agree that an interim juvenile salmonid project survival of 93% (project) and 95% (dam) individual project passage survival will be assumed for each development.
- Juvenile Coho survival studies will not be performed at the Project unless there is compelling evidence that demonstrates hydro operations have an impact of greater than 7% mortality on Coho.
- The PRCC and its HSC agree that if the Coho program does not meet its program/performance goals:

    1). Other impacts to the Coho program will be researched before evaluation of Project survival will be considered. This may include such things as harvest, hatchery performance, facilities, use of lower river stock for up-river production, etc.
    2). Existing information for Coho behavior and survival at other facilities in the Columbia Basin will be considered.
    3). There is agreement that when and if there is a requirement for survival studies, it is accomplished in the most cost-effective manner.

- The PRCC and its HSC agree there will be no NNI contribution for Coho. If there is "compelling" evidence and studies are implemented and passage survival standards are

not being met, compensation would be achieved through actual cost-per-pound of overall hatchery production, as negotiated by Yakama Nation and Grant PUD.

- The PRCC and its HSC agree that adult passage evaluations for Coho at the Project will not be required. Priority will remain on measurement and hydro operations for co-migrating Permit Species.
- The PRCC and its HSC agree that the performance of Coho program will be evaluated in 2017 for consistency with the Endangered Species Act and will need to meet the appropriate standards and goals as established by the committees to ensure protection of the Permit Species. If, as a result of the evaluations and program modifications either (a) the Coho population is stable or increasing, or (b) the Coho population is declining and other basin species populations are declining, then Grant PUD will continue to provide compensation pursuant to the Agreement entered into between the Yakama Nation and Grant PUD and this SOA. If the Coho population is declining and other basin populations are stable or increasing, then the PRCC and its HSC should determine the viability of a Coho program and if the program should remain a requirement of the SSSA.
- If the PRCC and its HSC determine that a Coho program is no longer viable, Grant PUD will not be required to continue providing compensation pursuant to Section 12.1 (or another Agreement entered into between the Yakama Nation and Grant PUD) the SSSA or this SOA. Funding would continue through the end of the respective brood-year.

The PRCC and its HSC agree that by adhering to all the actions in this SOA, Grant PUD fully meets its Coho mitigation obligation under the SSSA through 2017.

2.1.6 Schedule

Grant PUD and the PRCC developed a performance standard survival evaluation schedule in December of 2011 (SOA 2011-06; Table 3). Under this schedule, it is anticipated that if the PRFB is constructed and operational a project-wide yearling Chinook survival evaluation check-in will occur in 2014, in conjunction with the first year of a 3 year (2014-2016) consecutive juvenile steelhead survival evaluation (also project-wide). A juvenile sockeye evaluation, which would also serve as a 5 year check-in is scheduled to occur in 2016, while the first year of a 3 year consecutive evaluation for sub-yearling Chinook survival evaluations is scheduled in 2016 through 2018.

Table 3 Performance Standards Survival Evaluation Schedule for Covered Species migrating through the Priest Rapids Project 2013-2018.

Species	2013	2014[1]	2015	2016	2017	2018	2019	2020	2021
Spring Chinook	.	X[2]	.	.	.	.	X[3]	.	.
Steelhead	.	X[4]	X[5]	X[6]	.	.	.	.	X[7]
Sockeye	.		.	X[8]	.	.	.	.	X[9].
Summer Chinook	.		.	X[10]			.	.	.

[1]PRCC may need to modify the survival evaluation check-in schedule for spring Chinook and steelhead survival evaluations, if the Priest Rapids Top-spill is **NOT** completed prior to the outmigration in spring of 2014.
[2]2014 would serve as the 5 year check-in for yearling Chinook and would occur after completion of the Priest Rapids Top-spill.
[3]2019 would be a 5 year check-in for yearling Chinook if standards are met in 2014.
[4]2014 would serve as the first year of a 3 year consecutive evaluation for summer steelhead.
[5]2015 would serve as the second year of a 3 year consecutive evaluation for summer steelhead.
[6]2016 would serve as the third year of a 3 year consecutive evaluation for summer steelhead.
[7]2021 would serve as the 5 year check-in for juvenile steelhead if standards are achieved during 2014-2016.
[8]2016 would serve as the 5 year check-in for sockeye survival.
[9]2021 would serve as the 5 year check-in for sockeye if survival standards are met in 2016.
[10] During 2016-2018, Grant PUD would conduct three consecutive years of survival evaluations for sub-yearling Chinook (if feasible).

2.2 No Net Impact Fund

Grant PUD and the PRCC recognized that the performance standards for the Project may not be achieved for certain stocks through 2003 Project operations. The purpose of the NNI is to provide Grant PUD and the PRCC with additional financial capacity to undertake measures to improve survivals of juvenile salmonids prior to the time when the Project attains applicable juvenile project survival standards.

The NNI Fund is intended to provide near-term compensation for annual survivals that are less than the survival objectives in the performance standards for the Project for spring Chinook, steelhead, summer Chinook and sockeye. Grant PUD's annual contributions to the fund will be reduced as progress towards meeting performance standards for each is achieved. Once Grant PUD and the PRCC determine that performance standards have been achieved on a species-by-species basis, the NNI Fund annual contributions for that species will be terminated.

To evaluate steady progress toward meeting performance standards and to adjust the NNI Fund, Grant PUD, in consultation with the PRCC, conduct survival studies. The results of these studies are used to estimate survival rates based on an arithmetic three-year average of the annual estimates. Table 3 includes a planned implementation schedule for conducting these evaluations. The annual contribution made into the NNI account prior to February 15, 2012 was $1,841,718.75.

2.3 Description of Turbine Operating Criteria and Protocols

Project turbines are operated in a protocol referred to as "Fish Mode" and also "Ganging Units" during the juvenile salmonid out-migration season (typically mid- to late-April through mid- to late-August), based on smolt index counts conducted by WDFW at the Rock Island Smolt

Monitoring Station in order to maximize turbine passage survival rates of juvenile salmonids. Fish Mode was the result of using Hill Curves, Theoretical Avoidable Losses calculations, turbine discharge rates, head, and fish survival curves (based on 1996 and 2005 balloon-tag evaluations of salmonid smolts through the turbines) to determine the operating range of the turbines and maintain a minimum fish survival rate of 95 percent. For Wanapum Dam, this means an operating range of 11.8 to 15.7 kcfs per turbine, and for Priest Rapids Dam, turbine units are operated between 11.2 to 17.5 kcfs. Upon further investigation of the issue concerning smolt-passage survival through turbines, it was determined that passage survival rates for out-migrating juvenile salmonids are influenced not only by how a turbine is operated (i.e. Fish Mode), but also how the dam's powerhouse, overall, is operated. This determination led to the concept of "ganging" turbine units in conjunction with operating turbines in Fish Mode. Ganging units is defined as concentrating operating turbines into blocks of adjacent units, thus reducing the edge-effect in regard to predation by fish and birds on salmonid smolts as smolts exit a turbine's draft tube (LGL Limited, 2003).

When turbines are required, ganged units are operated first and shutdown last because it has been demonstrated that juvenile salmonids are drawn to passing through turbines closest to the spillway and that their survival is highest when passing through blocks of turbines being operated in Fish Mode.

Turbines furthest from the spillways (Unit 1 at Wanapum and Unit 10 at Priest Rapids) are the first turbines to discontinue operation during daylight hours when the powerhouses are operating at less than full capacity during juvenile and adult fish-migration seasons. The discharge from these turbines may adversely affect adult salmonids' ability to efficiently locate the entrances to the adult fishways adjacent to these turbine discharges.

2.3.1 Turbine Operation and Inspection Schedule

Turbines are operated as needed for producing electricity and do not have an operation season or schedule. Turbines are inspected as necessary based on the number of hours operated and other associated stresses.

2.4 Description of Spillway Operating Criteria and Protocols

The WFUB was designed to operate at five different flow volumes: 20 kcfs, 15 kcfs, 10 kcfs, 5kcfs and 2.5 kcfs. In the past four years, the WFUB has been operated at 20 kcfs during the downstream migration of juvenile salmonids. In 2008, the PRCC established that the bypass would be operated at 15 kcfs if future tailwater conditions were less than 488.0 ft. in elevation or tailwater discharge is less than 60 kcfs. With a tailwater below 488.0 ft., the outflow from the WFUB at 20 kcfs becomes unstable and starts to undulate. This undulation causes a condition that is believed to be less conducive for migrating juvenile smolts, with a likely increase in TDG that could ultimately decreased survival. At this described lower tailwater elevation, when the outflow from the WFUB is reduced, this undulating jet of water is returned to a surface-skimming flow, which entrains less air and is better for fish passage survival. Grant PUD will maintain the Wanapum tailwater elevations to stay within the range of 488.0 ft. to 498.0 ft. during the smolt out-migration season during non-extreme river condition periods.

The WFUB was operated continuously during the juvenile salmonid out-migration season in 2012 (typically starting mid-April through mid- to late-August) and is inspected for necessary maintenance annually when it is not in operation.

In the event of inadvertent spill, water is spilled through the tainter gates in a manner agreed upon by the PRCC spill representatives. An example of the typical spill protocols is given in the SSSA. Table 1 of Appendix A. Table 2 in Appendix A is an example of the inadvertent spill operation schedule at Wanapum Dam during 2012.

Non-turbine surface-spill passage route at Priest Rapids Dam during 2012 was through the top-spill bulkhead located at spillbays 5 & 6. This non-turbine surface-spill passage route at Priest Rapids Dam will be utilized until the PRFB is completed, which is currently anticipated to be April 1, 2014.

In the event of inadvertent spill, spill will occur through the tainter gates in accordance with the protocols (Appendix A - Table 3). Table 4 in Appendix A summarizes the spill operation schedule used at Priest Rapids Dam for 2012.

Grant PUD in consultation with the PRCC fish spill representatives, used and will continue to use the smolt index counts from the Rock Island Smolt Monitoring Station to determine when annual spring fish spill at both developments is initiated (before 2.5 percent of the juvenile spring migrants have passed the Project - typically mid- to late-April) and summer fish spill is terminated (when over 95.0 percent of the summer juvenile migrants have passed; typically mid- to late-August). Typically, the end of the spring fish spill overlaps with the beginning of the summer fish spill, providing continuous fish spill from April to August.

2.4.1 Spillway Operation and Inspection Schedule

The spillways are operated on the schedule outlined above during the juvenile salmonid out-migration season, and are operated on an as-needed basis during the remainder of the year. Inspections typically occur during the late summer/early fall low river-flow period, with any necessary maintenance occurring during the low river-flow winter months when the tainter gates are unlikely to be needed.

2.5 Description of Sluiceways Operating Criteria and Protocols

The sluiceway at Wanapum Dam is fully opened to provide an adult salmonid fish fall-back route when the WFUB is closed at the end of the juvenile salmonid out-migration season, typically in mid- to late-August. The WFUB serves as the adult salmonid fall-back route while it is in operation. The sluiceway remains open until November 15 of each year. The sluiceway at Priest Rapids Dam is un-pinned and then operated as a surface-spill sluiceway following the end of the salmonid out-migration, typically in mid- to late-August, to provide an adult salmonid fall-back route, and remains fully open for adult fall-back until November 15 of each year.

2.5.1 Sluiceway Operation and Inspection Schedule

The sluiceways are operated on the schedule outlined in the above section. Inspections occur during the non-operation periods.

Construction activity for the PRFB is currently ongoing at Priest Rapids Dam, with an anticipated completion date in the spring of 2014; therefore the operation of the Priest Rapids Sluiceway for adult fall-back will not be available during 2013. As an alternative fall-back route (in 2013), Grant PUD will be operating a top-spill bulkhead located at spillbay 5 and 6. This alternative will remain in place until the PRFB is completed.

2.6 Adult Fishways Operating Criteria, Protocols and Schedule

Fishway ladders are operated with a water depth over weirs of 1.0-1.2 ft. Debris from trash racks and picketed leads is quickly removed from ladder exits when water surface differentials exceed 0.5 ft., or as debris begins building up at the exit from the fish ladder. All submerged orifices and overflow weir crests are cleared of debris prior to the adult fish migration season and are kept free of debris during the fish-passage season. Fishway entrances are operated with a head differential range of 1.0 to 2.0 ft.

Grant PUD operates the fishways within the criteria ranges outlined above, and targeted heads are maintained whenever possible. When targeted heads cannot be maintained, the fishways are operated at maximum capable output to meet entrance and channel flow requirements.

Collection channel transport velocities of 1.5 to 4.0 feet per second (fps) (target 2.0 fps) are maintained through the powerhouse collection channels and through the lower end of the fish ladders. All collection channel orifice gates remain closed during the adult fish-passage season, per agreement with the PRCC.

Fishway inspections are conducted by a project operator at least once per day (walk-through) to ensure that fish facilities are operating within criteria limits. A daily log of the inspections is compared with the computerized printout to assure correct calibration of the fishway control system. At the discretion of NOAA Fisheries or Fish Passage Center (FPC), at least one inspection of the fishways is conducted by one of these agencies each month during the adult fish-passage season (April 15–November 15). Monthly ladder inspections occurred at both hydro projects on May 14, June 28, July 25, August 29, September 25 and October 25 of 2012. Inspection results are made available to Grant PUD, and problem-area solutions are immediately resolved after the inspection is completed.

Table 4 Entrance Criteria for Priest Rapids Dam Powerhouse and Spillway Entrances.

Gate	Targeted Head (ft.)	Gate Depth (ft.)
LSE-2	1.2	Slotted Gate (always open)
LEW-3	1.2	8.5 ± 0.5 ft. (Backup Gate only)
LSE-4	1.5	Slotted Gate (always open)
LEW-6	1.5	8.8 ± 0.5 ft. (Backup Gate only)
RSE-1	1.5	Slotted Gate (always open)
REW-2	1.5	7.5 ± 0.5 ft. (Backup Gate only)

Note:

1. Head represents water level indicator reading immediately above the entrance minus the water level indicator reading in tailwater.
2. Gate depth represents the tailwater reading minus the entrance weir crest reading.
3. The channel surface elevation differential from LSE-4 to LSE-2 should be at or greater than 0.3 ft.
4. The main slotted entrance gates will be used for primary adult passage and the mechanical backup gates will be used only in an emergency.
5. Verification of electronic water level indicator accuracy will be made via readings from staff gauges during monthly inspections at the discretion of the inspector.

Table 5 Entrance Criteria for Wanapum Powerhouse and Spillway Entrances

Gate	Targeted Head (ft.)	Gate Depth (ft.)
SE-2	1.5	Slotted Gate (always open)
SE-1	1.5	(Backup Slotted Gate only)
SE-3	1.2	Slotted Gate (always open)
RSE-2	1.2	Slotted Gate (always open)
REW-1	1.2	(Backup Gate only)

Note:
1. Head represents water level indicator reading immediately above the entrance minus the water level indicator reading in tailwater.
2. The channel surface elevation differential from SE-2 to SE-3 should be at or greater than 0.3 feet.
3. Verification of electronic water level indicator accuracy will be made via readings from staff gauges during monthly inspections at the discretion of the inspector.

Both adult fishways at both developments are typically operated continually from March 1 through November 30 of each year. Exceptions to this protocol are coordinated with NOAA Fisheries and FPC. In the event of a scheduled or emergency fishway maintenance outage, at least one fishway at the development remains in operation at all times.

2.6.1 Left Bank Adult Fishway at Priest Rapids Dam

The left-bank adult fishway at Priest Rapids Dam is composed of a powerhouse collection channel and the connecting east shore ladder. The ladder has two fish entrances, left slotted entrance 4/left entrance weir 5 (LSE4/LEW5 and LEW6-7) but only one (LSE4/LEW5) is kept open. LEW4 was changed to a slotted entrance in 1998 (now designated as LSE4), allowing LEW6 to be a backup mechanical gate.

LEW5's operation was incorporated and automated to assist with operation of LSE4 and water velocity manipulation in the collection channel. The collection channel consists of three main entrances (LEW1, LSE2, and LEW3) at the channel's west end and 18 leaf gate orifices (OG1-18). LEW2 was changed to a slotted entrance in 1999 and consequently is now designated as LSE2. With PRCC approval, LSE2 was closed in February 2012 (within the winter outage) and the slotted entrance moved to LEW3 and renamed LSE3 (left slotted entrance 3). This action was taken in support of the juvenile bypass construction. Also during February 2012, with PRCC approval, LEW1 was permanently closed.

Only one collection channel main entrance (LSE2) remains open during the adult passage season. All collection channel orifice gates remain closed during the adult passage season. LEW3 serves as a backup mechanical gate to LSE2. The auxiliary water at Priest Rapids Dam is comprised of a combination of gravity flow originating from the GIG and pumped water from five pumps in the tailrace. Both gravity and pumped water enter the attraction water supply pool before being directed into left-bank diffusion chambers (LDC) in the collection channel (LDC1-24), junction pool (LDC25-31), ladder (LDC32-45) and attraction water supply conduit. Butterfly valves control auxiliary water to LDC1-32 and chimneys provide auxiliary water to LDC33-45. At the ladder exit, water to diffusion chamber LDC46 is supplied from the forebay

by butterfly valve LV33. Grant PUD operates the diffusion chambers to keep the ladder within required criteria during the fish-passage season.

On October 15, 2010, Grant PUD submitted to FERC a plan for meeting the requirements within license article 403 Tailrace Pumping System for Fishway Water Supply at Priest Rapids Dam. FERC issued an order approving the plan on October 20, 2011. An element of that plan was to install two additional pumps in the existing left bank fish ladder pump house and install an independent gravity supply to the right bank fish ladder attraction water supply system. The additional pumping capacity for the left bank ladder would allow the pump house to supply all three fish ladder entrances at the Project while maintaining 1 foot differentials up to the 5 percent exceedance flow. The plan presented a schedule as follows:

- Spring 2011 - computational fluid dynamics and physical modeling would be conducted as required as well as necessary rock removal in front of the pump house intakes would be completed
- September 2011 - The final engineering design would be completed submitted to the FERC's Division of Dam Safety and Inspections
- March 2012 - Construction of the proposed pump house modifications and right bank supply configurations would commence in March 2012 and be completed by the fish ladder operation season of 2014 (April 1).

During additional engineering review and design for the two additional pumps for the left bank fish ladder; Grant PUD now believes that it will be able to satisfy the requirements of license article 403 by using the installed capacity of the new Right Bank Gravity Supply (RBGS) believes that the installation of the two additional pumps on the left bank pumphouse can be deferred for the following reasons:

- The design capacity for the RBGS is equal to the previously proposed pump capacity (~850 cfs) and flow will be achieved for all three entrances to be operated at minimum criteria up to the 5% exceedence flow (total of 2,480 cfs through the entrances);
- It will reduce and possibly eliminate the use of the Gravity Intake Gate (GIG); and
- It will provide a water supply that allows the two fish ladders at Priest Rapids Dam to operate independently of one another.

It is anticipated that the RBGS will be a robust and reliable system based on a throttling plug valve and an energy dissipating manifold in the Right Bank Attraction Water Supply Pool. Additionally, it will be capable of supplementing the pumphouse output during regular fishway operation, thereby resulting in a decreased water demand from the GIG by approximately 850 cfs. The RBGS will also be capable of independent operation of the right bank fish ladder at minimum criteria up to a 3% exceedance flow (895 cfs). The proposed RBGS design to supplement the present pumphouse will also meet the two primary objectives recommended by the National Marine Fisheries Service (NMFS) in their letter dated August 18, 2009 (Appendix B in the FERC filing submitted on March 4, 2013).

Based on a review of the original engineering design, ability to meet the NMFS primary objectives and an updated economic analysis; Grant PUD re-initiated discussion with the Priest Rapids Coordination Committee (PRCC) in June 2012.

On June 27, 2012, the PRCC members approved Grant PUD's proposal to continue to use the installed "new" capacity of the new right bank gravity supply to satisfy the requirements of license article 403 to provide attraction water at the Priest Rapids Right Bank Ladder and defer installation of the two additional pumps (Appendix B in the FERC filing submitted on March 4, 2013). The PRCC also agreed that if the expected performance of the Right Bank Gravity Supply is not realized, then Grant PUD and the PRCC would reconsider installation of the two additional pumps as originally proposed.

As originally planned and approved by FERC, Grant PUD is continuing to install the RBGS at Priest Rapids Dam, which will provide a new primary water source for the right bank fish ladder. The RBGS will be capable of supplementing the pumphouse output during regular fishway operation, thereby resulting in a decreased water demand from the GIG and will be capable of independent operation of the right bank fish ladder. This will achieve the two primary objectives recommended by NMFS.

Grant PUD submitted a revised management plan for License Article 403 -Tailrace Pumping System for Fishway Water Supply with FERC for review and approval on March 4, 2013.

2.6.2 Right Bank Adult Fishway at Priest Rapids Dam

The section of the fishway adjacent to the spillway has three fish entrances (RSE1, REW2 and REW3) but only one, RSE1, is used. REW1 was changed to a slotted entrance (RSE1) in 1999, while REW2 remains as a backup mechanical gate. REW3 faces the spillway and is bulkheaded. Right-bank auxiliary water at Priest Rapids Dam is supplied by the attraction water supply conduit running the length of the spillway. The water supply conduit feeds the right-bank auxiliary water supply pool. The right-bank auxiliary water supply pool can be isolated using the conduit closure gate (CCG) located on the right bank. The two main entrance diffusion chambers (RDC1 and 2) and diffusion chambers RDC3-5 are all fed by the right-bank auxiliary water supply pool through butterfly valves. The remaining lower ladder diffusion chambers (RDC6-19) are fed from chimneys in the auxiliary water supply pool. Upper diffusion chamber RDC20 is fed by the forebay through butterfly valve RV9. Grant PUD operates the diffusion chambers to keep the ladder within required criteria during the fish passage season.

In September of 2012 Grant PUD awarded a contract to provide a separate water source to the right bank ladder. Construction work is to begin early 2013 with completion scheduled for October 1, 2013. In-water and in-ladder work will occur during the 2012-2013 winter maintenance period. After completion, the water supply conduit under the spillway will be used as a backup water supply. As originally planned and approved by FERC, Grant PUD is continuing to install the RBGS at Priest Rapids Dam, which will provide a new primary water source for the right bank fish ladder. The RBGS will be capable of supplementing the pumphouse output during regular fishway operation, thereby resulting in a decreased water demand from the GIG and will be capable of independent operation of the right bank fish ladder. This will achieve the two primary objectives recommended by NMFS.

2.6.3 Left Bank Adult Fishway at Wanapum Dam

The section of the fishway adjacent to the spillway has three fish entrances (RSE1, REW2 and REW3) but only one, RSE1, is used. REW1 was changed to a slotted entrance (RSE1) in 1999, while REW2 remains as a backup mechanical gate. REW3 faces the spillway and is bulkheaded. Right-bank auxiliary water at Priest Rapids Dam is supplied by the attraction water supply

conduit running the length of the spillway. The water supply conduit feeds the right-bank auxiliary water supply pool. The right-bank auxiliary water supply pool can be isolated using the conduit closure gate (CCG) located on the right bank. The two main entrance diffusion chambers (RDC1 and 2) and diffusion chambers RDC3-5 are all fed by the right-bank auxiliary water supply pool through butterfly valves. The remaining lower ladder diffusion chambers (RDC6-19) are fed from chimneys in the auxiliary water supply pool. Upper diffusion chamber RDC20 is fed by the forebay through butterfly valve RV9. Grant PUD operates the diffusion chambers to keep the ladder within required criteria during the fish passage season.

In September of 2012, Grant PUD awarded a contract to provide a separate water source to the right bank ladder. Construction work is to begin early 2013 with completion scheduled for October 1, 2013. In-water and in-ladder work will occur during the 2012-2013 winter maintenance period. After completion, the water supply conduit under the spillway will be used as a backup water supply. As originally planned and approved by FERC, Grant PUD is continuing to install the RBGS at Priest Rapids Dam, which will provide a new primary water source for the right bank fish ladder. The RBGS will be capable of supplementing the pumphouse output during regular fishway operation, thereby resulting in a decreased water demand from the GIG and will be capable of independent operation of the right bank fish ladder. This will achieve the two primary objectives recommended by NMFS.

2.6.4 Right Bank Adult Fishway at Wanapum Dam

The fishway, adjacent to the spillway, has three fish entrances (REW1, RSE2 and REW3) but only one (RSE2) is used. REW2 was changed to a slotted entrance (RSE2) in 1996, while REW1 remains as a backup mechanical gate. REW3 faces the spillway and is bulkheaded. Right-bank auxiliary water at Wanapum Dam is supplied by the gravity supply conduit through two inline valves fed by the forebay. The lower diffusion chambers (RDC25-32) are fed by individual butterfly valves from the attraction water supply channel. Water is provided to the remaining lower ladder diffusion chambers (RDC2-24) by attraction water supply channel chimney overflow. The upper ladder diffusion chamber RDC1 is fed by the forebay through butterfly valves RV9 and 10. Grant PUD operates the diffusion chambers to keep the ladder within required fishway criteria during the fish passage period.

2.6.5 Fishway Inspections and Dewatering

Dewatering of the fishways for inspection and maintenance is conducted during the periods of minimum fish migration. In order to shorten the ladder shutdown periods, dewatering operations are carefully planned in advance. A schedule for the inspection and maintenance is worked out in cooperation with the PRCC, PRFF, and the FPC. The required frequency of the dewatering for maintenance is determined from Grant PUD's experience gained through yearly inspections.

During all dewatering that may involve fish handling, trained personnel are present to provide technical guidance and assure sound fish handling. Every effort is made to remove fish prior to the system becoming fully dewatered. All adult anadromous species recovered are released upstream of the dam.

2.6.6 Normal Winter Maintenance Period (December 1 – February 28)

The fishways may be dewatered to allow annual maintenance of fish facility equipment, including pumps, diffuser gratings, valves, and orifice and entrance gates as necessary to assure their readiness during the adult fish-migration period.

All fishway dewaterings are recorded and a report is completed by the project biologist or technician. Fish biologists or technicians are present at all dewaterings to assure proper fish handling procedures are followed.

A copy of the proposed winter maintenance is made available to the PRCC and PRFF by November 1 each year. Any expected deviation from the normal winter maintenance period is listed. Changes to the normal outage period are coordinated with NOAA Fisheries and FPC.

2.6.7 Scheduled Maintenance

Maintenance which requires dewatering, or that will have a significant effect on fish passage, is done during the winter maintenance period of December 1 through February 28. Maintenance of facilities that does not affect fish passage may be conducted during the rest of the year. Concurrent outages of both fishways are avoided whenever possible to provide an upstream fish passage route at the dams at all times. When facilities are not being maintained during the winter maintenance period, they are operated according to the normal operating criteria, unless otherwise coordinated with NOAA Fisheries, FPC, PRCC, and the PRFF.

2.6.8 Unscheduled Maintenance

Unscheduled maintenance that significantly impacts the operation of a fish-passage facility is coordinated with FPC, NOAA Fisheries, PRCC, and the PRFF. The decision on whether to dewater the ladder and make repairs during the fish passage season or wait until the winter maintenance period is made after consultation with the FPC, NOAA Fisheries, PRCC, and the PRFF. If part of a fish-passage facility malfunctions or is damaged during the fish-passage season and the facility can still be operated within criteria without any detrimental effects on fish passage, repairs are not conducted until the winter maintenance period or until minimal numbers of fish are passing the dam. If part of a facility that may significantly impact fish passage is damaged or malfunctions, it is repaired as soon as possible.

2.7 Total Dissolved Gas Abatement

On January 30, 2009, Grant PUD submitted to FERC and the WDOE a final Gas Abatement Plan (GAP), developed in consultation with the PRCC and WDOE (Hendrick 2009). On July 10, 2009, FERC approved and modified the GAP; the modification required FERC approval of annual updates to the plan. On January 23, 2012, Grant PUD submitted its updated GAP to FERC for approval (Keeler 2012). FERC approval of the GAP for 2012 was received on May 18, 2012. The 2012 update to the original 2009 GAP included details on operational and structural measures that Grant PUD planned to implement over the next six years. These measures are intended to result in compliance with WDOE's water quality standards for TDG at the Project.

In accordance with the GAP, Grant PUD monitored TDG levels in the forebay and tailrace of both Wanapum and Priest Rapids dams during the fish-spill season, as well as used data from the CORPS Pasco TDG monitor as Grant PUD's next downstream forebay TDG compliance point.

Results from these monitoring efforts indicated 147 exceedances in TDG levels observed during the 2012 fish-spill season. A majority of the TDG exceedances that were observed during the 2012 fish-spill season occurred during the spring-spill period (April 23 to June 14 (114 of the 147 exceedances or approximately seventy-eight percent of the total number of exceedances)); however, this is due to the fact that flows were above 7Q10 flows for a majority (from June 19 through July 26) of the summer fish-spill period and thus the TDG water quality standards did not apply (and thus there were less exceedances) for most of the summer fish-spill season.

Elevated TDG values were observed throughout the mid-Columbia River for much of the 2012 fish-spill season due to a higher than normal run-off, which resulted in high incoming TDG levels and flows in excess of the established 7Q10 flow for Wanapum and Priest Rapids dams. Over half of the total TDG exceedances that were observed during the 2012 fish-spill season occurred during the spring-spill period (April 23 to June 14) at the fixed-site monitoring stations (FSM stations) of either the Wanapum Dam tailrace or Priest Rapids Dam forebay (seventy-nine of the 147 exceedances or approximately fifty-four percent of the total number of exceedances observed during the 2012 fish-spill season). All of the sixty-three exceedances recorded at the Priest Rapids Dam forebay FSM station were attributed to river flows in excess of Wanapum Dam's current hydraulic capacity, requiring involuntary spill that resulted in elevated TDG levels, and because of the short distance between Wanapum and Priest Rapids dams (eighteen river miles (RM)), TDG levels did not have a chance to dissipate below 115 percent saturation (%SAT) by the time they reached the Priest Rapids Dam forebay FSM station. Additionally, of the sixty-three exceedances recorded at the Priest Rapids Dam forebay FSM station, forty-six (seventy-three percent) corresponded with incoming TDG levels 115 %SAT or above recorded during the same time period at the Wanapum Dam forebay FSM station.

Grant PUD strives to meet TDG standards, as well achieve juvenile and adult salmonid and steelhead fish passage and survival standards for the Project, all while meeting regional energy loads and demands. Grant PUD attempted to reduce TDG when feasible by implementing operational TDG abatement measures in 2012, including attempting to maximize turbine flows by setting minimum generation requirements (and thus maximizing turbine flows and reducing involuntary spill), participation in regional spill/project operation meetings, implementation of the regional Spill Priority List, and continuing to preemptively spill based on anticipated high flow/low power load time periods. Examples of structural abatement measures include the construction of spillway deflectors at Wanapum Dam (2000), the construction of the WFUB (2008), and the construction of the Priest Rapids Fish Bypass (PRFB; started construction fall of 2011 with expected completion by 2014). Grant PUD believes that by implementing these measures over the next five years (as part of the ten-year compliance schedule that began in 2008) it is implementing the most current reasonable and feasible measures to alleviate for elevated TDG values that occur during the fish-spill season. In accordance with the GAP and Section 6.4.11(c) of the WDOE 401 Water Quality Certification, Grant PUD provided the WDOE and PRCC with a summary report of TDG monitoring efforts during the 2012 fish-spill season (Keeler 2012). This report can be viewed at: Water Quality Monitoring Data.)

2.8 Avian Predation Control at Wanapum and Priest Rapids Dams

Grant PUD is required to implement and fund an avian Predation control program at the Priest Rapids Project (T&C 1.9 & 1.19; NMFS 2008). The overall goal is to reduce avian-related mortalities to salmon and steelhead populations affected by the Project. A specific measure identified includes installation and avian arrays/wires across the Wanapum and Priest Rapids powerhouse tailrace area and assure/maintain them in good condition to exclude avian predators. Arrays at both facilities were completed prior to the 2009 smolt out-migration and Grant PUD maintains a cooperative work agreement with the United States Department of Agriculture Wildlife Services (Wildlife Services) to repair, replace and maintain avian wire arrays at both developments. Wildlife Services also collects data to evaluate the avian predator control program.

2.8.1 Avian Predator Control Methods in 2012

Grant PUD has entered into a five year cooperative work agreement with Wildlife Services to conduct bird hazing and other wildlife control duties. Four Wildlife Services crews worked two shifts at Wanapum and Priest Rapids dams during the day beginning on April 17, 2012. Throughout the peak salmonid smolt migration, Wildlife Services personnel haze birds with pyrotechnics to remove the threat away from the developments seven days a week for approximately 16 hours per day. The hazing effort was increased in the Wanapum Dam forebay in 2012. Piscivorous waterbirds were killed when hazing actions were unsuccessful at deterring foraging birds. Avian control measures were completed on July 20, 2012 at Priest Rapids Dam and August 16, 2012 at Wanapum Dam.

During the 2012 avian control effort, 19,307 birds were hazed, 66% of which were Caspian terns (*Hydroprogne caspia*) and 1,329 birds were killed (Table 6). Of the birds removed from the Project, the majority (1,260) were piscivorous waterbirds. Gut contents of euthanized birds were not examined in 2012. Table 6 shows the overall season results.

Table 6 Total control actions made by Wildlife Services throughout the Priest Rapids Project, mid-Columbia, 2012.

		Hazed		Killed	
Common Name	**Scientific Name**	**Wanapum**	**Priest Rapids**	**Wanapum**	**Priest Rapids**
Caspian tern	*Hydroprogne caspia*	7,526	5,197	0	0
Common merganser	*Mergus merganser*	75	187	15	10
Double-crested cormorant	*Phalacrocorax auritus*	171	275	14	26
Gull, California	*Larus californicus*	1,776	908	192	195
Gull, Herring	*Larus argentatus*	33	12	16	12
Gull, Ring-billed	*Larus delawarensis*	1,783	1,364	394	386

2.8.2 Avian Control Efforts Proposed for 2013

Due to the effectiveness of the avian predator control measures implemented through Wildlife Services in 2012 at Priest Rapids and Wanapum dams, Grant PUD will implement the same control measures in 2013. The complete 2012 Avian Predator Control Program report can be viewed at Grant County PUD Supporting Documentation.

2.9 Northern Pikeminnow Removal at Wanapum and Priest Rapids Dams

Grant PUD is required to implement and fund a northern pikeminnow removal program at the Project (T&C 1.10 & 1.18; NMFS 2008). The long-term program goal is aimed at reducing juvenile salmon and steelhead mortality associated with predation by northern pikeminnow at the Project and improves juvenile passage survival.

2.9.1 Efforts in 2012

During the 2012, 1,320,551 northern pikeminnow were removed by the following methods:

- 13,583 in the set line fishery;
- 2,833 in the trap fishery;

- 1,281,852 in the beach seine fishery;
- 3,736 in the angling fishery; and
- 14,316 in the electrofishing fishery.

The trial ladder trap fishery proved unsuccessful, as no northern pikeminnow were captured.

The average length of northern pikeminnow removed in the 2012 varied between fisheries. The average length for the set line fishery was 276 mm ± 61 mm (n = 2,448) with 85% (n = 13,583) greater than 228.6 mm (>9"). The average length for trap fishery was 181 mm ± 65 mm (n = 462) with 29.2% (n = 2,833) greater than 228.6 mm (>9"). Northern pikeminnow caught in the beach seine fishery ranged from 12.7 to 406.4 mm (0.5-16") in with an average of about 19.1 mm (0.75"). The average length of northern pikeminnow removed in the angling fishery was 358 mm ± 62 mm (n = 2,719) with 99.6% greater than 228.6 mm (>9"). The average length of northern pikeminnow removed in the electrofishing fishery was 155 mm ± 1.112 mm (n = 14,316).

2.9.2 Efforts Proposed in 2013

Grant PUD will continue to take advantage of set lines, beach seines, angling and electrofishing as proven, cost effective, methods of pikeminnow removal. Grant PUD plans to operate two set line boats in 2013, one in the Wanapum Reservoir and one in the Priest Rapids Reservoir, similar to 2012. Grant PUD may also acquire an electrofishing boat in 2013. Having the ability to operate the electrofishing effort in-house would allow for more control over the total effort, as well as increasing the ability to conduct other, non-predator control. Grant PUD plans to continue to beach seine as much as possible in 2013. When set line catch per unit of effort drops during the spawning period, crews in both reservoirs will focus their time and energy on beach seining.

2.10 Adult Fish Counting

Grant PUD is required to maintain the video adult fish counting equipment at both developments to provide reliable fish count information and submit annual reports for inclusion in regional databases (T&C 1.2; NMFS 2008). The video fish-counting (VFC) system configuration at each dam has digital video cameras in each fishway streaming data to digital video recorders (DVRs) at each dam. These DVRs are networked and accessed by fish counters via PCs from the fish-counting room at Priest Rapids Dam. Data from the DVRs are played back in fast-forward mode on the PCs, and fish are identified and counted by the fish counters via a separate tallying program. At the end of each day fish counts from Priest Rapids and Wanapum dams are posted to Grant PUD's web page Grant County PUD Fish Counts. The Project fish-counting season runs April 15 through November 15, annually.

There were no major malfunctions or failures experienced within the fish-counting program in 2012. Grant PUD continues to investigate equipment and methods to help remedy periodic slowdown of video playback during heavy use. There were no data-accuracy problems experienced in 2012. The Fish Counters took two quality control tests and all Fish Counters were within acceptable accuracy.

2.10.1 2013 Video Fish Counting Operations

Grant PUD will continue to count fish in 2013 using the same basic methodology as in 2012. In 2013, each dam's fish crowder's backgrounds will be modified to improve removal for cleaning. The fish counting location will be moved from the present Priest Rapids Dam location to the new office building near Wanapum Dam. Upgrades to the video fish counting computers are anticipated in 2013. A full report on 2012 video fish count efforts and plans for 2013 operations can be viewed at Fish Counts.

2.11 Adult Steelhead Downstream Passage

Grant PUD is required to operate the project sluiceways at both dams continually from the end of summer spill until November 15 to provide a safer passage route for adult steelhead fallbacks (Term &Condition 1.23; NMFS 2008). If in-season monitoring indicates that these time frames could be modified to improve adult downstream fish passage, Grant PUD is required to discuss in-season study results with the PRCC, and upon approval by NMFS, modify the time frame for operating project sluiceways.

During 2012, summer fish-spill ended at on August 22, 2012 at Wanapum Dam and on August 23, 2012 at Priest Rapids Dam. Immediately following the end of summer fish-spill, the sluiceways at both dams were opened and operated 24/7 through November 15, 2012. No in-season discussions with the PRCC or NMFS to modify or improve adult downstream fish passage were necessary during 2012.

3.0 Wanapum Dam

Wanapum Dam consists of a 14,680-acre reservoir and an 8,637-foot-long by 186.5-foot-high dam spanning the Columbia River. The dam consists of left and right embankment sections; left and right concrete gravity dam sections; a left bank and right bank fish passage structure, each with an upstream fish ladder; a gated spillway; an intake section for future generating units; a downstream fish top-spill bypass structure in one of the unused intake sections (unit No. 11); and a powerhouse containing 10 vertical shaft integrated Kaplan turbine/generator sets with a total authorized capacity of 1,038 MW.

3.1 Wanapum Future Unit Fish Bypass

The WFUB was completed in early 2008 and began operation during the start of the annual fish-spill program on April 30, 2008 (Figure 2 & Figure 3). The WFUB was designed to operate at different flow volumes (20, 15, 10, 5 and 2.5 kcfs); however it has not been discussed to extend the operation of the WFUB at flow less than 20 kcfs, except for those periods that the Wanapum tailrace elevation falls below 488 ft. When tailwater drops below an elevation of 488.0', the outflow from the Wanapum Fish Bypass (at 20 kcfs) becomes unstable and starts to undulate, causing a condition that is believed to be less conducive for migrating juvenile smolts and also possibly producing greater TDG. At this lower tailwater elevation, when the outflow from the WFUB is reduced, this undulating jet (of water) is returned to a surface-skimming flow, which is better for fish passage. Grant PUD in consultation with the PRCC agreed to maintain the Wanapum tailwater elevations to stay within the range of 488.0 to 498.0 feet during the salmonid out-migration season during non-extreme river condition periods. During this first year the WFUB was operated at 20 kcfs, and acoustic tag technology was used to evaluate approach, behavioral and survival estimates for juvenile salmonids (yearling Chinook, steelhead, and sockeye) as they approached and passed through the WFUB. Along with survival estimates of

salmonid smolts using the WFUB as a passage route, the passage route efficiency (FPE[3]) of the WFUB was determined. The FPE of a given route used to pass the dam is proportional to the total number of fish detected that passed the dam (i.e., the 2008 FPE of the WFUB was equal to the number of fish that passed at the WFUB in 2008 divided by the total number of fish detected passing the dam in 2008).

Sullivan et al. (2009) reported the FPE for steelhead, yearling Chinook and sockeye through the WFUB were 54.2%, 29.4% and 33.1%, respectively. Survival estimates for the same three salmonid species were derived via a paired-release for steelhead, but only a single-point release for both sockeye and yearling Chinook. These single-point release survival estimates are typically biased low, due to the fact that any tagging and/or handling effects associated with the handled fish have not been removed as they would have been in a paired release. Based on detection histories, the WFUB passage survival estimates were 97.3% for steelhead, 96% for yearling Chinook, and 93% for sockeye. During the 2009 Project survival studies, FPE and passage survival estimates for steelhead and sockeye were determined to have increased; there were no yearling Chinook estimates in 2009. The FPE for steelhead and sockeye through the WFUB were 70.2% and 59.3%, respectively. Survival estimates for steelhead and sockeye were derived through a paired-release model (Skalski et al. 2010). The WFUB passage survival estimates were 99.0% for steelhead and 98.4% for sockeye (Timko et al. 2010).

During the 2010 Project survival studies, FPE and passage survival estimates for steelhead and sockeye were determined. There were no yearling Chinook estimates in 2010. The FPE of steelhead and sockeye through the WFUB were 77.3% and 78.3%, respectively. Survival estimates for steelhead and sockeye were derived via a paired-release model. The WFUB passage survival estimates were 98.9% for steelhead and 97.6% for sockeye (Timko et al. 2011). Table 3 summarizes steelhead FPE and route survival estimates through the WFUB for 2008 through 2010.

In 2011, survival studies were not conducted in the Project; however, juvenile steelhead behavioral studies were conducted with acoustic/passive integrated transponder (PIT) tags. The FPE for steelhead at the WFUB were not measured, yet survival of volitionally passing fish at Wanapum Dam was measured using fixed Juvenile Salmonid Acoustic Tracking System (JSATS) receivers deployed approximately every mile downstream of the dam throughout the Priest Rapids Reservoir.

Pooling the recapture histories for the 18 replicate releases resulted in an overall survival probability of 96.6% (SE=0.57%) from release to the Wanapum Dam forebay (Thompson et al. 2012) Survival through Wanapum Dam was estimated at 98.2% (SE=0.46%). No survival evaluations were conducted in 2012 or planned in 2013.

The WFUB is operated continuously during the juvenile salmonid out-migration season each year (typically starting mid-April through mid- to late-August) and is inspected for necessary maintenance annually when it is not in operation.

[3] Fish passage efficiency is defined as an estimate of passage for various species utilizing non-turbine passage routes. This estimate is reported as a percentage.

Figure 2 Aerial photograph of Wanapum Dam, mid-Columbia River, WA

Figure 3 Photograph of Wanapum Fish Bypass facility, looking downstream, mid-Columbia River, WA

3.2 Wanapum Advanced Hydro Turbines

On October 2, 2003, and supplemented on April 5 and May 28, 2004, Grant PUD filed an application to amend its license for the Project seeking authorization to replace the 10 turbines at the Wanapum development. The Advanced Turbine replacement was proposed to provide increased power and hydraulic capacity, equal or improved survival of juvenile salmon passing through the units, and improved water quality by reducing the amount of spill over the dam during periods of high flows. The decision criteria for proceeding with the replacement of the remaining nine units over the next eight years was based on whether the Advanced Turbine

testing results demonstrated equal or better survival than the existing turbines. Pursuant to FERC's July 23, 2004 Order, Grant PUD installed and tested an Advanced Turbine at Unit 8.

Consistent with the requirements of the BiOp and related FERC Order, a study was designed and conducted to test the hypothesis that survival of Chinook salmon smolts through a new Advanced Turbine would be equal to, or greater than, passage survival through an existing unit. On October 11, 2005, Grant PUD filed a report on the results of biological testing of the first installed Advanced Turbine unit, and in December 2005, FERC authorized continued installation of Advanced Turbines at the Wanapum Development (FERC 2005). Grant PUD is currently installing the eighth Advanced Hydro Turbine System at Wanapum Dam. Anticipated completion of the Wanapum turbine upgrade project is scheduled for 2013.

Other than the initial biological (i.e. balloon- and acoustic-tagged fish) testing conducted on the first Advanced Turbine in 2005, no other testing has been conducted to date. Additional biological (fish) testing is planned to evaluate the Wanapum Advanced Turbines upon completion of the Wanapum turbine replacement project. It is unclear if the operation of the newly installed advanced turbines is having a negative impact on the overall survival of juvenile salmonids that pass through the powerhouse; however, a trend in decreased survival has been shown in 2008-2010 during performance testing of acoustic-tagged steelhead and sockeye.

In 2008, the steelhead survival point estimate of passage through the Wanapum powerhouse was 95.2% (all turbines combined and based on the percentage of tags detected downstream that passed through the powerhouse). In 2010, the survival estimate of steelhead decreased from 92.9% in 2009 to 91.4%. Similar trends were exhibited by sockeye; in 2009 96.2% of the fish survived powerhouse passage and in 2010 92.0% of the fish survived.

3.2.1 Description of Turbine Operating Criteria and Fishery Operations

Per Term and Condition 1.8 (NMFS 2008), Grant PUD operates the Wanapum turbines in a protocol referred to as "Fish Mode" and also "Ganging Units" during the juvenile salmonid out-migration season (typically mid- to late-April through mid- to late-August), based on smolt index counts conducted by WDFW at the Rock Island Smolt Monitoring Station in order to maximize turbine passage survival rates of juvenile salmonids. Fish Mode was the result of using Hill Curves, Theoretical Avoidable Losses calculations, turbine discharge rates, head, and fish survival curves (based on 1996 and 2005 balloon-tag evaluations of salmonid smolts through the turbines) to determine the operating range of the turbines and maintain a minimum fish survival rate of 95 percent. For Wanapum Dam, this means an operating range of 11.8 to 15.7 kcfs per turbine, and for Priest Rapids Dam, turbine units are operated between 11.2 to 17.5 kcfs.

Recent investigation of smolt passage survival through turbines determined that passage survival rates for out-migrating juvenile salmonids was influenced not only by turbine operation (i.e. "Fish Mode"), but by powerhouse operation. These determinations led to the concept of "ganging" turbine units in conjunction with operating turbines in fish mode. "Ganging units" is defined as concentrating operating turbines into blocks of adjacent units, thus reducing the "edge-effect" that may increase predation risks to smolts as they exit the turbine draft tube and enter the tailrace. Thompson et al. (2012) results showed that a high concentration of northern pikeminnow, along with some walleye and bass (smallmouth and largemouth), exist in the immediate tailrace of Wanapum Dam and are actively foraging on smolts. Turbines furthest from the spillways (Unit 1 at Wanapum and Unit 10 at Priest Rapids) are the first turbines to discontinue operation during daylight hours when the powerhouses are operating at less than full

capacity during juvenile and adult fish-migration seasons. The discharge from these turbines may adversely affect adult salmonids' ability to efficiently locate the entrances to the adult fishways adjacent to these turbine discharges.

3.3 Wanapum Fish Spill

Fish spill at Wanapum Dam in 2008-2010 was passed through the WFUB to test whether this route was a better passage route than tainter gate fish spill at Wanapum Dam. Testing has indicated that the Wanapum tainter gate spill has lower passage survival rates for yearling Chinook and steelhead than other passage routes at the dam (Skalski et al. 2008, Timko et al. 2009). Grant PUD is currently planning on replacing all of the Wanapum Dam spillway Tainter gate seals as part of the Wanapum Dam Interim Spill Regime Evaluation required under Section 6.2(1) of the WQC and Article 11 of the NMFS and USFWS's Section 18 fishway prescriptions, (all of which have been adopted into Article 406 of the FERC license; FERC 2008). Tainter gate seals are believe to be a potential source for juvenile salmonids mortality during spillway passage. Although the Spillway is currently operated during high flow conditions with inadvertent flow, it is a non-turbine passage route alternative in the event the WFUB is not operational. Grant PUD received approval by FERC in February 2012 to begin modifications. During scheduled maintenance outages, the current 2" protruding bolts will be recessed into the seals. At this time, Grant PUD is finalizing the solicitation for contractor bids to begin replacing the seals with the approved design; work is planned to begin during the summer of 2013 and be completed by the fall of 2018 (Table 7).

In consultation with the PRCC fish-spill representatives, smolt index counts from the Rock Island Smolt Monitoring Station are used to determine when annual spring fish spill at both developments is initiated (before 2.5% of the juvenile spring migrants have passed the Project – typically mid- to late-April) and also when summer fish spill is terminated (when over 95% of the summer juvenile migrants have passed; typically mid- to late-August). The end of the spring fish spill typically overlaps with the beginning of summer fish spill, providing continuous fish spill from April to August.

The spillways are operated (if needed) on the schedule outlined above during the juvenile salmonid out-migration season, and are operated on an as-needed basis during the remainder of the year. Inspections typically occur during the late summer/early fall low river-flow period, with any necessary maintenance occurring during the low river-flow winter months when the tainter gates are unlikely to be needed.

3.3.1 Spill

The 2012 fish-spill season began on April 23, 2012 and concluded on August 22, 2012. The fish-spill periods were very closely matched with the juvenile migration timing, and greater than 90 percent of the yearling spring outmigrants passed during the spring fish-spill period between April 23 and June 14. The combined spring and summer fish-spill periods from April 23 – August 23 encompassed greater than 96 percent of the entire 2012 summer outmigration.

Table 7 Anticipated schedule for implementing the Wanapum tainter gate seal modifications.

Task Name	Start Date	End Date
Engineering	May 25, 2010 - Oct.10, 2011	
Review/Design Seal Assembly	May 25, 2010	Aug. 8, 2010
Analyze Gates per seismicity criteria	Dec. 31, 2010	Jun. 29, 2011
Issue/Review Preliminary Engineering Drawings	Jun. 29, 2011	Jul. 27, 2011
Final Design	Jul. 27, 2011	Oct. 10, 2011
FERC process	Jun. 29, 2011 – Jan. 24, 2012	
Construction Permitting (CORPS, WDFW, WDOE, & WDNR)	July 13, 2011 – Dec. 27, 2011	
Contract Prep and Award	Dec. 27, 2012 – Aug. 23, 2013	
Construction	Aug. 23, 2013 – May 3, 2018	
Demobilization	Apr. 3, 2018 – May 3, 2018	

3.4 Wanapum Bulkhead Gatewell Exclusion Screens

License Article 402 required Grant PUD, within six months of issuance date of the license, to file a plan to study the effects of installing gatewell exclusion screens on salmon, steelhead, and lamprey survival during turbine passage. On October 17, 2008, Grant PUD filed a Gatewell Exclusion Screen Study Plan pursuant to license Article 402 under the April 17, 2008 Order Issuing New License[4] for the Project. FERC issued an order approving the Gatewell Exclusion Screen Study Plan on December 18, 2008.

Under the plan, Grant PUD would install, test, and, if tested successfully, install exclusion screens at all bulkhead gatewell slots at both Wanapum and Priest Rapids dams, once approvals and all necessary permitting are acquired. In 2010, Grant PUD monitored and evaluated possible interactions between juvenile salmonids, steelhead and lamprey with the bulkhead exclusion screen (one screen installed at Wanapum Dam and one at Priest Rapids Dam). In addition to the Gatewell Exclusion Screen Evaluation study, the PRCC concurred that a Gatewell Retention Study also be conducted (in 2010) to evaluate if once inside of a gatewell slot, the smolts leave the gatewell slots on their own. This could have possible implications as to whether gatewell exclusion screens are needed at Wanapum Dam.

The results from the Gatewell Retention Study at Wanapum and Priest Rapids dams in 2010, where acoustic-tagged fish were released into wheel gate and bulkhead slots, indicated that median retention times inside of a gatewell slot were 2.9 hours at Priest Rapids Dam and 4.6 hours at Wanapum Dam before sockeye exited the slot, and median retention times were 1.7 days (Wanapum Dam) and 1.9 days (Priest Rapids Dam) before steelhead exited the gatewell slot (Wright et al. 2010). In 2011 a second study was conducted at Wanapum Dam only (O'Connor and Rizor 2012, *Memorandum*). The median retention time for sockeye was 5.5 hours while the steelhead median was 3.1 days prior to leaving the slot. The longer residence times recorded in 2011 were believed to have been an artifact of environmental conditions included increased flow, lower river temperature, and increased TDG compared to the environmental conditions recorded in 2010.

[4] 123 FERC ¶ 61,049 (2008)

Based on the results of the evaluation of exclusion screen interactions with fishes and the retention study, the PRCC members agreed on December 22, 2012 not to require Grant PUD to install gatewell screens at the Project, Statement of Agreement of Not Installing Gatewell Exclusion Screens at Wanapum and Priest Rapids Dams (SOA 2011-09 and 2011-10; PRCC SOAs.

4.0 Priest Rapids Dam

Priest Rapids Dam consists of a 7,725-acre reservoir and a 10,103-foot-long by 179.5-foot-high dam spanning the Columbia River. The dam consists of left and right embankment sections; left and right concrete gravity dam sections; a left and right fish passage structure, each with an upstream fish ladder; a gated spillway section; and a powerhouse containing 10 vertical shaft integrated Kaplan turbine/generator sets with a total authorized capacity of 855 MW.

4.1 Priest Rapids Top-Spill

On April 26, 2011, construction bids for the construction of the PRFB were opened, and ultimately, the construction contract was awarded to Kuney-Goebel Joint Venture for $27.4 million (May 31, 2011), with construction beginning in September of 2011. The most updated final cost for construction of the PRFB $30,477,681.51. Grant PUD is still forecasting the project will be completed on time (April, 2014).

During the expected two years of construction, the Priest Rapids Top-spill Bulkhead that was utilized for salmonid smolt passage was moved from TG-19 & 20 to TG-5 & 6 and will be utilized for downstream smolt passage in the similar manner as it was used when located at TG-19 & 20. The new location for the top-spill bulkhead was selected after wave analysis was completed at the University of Iowa's IIHR for negative impacts to construction work barges in the Priest Rapids tailrace working on the PRFB during the smolt out-migration season.

Figure 4 Priest Rapids Fish Bypass – Gate 22 Modifications, 2011.

Figure 5 Priest Rapids Fish Bypass – Spill bay 22 dewatering.

Figure 6 Priest Rapids Fish Bypass – Spill bay 22 mass concrete form work – apron pour.

4.2 Primary Juvenile Passage Options/Priest Rapids Fish Spill/Spill Program

During the 2012 smolt out-migration season, the Priest Rapids Top-Spill Operations Configuration spill program used in both 2010 and 2011 was followed with the only exception that spill operations were moved to spill gates 4 – 7 to accommodate the construction of the Priest Rapids Fish Bypass. This spill operation consisted of 6.8 kcfs surface spill through the top-spill bulkhead at spill bays 5 and 6, 5 kcfs bottom spill through tainter gates 4 and 7 each; the total "fish spill" amount was approximately 24 kcfs. Fish-spill began on April 24 and ended on August 23, 2012.

As in 2012, the primary juvenile passage option in 2013 will be through the Priest Rapids Top-spill Bulkhead in spill gates 4-7.

Involuntary spill was passed through the remaining spillway gates at Priest Rapids. Grant PUD, in consultation with NMFS and the PRCC, used near real-time TDG and flow information to adjust/modify spill patterns as necessary.

4.3 Priest Rapids Turbine Operation

In February 2005, a turbine evaluation was conducted at Priest Rapids Dam (Normandeau Associates and Skalski 2005). The objectives of the turbine evaluation were to: 1) estimate direct

survival probabilities within ±2.5%, 95% of the time, and 2) evaluate the relationship between turbine discharges (9, 11, 15, and 17 kcfs) and survival and condition of fish entrained at two depths (10' and 30' below the intake ceiling). The resulting data was used to operate the turbine units (and powerhouse) in such a manner that ensures the highest survival rate for juvenile salmonid turbine passage.

This evaluation indicated that high turbine passage survival for entrained yearling Chinook salmon across discharges (9, 11, 15 and 17 kcfs) and depths (10 ft. and 30 ft.) was achieved. Pooled survival probabilities across depths ranged from 95.0% (15 kcfs) to 97.5% (9 kcfs), while pooled survival probabilities across discharges ranged from 96.1% to 96.5% (Normandeau Associates and Skalski 2005). Highest survival (98.8%, SE=0.008) was observed for fish entrained at 30 ft. at 17 kcfs; while the highest survival at 10 ft. occurred at 9 kcfs (97.9%, SE=0.012). The survival estimates at 9 and 11 kcfs were high (97.1% to 97.9%) and ranged from 94.4% to 96.1% for a discharge of 15 kcfs. Survival at the 17 kcfs ranged 95.6% to 98.8% (Normandeau Associates and Skalski 2005). Forty-eight hour survival probabilities estimates were ≥95.6%; only one estimate at 15 kcfs for 10 ft. entrained fish was slightly lower (94.4%).

Term and Condition 1.16 of the BiOp (adapted from Action 18, NMFS 2004), requires Grant PUD to operate the Priest Rapids turbines in non-cavitation mode and run at least two adjacent turbines at any one time. These turbine operations are in place for 95% of the juvenile spring migration (based on index counts at Chelan PUD's Rock Island Dam), and coordinated with the upstream projects. Grant PUD starts monitoring (Rock Island index counts) on or before April 1 of each year and non-cavitation turbine mode operations is initiated before 2.5% of the spring migration has passed. Non-cavitation turbine mode operations are concluded after 97.5% of the spring migration has passed, or on June 15, whichever occurs first.

At this time, Grant PUD expects that installation of "in-kind" at Priest Rapids Dam would follow the completion of the turbine installation project at Wanapum Dam. At this time, the expected start date for the Priest Rapids Dam turbine installation project is 2015, with a completion date (installation of all ten turbines) in 2023. Grant PUD has started preliminary modeling and design work.

4.4 Priest Rapids Bulkhead Gatewell Exclusion Screens

License Article 402 required Grant PUD, within six months of issuance date of the license, to file a plan to study the effects of installing gatewell exclusion screens on salmon, steelhead, and lamprey survival during turbine passage. On October 17, 2008, Grant PUD filed a Gatewell Exclusion Screen Study Plan pursuant to license Article 402 under the April 17, 2008 Order Issuing New License for the Project. FERC issued an order approving the Gatewell Exclusion Screen Study Plan on December 18, 2008.

Under the plan, Grant PUD would install, test, and, if tested successfully, install exclusion screens at all bulkhead gatewell slots at both Wanapum and Priest Rapids dams, once approvals and all necessary permitting are acquired. In 2010, Grant PUD monitored and evaluated possible interactions between juvenile salmonids, steelhead and lamprey with the bulkhead exclusion screen (one screen installed at Wanapum Dam and one at Priest Rapids Dam). In addition to the Gatewell Exclusion Screen Evaluation study, the PRCC concurred that a Gatewell Retention Study also be conducted (in 2010) to evaluate if once inside of a gatewell slot, the smolts leave the gatewell slots on their own. This could have possible implications as to whether gatewell exclusion screens are needed at Wanapum Dam.

The results from the Gatewell Retention Study at Wanapum and Priest Rapids dams in 2010, where acoustic-tagged fish were released into wheel gate and bulkhead slots, indicated that median retention times inside of a gatewell slot were 2.9 hours at Priest Rapids Dam and 4.6 hours at Wanapum Dam before sockeye exited the slot, and median retention times were 1.7 days (Wanapum Dam) and 1.9 days (Priest Rapids Dam) before steelhead exited the gatewell slot (Wright et al. 2010). In 2011 a second study was conducted at Wanapum Dam only (O'Connor and Rizor 2012, Memorandum). The median retention time for sockeye was 5.5 hours while the steelhead median was 3.1 days prior to leaving the slot. The longer residence times recorded in 2011 were believed to have been an artifact of environmental conditions included increased flow, lower river temperature, and increased TDG compared to the environmental conditions recorded in 2010.

Based on the results of the evaluation of exclusion screen interactions with fishes and the retention study, the PRCC members agreed on December 22, 2012 not to require Grant PUD to install gatewell screens at the Project, Statement of Agreement of Not Installing Gatewell Exclusion Screens at Wanapum and Priest Rapids Dams (SOA 2011-09 and 2011-10; PRCC SOAs.

4.5 Priest Rapids Dam Fishway Water Supply

On October 15, 2010, Grant PUD submitted to FERC a plan for meeting the requirements within license article 403 Tailrace Pumping System for Fishway Water Supply at Priest Rapids Dam. FERC issued an order approving the plan on October 20, 2011. An element of that plan was to install two additional pumps in the existing left bank fish ladder pump house and install an independent gravity supply to the right bank fish ladder attraction water supply system. After presentation of additional information to the PRCC by Grant PUD, the PRCC on June 27, 2011 agreed that installation of the two additional pumps of the left bank was not necessary at this time. No modifications are planned to occur to the left bank fish ladder attraction water supply. Modifications to the right bank are occurring as described in section 2.6.1; refer to this section for additional information about this PRCC decision.

4.6 Adult PIT-Tag Detection

Per Term and Condition 1.19 (NMFS 2008), Grant PUD maintained and operated the PIT tag detection system at Priest Rapids Dam. The PIT tag detection system was established in the Priest Rapids Dam fishways in spring 2003.

Priest Rapids Dam has two adult fishways, each with multiple non-overflow weirs in the uppermost sections. The adult PIT-tag detection system at Priest Rapids Dam is designed to detect upstream migrating fish bearing an ISO FDX-B PIT-tag (134.2 kHz). The PIT-tag detection system plans and specification document states the system is designed to be 95% efficient for the detection of Digital Angel's PIT-tag model TX1400ST or "supertag". Each fishway has two detection weirs located within the non-overflow sections (Figure 7). Each detection weir has two completely submerged orifices for fish passage equipped with PIT-tag antennae mounted to the upstream face of each orifice. Each antenna is controlled by a Digital Angel FS1001A Stationary Transceiver (Richmond & Anglea, 2008). Grant PUD expects to upgrade the PIT-tag readers and move the antennas during the 2013 – 2014 winter outage.

In addition to the antennae in the adult fishways, there are three antennae installed at the head of the sorting flume within the OLAFT. Only fish that have been trapped and pass through the

sorting flume are interrogated by this antenna array. The adult fishways' PIT-tag detection system is functional during all times the adult fishways are passable to fish. The OLAFT's PIT-tag detection system is available only when the trap is being operated. All interrogation data collected at Priest Rapids Dam are uploaded to the Pacific States Marine Fisheries Commission's PTAGIS web page, http://test.ptagis.org/ptagis/index.jsp. Biomark, Inc. of Boise, ID remotely monitors the detection system for functionality and performs periodic maintenance checks on site. All detection data reported within this report were obtained from the PTAGIS web site.

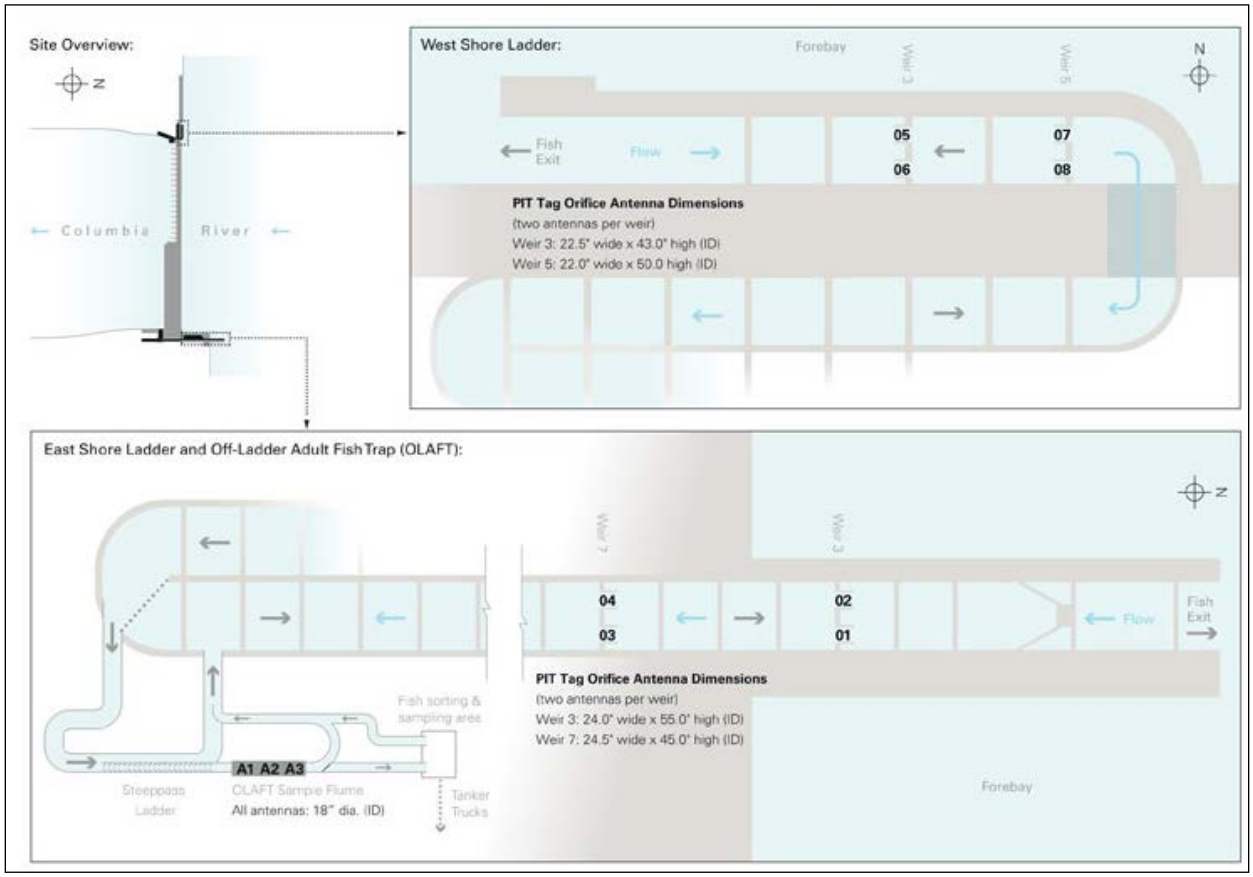

Figure 7 **Plan view of upper regions of the fishways at Priest Rapids Dam showing location of PIT-tag detection antennae and associated identification numbers.**

4.6.1 2012 PIT-Tag Detection Summary

A total of 20,046 PIT-tag detections were observed at Priest Rapids Dam in 2012. Of these detections, 8,292 were from unique tags within five species of fish. Species of fish carrying PIT tags identified at Priest Rapids Dam in 2012 were Chinook salmon (*Oncorhynchus tshawytscha*), Coho salmon (*O. kisutch*), steelhead trout (*O. mykiss*), sockeye salmon (*O. nerka*), bull trout (*Salvelinus confluentus*) and northern pikeminnow (*Ptychocheilus oregonensis*). All detections and associated fish species are summarized in Table 8.

Table 8 **Summary of PIT-tag Detections at Priest Rapids Dam in 2012**

Species	Number of Observations	Unique Tag Codes
Chinook salmon	9399	3555

coho salmon	1009	337
steelhead trout	7598	3203
sockeye salmon	6046	2486
bull trout	5	1
northern pikeminnow	12	6
Totals	24,068	9588

4.7 Adult Fish Trap (Off Ladder Adult Fish Trap/OLAFT)

Under Term and Condition 1.20, Grant PUD is required to maintain in good working order the Priest Rapids Dam off-ladder adult fish trap and ensure that it is operational each year prior to startup for fish collection. Grant PUD is also required to make necessary repairs and modifications as determined necessary.

The WDFW operated the OLAFT at Priest Rapids Dam from about mid-July through mid-November 2012 to sample steelhead trout for the agency's stock-assessment program and to sample fall Chinook salmon for an age-class study. The WDFW typically operated the trap on Tuesdays and Thursdays of each week for steelhead trout sampling (July 10 – November 14, 2012) and Mondays and Wednesdays (September 5 – November 1) for fall Chinook salmon. The Yakama Nation Fisheries operated the trap during late June to mid-July to collect adult sockeye for their Lake Cle Elum and Cooper Lake sockeye salmon reintroduction program. The Yakama Nation typically operated the trap Monday through Friday each week (June 2-July 12, 2012). The OLAFT was completely dewatered and winterized for the season on November 16, 2012.

There were no significant trap modifications during the winter of 2011 - 2012. Grant PUD replaced the stainless steel sorting gates with lighter aluminum sorting gates and repositioned overhead heaters closer to the trap operators. A primary fish diversion gate solenoid was replaced during the trapping season.

4.7.1 OLAFT Operation Observations

An operational change was made in November 2011 to have the submerged orifice slide gate (SG-3) open at all times except during trapping operations. The orifice slide gate is part of the OLAFT fish diversion weir and is located on the bottom east side of the weir. This opening is designed to allow lamprey passage without diverting them through the OLAFT facilities. Prior to this time, the slide gate was kept closed by the trap operator. During July 2012 slide gate (SG-2) will remain partially open to provide lamprey passage while avoiding non-lamprey access through the side gate. More investigations are being planned during subsequent years; the slide gate will be monitored to insure it is open during trapping operations. All other gates, valves, plumbing, electrical components, and laboratory utilities operated as designed. Observed fish passage indicated that adult salmonids continue to successfully find the entrance channel and readily ascended the steeppass fishway (Figure 8). The sorting flume again proved to be sufficient length to allow for the identification and sorting of trapped fish. Fish readily migrated

out of the return channel and back into the main fishway once they had been bypassed or sampled. No significant design improvements to the trapping facilities were made in 2012.

Figure 8 Steeppass fishway section of the off-ladder adult fish trap located at Priest Rapids Dam, Columbia River mile 397.1, Washington, USA.

4.7.2 Design Modifications for 2013

There are no major OLAFT modifications planned during the 2013 OLAFT operation season. Minor modification will include improved ceiling lighting and addition of a wireless laptop computer system. Grant PUD will continue to make in-season necessary repairs and modifications and needed. A complete report on the 2012 OLAFT activities can be viewed at Grant County PUD supporting documentation.

5.0 Hatchery Mitigation Programs

Grant PUD implements 11 hatchery programs as mitigation for the Project effects on anadromous salmonids and steelhead that pass through the Project area or are affected by Project operations. Under the 2006 SSSA Grant PUD agreed to achieve and maintain “no net impact” from the Project on steelhead; spring, summer and fall Chinook; sockeye; and Coho salmon. In part, Grant PUD accomplishes this objective through hatchery propagation. The substantive requirements of the SSSA were incorporated into the WQC conditions, NMFS and USFWS

Section 18 prescriptions, and NMFS' 2008 terms and conditions to the incidental take statement for endangered salmon and steelhead. Grant PUD's FERC license requires implementation as defined in these documents and in the Hatchery and Genetic Management Plans (HGMPs) and Artificial Propagation Plans (APPs) required by License Article 401(a)(4).

5.1 Priest Rapids Coordinating Committee Hatchery Subcommittee

FERC shall require Grant PUD to continue to support the PRCC HSC. This shall include provision of sufficient facilitation, administration, and clerical support to the HSC. This committee shall be the primary forum for implementing and directing supplementation measures for the Project's anadromous fish program. The HSC is comprised of NMFS, USFWS, WDFW, Confederated Tribes of the Colville Reservation, Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Umatilla Reservation and Grant PUD.

During this reporting period the PRCC HSC met monthly (Table 9) and made considerable progress in approving facility designs and program development. Minutes were taken at all meetings and approved by the PRCC HSC. For the past several years, Grant PUD has produced and distributed monthly status reports to the PRCC HSC for its hatchery mitigation programs. These reports included monthly progress, pending issues, and significant milestones achieved. Significant decisions were formalized in five SOAs during 2012 (Table 10). All SOAs were approved by PRCC HSC consensus. Meeting minutes and statements of agreement for all years can be viewed at Grant PUD's website.

Table 9 PRCC HSC 2012 meeting schedule

PRCC Hatchery	January 18, 2012	Meeting
PRCC Hatchery	March 22, 2012	Meeting
PRCC Hatchery	March 29, 2012	Meeting
PRCC Hatchery	April 19, 2012	Meeting
PRCC Hatchery	May 16, 2012	Meeting
PRCC Hatchery	June 21, 2012	Meeting
PRCC Hatchery	July 19, 2012	Meeting
PRCC Hatchery	August 16, 2012	Meeting
PRCC Hatchery	September 20, 2012	Meeting
PRCC Hatchery	October 23, 2012	Meeting
PRCC Hatchery	November 15, 2012	Meeting
PRCC Hatchery	December 20, 2012	Conf. call

Table 10 Statement of agreements approved by the PRCC HSC

Years and SOA #	Title of Statement of Agreement	Date Approved
2012-01	Grant PUD Hatchery Production Objectives Release Years 2014-2023	01/22/12
2012-03	Basis of Design for the Carlton Summer Chinook Acclimation Facility	01/18/12
2012-04	Basis of Design for the Dryden Summer Chinook Acclimation Facility	01/27/12
2012-07	Geochemical Analysis of Scales and Fin Rays to Identify Chinook Salmon Populations in the Wenatchee Basin Using Inductively Coupled-Mass Spectrometry	07/06/12
2012-12	2013 White River Spring Chinook Acclimation Plan	08/30/12

5.2 Planning Documents Summary

All hatchery planning documents and associated monitoring and evaluation (M&E) plans have been approved by the PRCC Hatchery Subcommittee and by FERC (Table 11) All HGMPs, APPs, and M&E plans have been submitted to NMFS and two have undergone the public review process (White River and Nason Creek spring Chinook salmon). NMFS' action on the White River and Nason Creek HGMPs is anticipated in 2013.

Table 11 Hatchery planning document approvals

Document	Approved by PRCC Hatchery Subcommittee	Submitted to NMFS for approval*	NMFS approval/ESA take permit	Approved by FERC
White River spring Chinook salmon (HGMP)	Aug. 20, 2009	Sept. 15, 2009	Processing	Feb. 7, 2012
Nason Creek spring Chinook salmon (HGMP)	Aug. 20, 2009	Sept. 15, 2009	Processing	Feb. 7, 2012
Methow spring Chinook salmon (APP)*	Sept. 16, 2010	June 30, 2009	Processing	Dec. 14, 2011
Okanogan spring Chinook salmon (APP)*	Sept. 23, 2010	Sept. 30, 2009	Processing	Dec. 14, 2011
Wenatchee summer Chinook salmon (HGMP)	Sept. 17, 2009	Sept. 30, 2009	Review Pending	Nov. 15, 2011
Methow summer Chinook salmon (HGMP)	Sept. 17, 2009	Sept. 30, 2009	Review Pending	Nov. 15, 2011
Okanogan summer Chinook salmon (APP)*	Dec. 16, 2010	Sept. 30, 2009	Review Pending	Oct. 13, 2011
Fall Chinook salmon (HGMP & M&E)	Oct. 22, 2009	June 30, 2009	Review Pending	Feb. 7, 2012
Sockeye salmon (HGMP)	April 22, 2010	Sept. 30, 2009	Review Pending	Nov. 15, 2011
Coho salmon (APP)*	Oct. 11, 2010	Aug. 31, 2009	Processing	Oct. 13, 2011
Steelhead trout (APP)*	Sept. 23, 2010	Sept. 30, 2009	Review Pending	Dec. 14, 2011
Monitoring and Evaluation Plan covering all programs	Aug. 20, 2009	June 30, 2009	Review Pending	Approved as part of individual HGMP/APP filings.

* APPs are explanatory documents that explain the relationship between GPUDs responsibilities within a larger program covered by an HGMP submitted to NMFS by others.

5.3 Facility Development Summary

Substantial progress was made in 2012 on several Grant PUD hatchery program facilities. See specific sections below for details *related to design, permitting and construction of these production facilities.*

Table 12 Design and permitting facility status for planned species.

Program	Design and permitting facility status
White River spring Chinook salmon	Based on a recent statement of agreement agreed upon by the Priest Rapids Coordinating Committee – Policy Committee, it is anticipated that no long-term acclimation facilities will be necessary prior to 2026.
Nason Creek spring Chinook salmon	Facility permit application submitted to Chelan County, U.S. Army Corps of Engineers, Washington Department of Ecology, and Washington Department of Fish and Wildlife in August 2011. As of January 1, 2013 all permits had been obtained with the exception of final building permits from Chelan County. These are expected to be obtained in first or second quarter 2013. Construction contract was awarded to Strider Inc. by Grant PUD in October 2012. Construction is expected to begin in first quarter 2013 and be completed by May 2015.
Methow spring Chinook salmon	This Douglas PUD-owned facility is currently operated by the Washington Department of Fish and Wildlife. Grant PUD entered into a 10-year interlocal agreement (ILA) in 2004 for spring Chinook production. A renewed 39-year ILA is in development and expected to be approved within the first quarter of 2013.
Okanogan spring and summer Chinook salmon	Chief Joseph Hatchery construction began in June 2010 and is expected to be completed by May 2013, with production beginning in 2013.
Wenatchee summer Chinook salmon	Feasibility analysis for overwinter acclimation at the Chelan PUD-owned Dryden Pond facility is in progress. Grant PUD completed permit-level designs in May 2012. Further design progress is dependent on outcome of the feasibility analysis.
Methow summer Chinook salmon	Carlton Pond – Okanogan County Shoreline Exemption issued in July 2012. Building permits are pending. Construction is scheduled to begin spring 2013.
Fall Chinook salmon	Construction began on Priest Rapids Hatchery in May 2012 and all components of the facility are expected to be operational by fall 2014.
Sockeye salmon	Penticton Hatchery design is nearing completion, with 99% designs expected in first quarter 2013. Construction is anticipated to start in 2013.
Coho salmon	Funding agreement only (10-year agreement with Yakama Nation – expires 2017)
Steelhead trout	Production currently occurs at Wells Hatchery, owned by Douglas PUD. Renovation of this facility is expected to begin in early 2014. Dedicated space for Grant PUD's steelhead production is planned. Acclimation facilities in Okanogan basin are operational, but Grant PUD is pursuing additional acclimation opportunities and facility upgrades to Omak Creek Acclimation Pond. Discussions with the Colville Confederated Tribes are underway.

5.4 Number of Fish Released and Dollars Invested Summary

Fish have been produced and released for several of the hatchery programs for multiple years. Significant program investments were made in 2012, including investments in programs that have not yet release fish (Table 13). Expenditures included capital construction, operation and maintenance, and monitoring and evaluation.

Table 13 Approximate number of fish released and estimated dollars invested in support of Grant PUD's hatchery mitigation.

Program	Years that fish were released	Mean number of fish released per year	Number of fish released in 2012	GPUD Program investment ($) in 2012*	GPUD Program investment ($) total*
White River spring Chinook salmon	2004-2012	34,643	18,850	$1,409,586	$23,587,040
Nason Creek spring Chinook salmon	2004-2005	6,600	0	$582,718	$2,501,874
Methow spring Chinook salmon	2007-2012	124,585	186,029	$932,188	$4,982,149
Okanogan spring Chinook salmon	None	0	0	$451,142	$2,664,154
Wenatchee Summer Chinook salmon	None	0	0	$449,247	$1,173,333
Methow Summer Chinook salmon	None	0	0	$785,536	$1,543,865
Okanogan Summer Chinook salmon	None	0	0	$802,030	$6,938,108
Fall Chinook salmon	1985-2011[a]	5,131,308	5,271,247	$10,535,956	$20,864,963
Sockeye salmon	2005-2012	809,145	552,948	$1,058,658	$4,226,953
Coho salmon	2007-2012	1,500,000	1,529,678	$624,459	$1,395,057
Steelhead	2005-2012	113,821	84,420	$575,126	$3,473,338
Total	**2004-2012**	**7,720,102**	**7,643,172**	**$18,206,646**	**$73,350,834**

[a] First fish were released in 1972, but the data from the earlier releases is not as robust as the later dates. *ALL COSTS ARE ESTIMATES ONLY AND ARE LIKELY TO BE UNDERESTIMATES. These expenditures do not include Grant PUD staff labor or travel expenditures.

[b]Coho program and related data reporting runs October 1 through September 30, previous year.

5.5 Monitoring and Evaluation Summary

Monitoring and Evaluation activities continued for all hatchery programs currently being implemented by Grant PUD (Table 14). A revised M&E Plan for upper Columbia species is in development and is expected to be implemented in 2013.

Table 14 Monitoring and Evaluation Activities for Grant PUD Hatchery Programs, partially and fully funded by Grant PUD. The span of years that activities were conducted is in each cell.

Program	Brood Collection	Spawning	Tagging	Release	Smolt Abundance	Redd Surveys	Carcass Recoveries
White River spring Chinook salmon	97-09	01-12	04-12	02, 04-12	07-12	97-12	97-12
Nason Creek spring Chinook salmon	98-99	02-03	04-05	04-05	07-12	98-99	98-99
Methow spring Chinook salmon	96-99*, 05-12	96-99, 05-12	01-12	02-12	02-12	96-12	96-12
Okanogan spring Chinook salmon	NA	NA	NA	NA	NA	NA	NA

Wenatchee summer Chinook salmon	NA	NA	NA	NA	NA	NA	NA
Methow summer Chinook salmon	NA	NA	NA	NA	NA	NA	NA
Okanogan summer Chinook salmon	NA	NA	NA	NA	NA	NA	NA
Fall Chinook salmon	98-12	98-12	98-12	98-12	98-12	10-12	10-12
Sockeye salmon	04-12	04-12	04-12	04-12	04-12	04-12	04-12
Coho salmon	05-12	05-12	06-12	06-12	06-12	06-12	06-12
Steelhead trout (Methow)	05-12	05-12	05-12	05-12	06-11	06-11	06-11
Steelhead trout (Okanogan)	06-12	06-12	07-12	07-12	07-12	07-12	07-12

*Part of the captive brood program

5.6 Upper Columbia River Steelhead Supplemental Plan

Grant PUD is required under T&C 1.25 (NMFS 2008) to consult with the PRCC HSC (subject to NMFS approval) to develop an APP to rear 100,000 yearling UCR steelhead for release in the UCR basin. The PRCC HSC has previously agreed that on an annual basis Grant PUD's steelhead compensation responsibilities may be met by funding the Colville Tribes 20,000 steelhead in Omak Creek (Okanogan River) and the remaining 80,000 steelhead at the WDFW operated program at Wells Hatchery owned by Douglas PUD. The PRCC HSC further agreed that as the Omak Creek program develops, it would decide on appropriate adjustments to the apportionment described above. Also part of this requirement was to develop a comprehensive monitoring and evaluation program which includes monitoring in the natural environment and investigating the impacts of the hatchery program on the naturally produced steelhead population. This is subject to HSC approval, and the monitoring and evaluation program may be implemented in conjunction with ongoing or future monitoring and evaluation programs with other entities such as Chelan and Douglas PUDs through cost-sharing agreements external to this Opinion.

5.6.1 Program Background

Originally listed as endangered in 1997 the status of UCR steelhead has changed several times; as of August 15, 2011 the upper Columbia distinct population segment (DPS) for steelhead was listed as threatened by NOAA Fisheries. This DPS includes all naturally spawned anadromous steelhead populations below natural and man-made impassable barriers in streams in the Columbia River Basin upstream from the Yakima River, Washington, to the U.S.-Canada border, as well six artificial propagation programs: the Wenatchee River, Wells Hatchery (in the Methow and Okanogan Rivers), Winthrop National Fish Hatchery, Omak Creek, and the Ringold steelhead hatchery programs.

In August 2004, Douglas PUD and Grant PUD entered into a 10-year term Interlocal Agreement enabling Grant PUD to utilize excess rearing capacity at the Wells and Methow fish hatcheries to produce steelhead and spring Chinook salmon, respectively. Since then, the PRCC HSC has approved Grant PUD's annual request for up to 100,000 brood year yearling steelhead smolts to meet Grant PUD's mitigation requirements.

Beginning in 2005, Grant PUD released hatchery steelhead into the Methow basin and co-funded M&E activities as part of its mitigation requirement using facilities at Wells Hatchery, owned by Douglas PUD and operated by WDFW. In 2007, Grant PUD released yearling steelhead smolts

into the Okanogan basin as part of a reintroduction program operated by the Colville Confederated Tribes at Cassimer Bar. Because of poor survival and inadequate hatchery infrastructure, Cassimer Bar was discontinued after the 2011 release and the entire program was moved to Well Hatchery. In order to concentrate M&E efforts into a single basin, beginning in 2012 Grant PUD's steelhead mitigation program will be released wholly into the Okanogan.

5.6.2 Hatchery Planning Documents

The Wells Hatchery Steelhead HGMP was completed and submitted to NOAA Fisheries in 2011. The Colville Confederated Tribes is currently working on the HGMP for the Okanogan basin. The quantitative objectives for steelhead were approved by the PRCC HSC in January 2009. Grant PUD submitted an APP for both the Wells and Cassimer Bar programs to the PRCC and PRCC HSC on April 17, 2009, and to NMFS on September 30, 2009. The APP was approved by the PRCC HSC on September 23, 2010, submitted to FERC for approval on September 30, 2010, and approved by FERC on December 14, 2011.

5.6.3 Facilities

Since 2005, Grant PUD has funded releases of yearling steelhead smolts into the upper Columbia basin (Table 15). In 2012, Grant PUD began negotiating a new long-term agreement with Douglas PUD that will provide new infrastructure at the Wells Hatchery as part of an overall plan to re-design and modernize the facility. Through the agreement, Grant PUD will provide capital for spawning, incubation, and rearing infrastructure for its 100,000 smolt program. Designs for the modernization are expected to be completed by the end of 2013 and construction by the end of 2014.

Currently, Omak Creek is the only location used for brood collection for the Okanogan program but as it expands, other trapping locations and acclimation sites may be used or developed.

5.6.4 Operations and Maintenance

As stated above, Grant and Douglas PUDs are developing a new long-term agreement for production of Grant PUD's steelhead mitigation program. This agreement covers reimbursement to Douglas PUD for Grant PUD's proportionate usage of the Wells Hatchery facility for its steelhead program, including operations and maintenance, monitoring and evaluation, and the capital improvements described in Section 5.6.3.

Grant PUD will also continue to fund the Okanogan basin steelhead program managed by the Colville Confederated Tribes. A new agreement between Colville Confederated Tribes and Grant PUD was signed in 2013, extending the program through February 2014 and expanding the existing M&E activities.

In spring 2012, 84,420 BY 2011 steelhead smolts were released into the Okanogan basin as part of Grant PUD's mitigation requirement. Six consecutive brood years have been released into the Okanogan basin as part of the Colville Confederated Tribes' steelhead program using locally adapted brood since 2005 (Table 16). As of November 2012, approximately 9,677 brood year 2012 fish were on-site at the Wells Hatchery as part of Colville Confederated Tribes' steelhead program and 90,192 BY 2012 fish are reserved for Grant PUD from the Wells Hatchery. The fish are scheduled for release in spring 2013. All Omak Creek program parr have received both coded-wire tags (CWTs) and PIT-tags.

The mean release for both the Wells and Omak programs between 2005 and 2012 is 113,821, annually.

Table 15 Steelhead release and annual expenditures for the Wells Hatchery as part of the Grant PUD's mitigation requirement.

	Numbers of Fish Released	Annual Expenditures*			
		Capital**	O&M	M&E***	Totals
2005	100,000	$542	$270,531	$14,489	$285,562
2006	101,379	$1,626	$283,929	$13,751	$299,306
2007	100,600	$2,037	$283,269	$37,345	$322,651
2008	95,500	$6,269	$285,854	$37,049	$329,172
2009	80,000	$7,510	$265,180	$46,887	$319,577
2010	73,775	$7,800	$421,151	$48,721	$477,672
2011	85,630	$8,376	$122,339	$48,447	$179,162
2012	42,997	$10,619	$255,728	$141,814	$408,160
Mean	84,985	$5,597	$273,498	$48,563	$327,658
Totals	679,881	$44,779	$2,187,981	$388,503	$2,621,262

Note: *ALL COSTS ARE ESTIMATES ONLY AND ARE LIKELY TO BE UNDERESTIMATES. Does not include Grant PUD staff labor or travel expenditures. ** These are amortized amounts. *** Includes studies and hatchery evaluations.

Table 16 Steelhead released and annual expenditures into the Okanogan basin as part of Grant PUD's mitigation requirement.

Year Released	Numbers of Fish Released	Annual Expenditures Totals*
2007	27,219	$54,741
2008	32,915	$102,393
2009	15,505	$192,443
2010	23,618	$185,533
2011	32,333	$150,000
2012	41,423	$166,966
Mean	28,836	$142,013
Program Totals	173,013	$852,076

Note: *ALL COSTS ARE ESTIMATES ONLY AND ARE LIKELY TO BE UNDERESTIMATES. Does not include Grant PUD staff labor or travel expenditures.

5.6.5 Monitoring and Evaluation

The current Okanogan basin steelhead program is permitted to collect up to 16 adult steelhead for broodstock each spring from Okanogan tributaries. After transport from the collection site to Wells Hatchery, the fish are spawned, incubated, and reared prior to transport and release back into select areas of the Okanogan basin. The production goal is for 20,000 or more smolts to be released into Omak Creek in early May at 18 fish per pound. Any excess production above 20,000 fish will be out-planted into other approved tributaries. Past M&E work in the Methow basin has been conducted by WDFW but since transitioning all releases into the Okanogan basin, the Colville Confederated Tribes will conduct all future M&E. Activities conducted are shown in Table 17 and are consistent with Grant PUD's approved M&E Plan.

Table 17 Monitoring and Evaluation activities for Okanogan basin steelhead, funded by Grant PUD.

Activity	2006	2007	2008	2009	2010	2011	2012
Brood Collection	X	X	X	X	X	X	X

Spawning	X	X	X	X	X	X	X
Tagging		X	X	X	X	X	X
Release		X	X	X	X	X	X
Smolt Abundance		X	X	X	X	X	X
Carcass Recoveries		X	X	X	X	X	X
Redd Surveys		X	X	X	X	X	X

5.7 Upper Columbia River Spring Chinook Salmon Supplementation

UCR Spring Chinook covered under this T&C (1.26; 2008 NMFS) are listed as Endangered (FR Vol. 64, No. 56, March 24, 1999). This Evolutionary Significant Unit (ESU) includes all naturally spawned populations of Chinook salmon in all river reaches accessible to Chinook salmon in Columbia River tributaries upstream of Rock Island Dam and downstream of Chief Joseph Dam in Washington, excluding the Okanogan River. Hatchery propagation of the White River, Nason Creek, Chiwawa River, Twisp River, Methow River, and Chewuch River spring Chinook stocks is included in the ESU. Development of the APP covering Grant PUD's hatchery mitigation responsibilities for UCR spring Chinook salmon was completed in 2009 and is currently under review by NMFS. Once these programs are fully developed, they are expected to produce 600,000 yearling spring-run Chinook salmon. Planning for each of these programs is ongoing, much of which was completed during 2009 with submission of the HGMPs. Additional details about each of these programs are provided below.

5.8 White River Spring Chinook Salmon Program

The 2008 NMFS BiOp (T&C 1.27) required Grant PUD to continue to implement the White River spring-run Chinook salmon program. This included the possible development of rearing (may be outside the White River Basin) and acclimation (in the White River Basin) facilities. The program was to be implemented to reach a yearling smolt production level of a total of 150,000 fish.

5.8.1 Program Background

The White River spawning aggregate is within the UCR spring Chinook salmon ESU. In 1997, a spring Chinook captive broodstock program was initiated for the White River population in an effort to reduce the risk of extinction. Adult escapement has remained low in the White River and the captive-brood program is ongoing. The final egg collection for the first-generation portion of the captive-brood program occurred in 2009. The program was expected to transition to traditional adult-based supplementation once the captive-brood program sunsets in 2016. However, in 2012 resource co-managers determined that an adult-based supplementation program as required is not feasible at this time, due primarily to the inability to collect sufficient broodstock to support a 75,000 smolt program. Discussions about the future of the program are ongoing.

5.8.2 Hatchery Planning Documents

The quantitative objectives for spring Chinook were approved by the PRCC HSC in January 2009. The overall M&E plan, including White River spring Chinook, was submitted to NMFS on June 30, 2009, approved by the PRCC HSC on August 20, 2009 and was submitted to FERC on June 28, 2010. A Draft HGMP was submitted to the PRCC HSC on April 17, 2009 and to NMFS

on June 30, 2009. The PRCC HSC approved the revised plan on August 20, 2009. The PRCC HSC-approved plan was resubmitted to NMFS on September 15, 2009. NMFS requested additional information from Grant PUD on October 22, 2009. The information was provided during a meeting between NMFS and Grant PUD on November 13, 2009 and also in an addendum that was provided to NMFS in March 2010. The HGMP was released for public comment by NMFS March 18, 2010, submitted to FERC on June 28, 2010, and approved by FERC on February 7, 2012.

5.8.3 Facilities

Program facilities and most of the activities required to implement the White River spring Chinook management plan will continue to occur downstream of the White River, with the exception of short-term spring acclimation at the White River.

On February 8, 2013, the Priest Rapids Coordinating – Policy Committee (PRCC PC) agreed that given the technical, scientific, and political challenges the planned alternative of implementing a 74,556 hatchery smolt supplementation program on the White River is not feasible at this time. Therefore, they agreed that in order for Grant PUD to meet its Wenatchee spring Chinook salmon mitigation for the period from BY 2013 through BY 2026, the PRCC PC agreed to a SOA, which at its essence, approves the following:

- No artificial propagation of White River spring Chinook prior to 2026
- No artificial propagation of White River spring Chinook or construction of long-term facilities until an independent scientific review is conducted and only if the PRCC Hatchery Subcommittee deems them warranted based on results of the review
- Sunset of the current White River captive brood program, with the last release of fish in 2016
- Transfer of Grant PUD's entire 75,000 spring Chinook smolt requirement to the Nason Creek program after 2016
- Funding by Grant PUD of Monitoring and Evaluation (M&E) through 2026 to meet the goals and objectives in the approved PRCC HSC M&E plan.

Grant PUD will file a license amendment with FERC for review and approval of this SOA during the first quarter of 2013.

5.8.4 Operations and Maintenance

Grant PUD maintains a contract with the U.S. Department of the Interior for services related to the current captive-broodstock program at the USFWS-owned Little White Salmon National Fish Hatchery (LWSNFH) near Cook, WA. The captive broodstock are held and spawned at the hatchery and their progeny are early reared there before transport to the White River for spring acclimation and release. Grant PUD also contracts with the WDFW for transportation, final rearing, and release services associated with the White River spring acclimation program.

5.8.4.1 Broodstock Collection, Rearing and Spawning

The first- and second-generation components of the White River program are being reared at the LWSNFH. Spawning of first-generation adults during 2012 resulted in approximately 114,983 second-generation eggs as of December 31, 2012. A total of 145,224 BY 2011 F2s and 719

captive broodstock (F1s) of BYs 2007, 2008, and 2009 were on station at LWSNFH as of December 31, 2012. No broodstock were collected in 2012.

5.8.4.2 Fish Release

All White River spring Chinook released during 2012 were from BY 2010 (Table 18). Released fish were adipose-fin present and had a CWT in the base of the adipose-fin tissue. Additionally, approximately 12,937 fish had PIT-tags. A total of 18,850 fish were acclimated in eight aluminum tanks at the Grant PUD's property, located at White River RM2. All were released into the Wenatchee River via trucked transport on May 9, 2012. Table 18 shows the numbers of White River spring Chinook salmon released by brood year, acclimation type, and location. Program expenditures to date are reflected in Table 19.

Table 18 Numbers of White River Chinook salmon released by brood year, acclimation type, and location

Brood Year	Release Location	Approximate Number of Fish
2001	Egg basket in White River as fry	1,536
2002	Acclimation tanks in the White River	2,589
2003	Acclimation tanks in the White River	2,096
2004	Acclimation tanks in the White River	1,639
2005	Net pens in Lake Wenatchee	63,779
2006	Direct to White River as subyearlings & yearlings	139,644 and 142,033 respectively
2007	Net pens in Lake Wenatchee & Direct to Lake Wenatchee as yearlings	131,843
2008	Net pens in and at mouth of Lake Wenatchee and in White River	41,603
2009	Acclimation tanks and pens in White River, net pens in Lake and acclimation at River mile 11.5 via side channel and acclimation tanks.	112,596
2010	Acclimation tanks, bridge site	18,850
MEAN (all BY)		34,643
TOTAL		**658,208**

Table 19 Spring Chinook salmon annual expenditures for the White River program as part of Grant PUD mitigation

Year	Annual Expenditures			
	Capital	O&M**	M&E	Totals
1997-2007*	$255,010	$13,852,851	$360,470	$14,257,636
2008	$216,105	$2,118,610	$224,101	$2,558,816
2009	$269,893	$644,568	$192,405	$1,106,666
2010	$452,926	$1,160,851	$242,195	$1,855,972
2011	$1,282,984	$847,406	$267,974	$2,398,364
2012	$281,025	$889,272	$239,289	$1,409,586
Totals	**$2,757,943**	**$19,513,558**	**$1,526,434**	**$23,587,040**

Note: ALL COSTS ARE ESTIMATES ONLY AND ARE LIKELY TO BE UNDERESTIMATES. *Breakdown of costs from 2004-2007 unavailable. **Does not include Grant PUD staff labor or travel expenditures.

5.8.5 Monitoring and Evaluation

Since 2007, smolt abundance and emigration from the White River has been monitored using a rotary screw trap. The trap is located downstream of the Sears Creek Bridge. In 2012, the trap was operated from March 1 through late May, and early August through late November. A similar trapping schedule is anticipated during 2013.

Preliminary analyses of PIT-tag data suggest survival was low for fish released in the White River and Lake Wenatchee from 2007 through 2012. The PRCC HSC is concerned that precocious male maturation and predation are negatively effecting survival and emigration as fish migrate through Lake Wenatchee. The final rearing and acclimation strategies described above are designed to address these concerns.

In an effort to reduce precocious maturation, a feeding experiment was conducted in 2012 on BY 2010 juvenile White River spring Chinook salmon at the Little White Salmon National Fish Hatchery. An approximate 30% reduction in precocious maturation was achieved.

Fisheries managers continue to develop an approach for managing spring Chinook in the Wenatchee basin, which will include the White River program. The concept is to manage the proportion of hatchery and natural origin fish in the broodstock and on the spawning grounds to limit impacts to the White River spring Chinook spawning aggregate. Information on M&E activities can be found in Table 20.

Table 20 Monitoring and Evaluation Activities for White River spring Chinook, partially or fully funded by Grant PUD.

Activity	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
Brood Collection	X	X	X	X	X	X	X	X	X	X	X	X	X			
Spawning					X	X	X	X	X	X	X	X	X	X	X	X
Tagging								X	X	X	X	X	X	X	X	X
Release						X		X	X	X	X	X	X	X	X	X
Smolt Abundance											X	X	X	X	X	X
Carcass Recoveries	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Redd Surveys	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

5.9 Nason Creek Spring Chinook Salmon Program

Under T&C 1.28 (2008 NMFS), Grant PUD continues their work to implement artificial propagation for spring-run Chinook salmon in Nason Creek. This includes (but is not limited to), the development of rearing and acclimation facilities to acclimation up to a total of 275,000 yearling smolts. The facility includes a 10% buffer in production capacity beyond the required production levels of 250,000.

5.9.1 Program Background

The Nason Creek spawning aggregate is within the UCR Spring-run Chinook Salmon ESU. In 1997, a spring Chinook captive-broodstock program was initiated for the Nason Creek population to reduce the risk of extinction. Improvement in adult escapement in Nason Creek has reduced the near-term risk of extinction, so the captive-broodstock program was discontinued. An adult-based supplementation program will be implemented and is intended to increase the abundance of naturally spawning spring Chinook salmon in Nason Creek.

5.9.2 Hatchery Planning Documents

The PRCC HSC-approved plan was resubmitted to NMFS on September 15, 2009. The HGMP was released by NMFS for public comment on March 18, 2010. The HGMP was submitted to FERC on June 28, 2010 and approved on February 7, 2012. The HGMP serves as an application for a Section 10 permit under the Endangered Species Act. A Section 10 permit, which provides legal coverage for the activities proposed for the supplementation program, has not yet been issued by NMFS.

5.9.3 Facilities

The proposed hatchery program will employ adult supplementation technology to rear progeny of spring Chinook spawners from Nason Creek. Immigrating adults will be collected at Tumwater Dam. Adult holding, spawning, egg incubation, and initial rearing will occur at the Eastbank Hatchery on the Columbia River near Wenatchee, WA. Overwinter acclimation will occur at a new facility on Nason Creek. Construction of this facility is anticipated to begin in spring 2013 and completed in spring 2014. The resulting progeny will be released from the acclimation facility into Nason Creek at the smolt stage (20 months).

A hatchery sharing agreement between Chelan PUD and Grant PUD will provide adult holding, egg incubation, and juvenile rearing space for Nason Creek spring Chinook salmon at Chelan PUD's Eastbank Hatchery until transfer to the Nason Creek Acclimation Facility in October each year.

5.9.4 Operation and Maintenance

Approximately 13,200 yearling spring Chinook have been released into Nason Creek as a result of captive broodstock collected in 2002 and 2003 (Table 21). Monitoring and its associated expense were limited because the captive broodstock program was discontinued due to better than expected adult escapement in Nason Creek. However, capital and operations and maintenance expenses continue as the adult-based supplementation program develops (Table 22). Except for the terminated captive-brood program, broodstock collection has not begun for the adult-based supplementation program. If permits are secured, broodstock collection is anticipated to begin in 2013.

Table 21 The numbers of Nason Creek spring Chinook salmon released by brood year, acclimation type, and location.

Brood Year	Release Location	Number of Fish
2002	Acclimation tanks in Nason Creek	8,956
2003	Acclimation tanks in Nason Creek	4,244
MEAN		6,600
TOTAL		13,200

Table 22 Spring Chinook salmon annual expenditures for the Nason Creek program as part of Grant PUD's mitigation requirement for the operation of the Priest Rapids Project.

Year	Capital	O&M**	M&E	Totals
2004-2009*	$1,023,557	$162,295	$91,388	$1,277,976
2010	$177,359	$25,179	$55,810	$143,667
2011	$393,551	$19,083	$84,879	$497,513
2012	$502,910	$13,868	$65,940	$582,718
Totals	**$2,097,377**	**$220,425**	**$298,017**	**$2,501,874**

Note: ALL COSTS ARE ESTIMATES ONLY AND ARE LIKELY TO BE UNDERESTIMATES. *Breakdown of costs from 2004-2009 unavailable. **Does not include Grant PUD staff labor or travel expenditures.

5.9.5 Monitoring and Evaluation

Grant PUD continued to co-fund juvenile emigrant trapping on Nason Creek (Table 23). Other M&E activities to evaluate the future Nason Creek supplementation program continue to occur,

but are not presented in Table 23. These activities include redd surveys, carcass surveys, and reproductive success studies that are currently funded by Chelan PUD and Bonneville Power Administration (BPA).

Table 23 Monitoring and Evaluation Activities for Nason Creek spring Chinook, partially or fully funded by Grant PUD.

Activity	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
Brood Collection	X	X													
Spawning					X	X									
Tagging							X	X							
Release							X	X							
Smolt Abundance										X	X	X	X	X	X
Carcass Recoveries	X	X													
Redd Surveys	X	X													

5.10 Methow River Spring-run Salmon Chinook Program

Methow spring Chinook are included in the UCR spring Chinook salmon ESU. In August 2004, Douglas PUD and Grant PUD entered into a 10-year Interlocal Agreement enabling Grant PUD to utilize excess rearing capacity at the Methow Fish Hatchery owned by Douglas PUD and operated by WDFW. Under this agreement, Grant PUD has the ability to request use of excess rearing capacity for five groups of fish. In September 2004, the Chelan/Douglas PUD HCP and the PRCC HSC agreed upon the framework regarding current and future plans for Douglas PUD to raise mitigation and study fish for Grant PUD.

In 2012, Grant PUD requested excess rearing space for spring Chinook salmon at Methow Hatchery and agreed upon appropriate levels of cost-sharing. The PRCC HSC approved Grant PUD's annual request as part of Grant PUD mitigation for a request up to 201,000 BY 2012 spring Chinook at Douglas PUD's Methow Hatchery. This action was subsequently approved by the PRCC.

5.10.1 Hatchery Planning Documents

The Methow spring Chinook HGMP is under review by NMFS. Quantitative objectives for the program were approved by the PRCC HSC in January 2009. Grant PUD submitted an APP for its Methow spring Chinook program to the PRCC HSC on April 17, 2009 and to NMFS on June 30, 2009. The APP was approved by the PRCC HSC on September 16, 2010, submitted to FERC on September 30, 2010 and approved by FERC on Dec. 14, 2011.

5.10.2 Facilities

The Methow Hatchery has a long history of operation and the current facilities are meeting Grant PUD's program needs. There is no current discussion regarding the potential for extensive upgrades at the hatchery but there has been discussion about a weir in the upper Methow basin that would primarily benefit steelhead. Grant and Douglas PUDs are developing a new long-term

agreement to reserve spawning and rearing capacity at the Methow Hatchery for Grant PUD's Methow spring Chinook mitigation.

5.10.3 Operations and Maintenance

Broodstock collection primarily occurs at Wells Dam around the first of May and lasts up to two months. Monthly health examinations including length and weight samples are conducted and growth is monitored regularly.

The number of yearling smolts released in the spring of 2012 from the 2010 brood year was 186,029 fish and represents the eighth consecutive year of fish released on behalf of Grant PUD, with almost $5 million dollars being committed to the program to date (Table 24). BYs 2011 and 2012 are currently being rearing at Methow Hatchery.

Table 24 Spring Chinook salmon smolts released and annual expenditures for the Methow hatchery into the Methow basin as part of Grant PUD's mitigation requirement.

Year	Numbers of Fish Released	Annual Expenditures*			
		Capital	O&M**	M&E	Totals
2005	0	$8,244	$375,512	$161,118	$544,874
2006	0	$14,938	$331,364	$154,105	$500,406
2007	152,451	$15,352	$334,215	$141,010	$490,576
2008	150,509	$15,540	$444,331	$139,890	$599,761
2009	109,488	$15,516	$320,383	$177,036	$512,935
2010	187,865	$15,863	$783,629	$183,957	$983,449
2011	210,336	$17,896	$276,843	$123,220	$417,960
2012	186,029	$19,197	$764,949	$148,042	$932,188
Mean	124,585	$15,318	$453,903	$153,547	$622,769
Totals	996,678	$122,546	$3,631,226	$1,228,378	$4,982,149

Note: *ALL COSTS ARE ESTIMATES ONLY AND ARE LIKELY TO BE UNDERESTIMATES **Does not include Grant PUD staff labor or travel expenditures. ***Includes studies and hatchery evaluations.

5.10.4 Monitoring and Evaluation

Grant PUD began co-funding the Methow Hatchery spring Chinook program beginning with BY 2005. As part of this agreement, Grant PUD also co-funds the M&E program, as well as other hatchery evaluations, and original and contemporary capital expenses. A list of M&E activities can be found in Table 25.

Table 25 Monitoring and Evaluation Activities for the Methow spring Chinook salmon hatchery program that is partially or fully funded by Grant PUD.

Activity	2005	2006	2007	2008	2009	2010	2011	2012
Brood Collection	X	X	X	X	X	X	X	X
Spawning	X	X	X	X	X	X	X	X
Tagging			X	X	X	X	X	X
Release			X	X	X	X	X	X
Smolt Abundance		X	X	X	X	X	X	X
Carcass Recoveries		X	X	X	X	X	X	X

Redd Surveys		X	X	X	X	X	X	X

5.11 Fall Chinook Protection Program

As part of Grant PUD's fall Chinook Protection Program required under the SSSA, Grant PUD was required to develop and implement a comprehensive Fall Chinook Protection Program for the fall Chinook populations in the mid-Columbia region affected by the Project. The Program was comprised of the following components: Program Performance Standards; a Passage Program for the Project; the HRFCPPA; 2% compensation provided through the habitat program; and a Fall Chinook APP as described (in the SSSA, including facility improvements to the Priest Rapids Hatchery).

5.11.1 Program Background

Because the SSSA's Fall Chinook Protection Program is designed to achieve no net impact from operations of the Project on fall Chinook salmon populations in the program area, including in the Hanford Reach, no annual contributions to the NNI Fund based upon deficits in fall Chinook salmon survivals are warranted. The Parties agree that NNI is being achieved for fall Chinook salmon based upon the current mix of measures.

The NNI component of the hatchery mitigation for fall Chinook salmon is used to mitigate for unavoidable losses associated with the Project. This mitigation is intended to result in NNI. The numbers of fish were recalculated in 2012 and this recalculation applies to fish released in 2014. The NNI component of the fall Chinook salmon to be released into the Columbia River was recalculated from 1 million to 325,543.

Grant PUD continues to consult with the PRCC to review the performance of the Fall Chinook Protection Program and determine its continued ability to achieve its performance standards.

5.11.2 Hatchery Planning Documents

The Hanford Reach Fall Chinook salmon HGMP and M&E plan was submitted for review to the PRCC HSC on January 1, 2009 and April 17, 2009. The PRCC HSC comments were incorporated into the plan and then submitted to NMFS on June 30, 2009. The PRCC HSC provided further comment on the HGMP and approved the revised plan which was subsequently resubmitted to NMFS in March 2010. The plan was submitted to FERC on August 27, 2010 and approved on February 7, 2012. An approved plan by NMFS will result in a new Section 10 Permit that will only cover production at Priest Rapids Hatchery and replace the Section 10 Permit that was issued during 2003 for all non-listed salmonid programs in the upper Columbia River. Grant PUD is currently waiting for a response from NMFS.

5.11.3 Facilities

Grant PUD, in consultation with the PRCC, developed the Priest Rapids Hatchery facilities improvements as outlined in Section 9.6 of the SSSA. Overall design of the renovated facility to produce Grant PUD's mitigation of 5.3 million fall Chinook salmon sub-yearling smolts (plus an additional design capacity for 100,000 smolts) and 1 million fall Chinook salmon fry was completed and approved by the PRCC HSC. Construction was begun in spring 2012 and significant progress has been made on almost all elements of the modifications. The facility is anticipated to be operational beginning with broodstock collection in September 2013 and completed by 2015. The facility, which produces both Grant PUD's current mitigation

requirements and 1.7 million smolts and 3.5 million eyed-eggs for the CORPS, will remain fully operational during the phased construction.

5.11.4 Operations and Maintenance

Historical and current information regarding Priest Rapids Hatchery egg take, release and associated expenditures are reflected in Table 26.

Table 26 Priest Rapids Hatchery Egg Take, Release and Costs.

Brood Year	Egg Take	Eggs Shipped	Grant Fish Release	Other Fish Release	Capital	O&M*	M&E**	TOTAL
1985	10,632,000	1,250,000				NA		
1986	22,126,100	13,559,800				NA		
1987	24,123,000	14,576,500				NA		
1988	16,682,000	9,905,000	5,404,550	0		NA		
1989	13,856,500	5,820,000	6,431,100	0		NA		
1990	9,605,000	3,434,500	5,239,700	93,800		NA		
1991	6,338,000	705,500	5,158,700	1,841,400		NA		
1992	11,156,000	4,820,500	5,451,000	1,683,159		NA		
1993	14,785,000	7,133,000	5,008,476	1,697,360		NA		
1994	16,074,600	7,509,100	5,002,000	1,700,000		NA		
1995	17,345,900	8,826,000	5,000,000	1,700,000		NA		
1996	14,533,500	6,869,500	4,944,700	1,699,400		NA		
1997	17,007,000	8,330,350	5,029,070	1,708,530		NA		
1998	13,981,300	6,238,500	4,841,800	1,663,000		NA		
1999	16,088,100	8,305,000	5,156,000	1,700,000		$461,545		$461,545
2000	15,359,500	6,060,600	5,119,100	1,743,450		$598,792		$598,792
2001	13,389,500	4,889,500	5,041,060	1,737,975		$581,134		$581,134
2002	13,732,550	5,113,550	5,071,640	1,705,965		$664,368		$664,368
2003	13,820,500	5,238,000	5,114,560	1,700,000		$501,156		$501,156
2004	12,753,500	4,384,700	4,899,835	1,700,000		$714,149		$714,149
2005	13,500,100	5,230,150	5,180,752	1,695,538		$732,716		$732,716
2006	14,412,102	5,281,950	5,024,634	1,718,467		$746,409		$746,409
2007	5,428,648	0	4,548,306	0		$821,250		$821,250
2008	12,643,600	3,744,441	5,067,926	1,720,388	$230,336	$737,252		$967,588
2009	13,074,798	3,785,600	5,064,043	1,712,608	$227,367	$543,893		$771,260
2010	12,899,721	4,248,700	5,081,184	1,717,206	$2,044,281	$573,513	$150,846	$2,768,640
2011	12,693,000	4,288,250	5,271,247	1,785,701	$9,613,911	$716,041	$206,004	$10,535,997
MEAN	14,001,538	5,909,211	5,131,308	1,434,331	$3,028,974	$645,555	$178,425	$1,604,997
TOTALS	378,041,519	159,548,691	123,151,383	34,423,947	$12,115,895	$8,392,218	$356,850	$20,864,963

Note: ALL COSTS ARE ESTIMATES ONLY AND ARE LIKELY TO BE UNDERESTIMATES
*Does not include costs prior to 1999, Grant PUD staff labor or travel expenditures, or facility electrical costs. **Prior to 2011, all M&E costs are included in the O&M column.

5.11.5 Monitoring and Evaluation

Data collection in fulfillment of the Priest Rapids Hatchery M&E Program was initiated in September 2010. Data was collected primarily at the Priest Rapids Hatchery volunteer trap beginning in September, at the hatchery during spawning, and in the Columbia River during and after spawning. Otolith marks were available to help determine hatchery and natural origin of adults. Annual reports that present the current year as well as previous years data have been completed (Hoffarth and Pearsons 2012 a, b). Data collection associated with the hatchery M&E plan will continue in 2013.

A study to evaluate if the OLAFT at Priest Rapids Dam could be used to increase the abundance of natural-origin fall Chinook salmon used for hatchery broodstock was initiated in 2010. Activities of this study included: 1) collection of a sample of fish that would be used for hatchery broodstock and to determine hatchery or natural origin, and 2) PIT tagging a sample of all ages of fish to determine distribution after release upstream of Priest Rapids Dam. An annual report that presents the data collected is being drafted.

Additional pilot studies were conducted to evaluate alternative means to achieve desired broodstock characteristics.

5.11.6 Hanford Reach Fall Chinook Protection Program 2012 and 2013

As in previous years, implementation of the HRFCPPA was very successful during the 2011-2012 season. Protections for fall Chinook salmon from the 2011 BY began on October 15 and continued through June 17, 2012. Based on HRFCPPA criteria and redd counts in the Vernita Bar index area, spawning began October 19 and continued through November 20, 2011. There was a total of 243 redds counted in the index area during the redd survey on November 20 and the distribution of those redds resulted in a Critical Elevation of 65 kcfs. Minimum discharge protections were maintained through the end of emergence on May 15, 2012. Rearing Period protections began at the start of emergence and continued through June 17, 2012. All constraints were met during the 2011-12 season. While 97% of constraints were met or had minor exceedances during the past five seasons, this is the first season without any exceedances since implementation of protections under the HRFCPPA.

Fall Chinook salmon stranding and entrapment surveys are to be completed during each Rearing Period in 2011, 2012, and 2013 as part of the follow-up monitoring plan required by the HRFCPPA (see Article 401(a)(5)). A report of results from 2012 (Hoffarth et al. 2012) was filed with FERC on January 15, 2012.

Protections for fall Chinook salmon from the 2012 BY began on October 15, 2012 and will continue through May or June 2013. Based on redd counts in the Vernita Bar index area, the Initiation of Spawning was determined to be on October 24 for the zones below 50 kcfs elevation and October 31 for the zone above 50 kcfs. The End of Spawning was determined to be November 18, 2012. There was a total of 111 redds counted in the index area during the final redd count and the distribution of those redds resulted in a Critical Elevation of 65 kcfs. Minimum discharge protections were maintained through the writing of this report. Protections for BY 2012 will continue into 2013 and will be reported in the 2013-2014 FERC report.

5.12 Summer Chinook

The objective of the Summer Chinook Protection Program is to achieve NNI from the operations of the Project on summer Chinook salmon populations that pass through the Project. Grant PUD's summer Chinook mitigation obligation is for artificial propagation of 834,000 juvenile salmonids on an annual basis. These fish are divided equally for release into each of the Wenatchee, Methow, and Okanogan rivers. Details about each of these individual programs can be found below.

5.12.1 Wenatchee Summer Chinook Program Background

The numbers for Grant PUD's summer Chinook programs were recalculated in 2012 and this recalculation applies to fish released in 2014. The number of summer Chinook salmon to be released into the Wenatchee River was recalculated to 181,816.

5.12.1.1 Hatchery Planning Documents

Versions of the HGMP were distributed to the PRCC HSC for review and comment on October 2007, June 2008, and April 14, 2009. The revised HGMP was voted on and approved by the PRCC HSC on September 17, 2009, submitted to NMFS on September 30, 2009 and submitted to FERC on January 28, 2011. The HGMP was approved by FERC on November 15, 2011. Grant PUD is waiting for a response from NMFS relative to a Section 10 permit.

5.12.1.2 Facilities

The PRCC HSC approved the modification of Eastbank Hatchery to accommodate Grant PUD's summer Chinook mitigation for ultimate release into the Wenatchee and Methow river basins. The modifications include the capacity to hold adults, incubate eggs, and rear fish prior to transfer to an acclimation site. Modifications were completed in 2012.

Fish will be transferred from Eastbank Hatchery to Dryden Acclimation Pond adjacent to the Wenatchee River. Grant PUD developed a basis of design (BOD) for modification of the Dryden Acclimation Pond so that it could be used for overwinter acclimation. The BOD was approved by the HSC on February 27, 2012 and was sent to Chelan PUD for consideration. Chelan PUD does not support modifications of their facility at this time because of concerns, one of which is about meeting phosphorous management associated with the Wenatchee River Total Maximum Daily Load requirement administered by WDOE. The WDOE has calculated the maximum allowable phosphorous discharge that would be permitted from the Dryden Pond Facility. Grant PUD has been exploring different cost-effective options, such as development of an ultra-low phosphorous feed and the reduction of fish size, to accommodate the desired number of summer Chinook salmon at Dryden Pond. Grant PUD will acclimate fish during the spring until it is decided whether the Dryden Acclimation Facility will be modified.

Costs associated with development of Wenatchee summer Chinook salmon facilities are included in Table 27.

5.12.1.3 Operations and Maintenance

Under the long-term hatchery sharing agreement between Chelan PUD and Grant PUD, broodstock for the program was collected in 2012. Adults collected were transferred to Eastbank Hatchery where they were held and spawned. Incubation and early rearing also occurred at Eastbank where the fish will be reared until transfer to the Dryden Acclimation Facility in spring 2014 and released into the Wenatchee River.

Table 27 Summer Chinook salmon annual expenditures for the Wenatchee program as part of Grant PUD's mitigation requirement for the operation of the Priest Rapids Project.

Year	Annual Expenditures*			
	Capital	O&M	M&E	Totals
1997-2007	$130,000	NA	NA	$130,000
2008	$32,442	NA	NA	$32,442

2009	$159,422	NA	NA	$159,422
2010	$344,081	NA	NA	$344,081
2011	$58,141	NA	NA	$58,141
2012	$300,269	$148,978	NA	$449,247
Totals	**$1,024,355**	**$148,978**	**NA**	**$1,173,333**

*ALL COSTS ARE ESTIMATES ONLY AND ARE LIKELY TO BE UNDERESTIMATES. These expenditures do not include Grant PUD staff labor or travel expenditures.

5.12.1.4 Monitoring and Evaluation

Grant PUD began contributing to the M&E of this program in 2012. Previously, Chelan PUD had been conducting long-term monitoring of their summer Chinook salmon mitigation program. Progress on an ecological risk assessment and identification of reference streams occurred during 2012 as part of a work effort by the Hatchery Evaluation Technical Team.

5.12.2 Methow Summer Chinook Program Background

Hatchery mitigation for summer Chinook salmon is used to mitigate for unavoidable losses associated with the Project. This mitigation is intended to result in NNI. The numbers of fish were recalculated in 2012 and this recalculation applies to fish released in 2014. The summer Chinook salmon to be released into the Methow River was recalculated to 200,000.

5.12.2.1 Hatchery Planning Documents

Versions of the HGMP were distributed to the PRCC HSC for review and comment on October 2007, June 2008, and April 14, 2009. The revised HGMP was voted on and approved by the PRCC HSC on September 17, 2009, submitted to NMFS on September 30, 2009, and submitted to FERC on January 28, 2011. The HGMP was approved by FERC on November 15, 2011. Grant PUD is waiting for a response from NMFS relative to a Section 10 permit.

5.12.2.2 Facilities

The PRCC HSC approved the modification of Eastbank Hatchery to accommodate Grant PUD's summer Chinook mitigation for ultimate release into the Wenatchee and Methow river basins. The modifications include the capacity to hold adults, incubate eggs, and rear fish prior to transfer to an acclimation site. Modifications were completed in 2012.

Fish will be transferred from Eastbank Hatchery to the Carlton Acclimation Pond adjacent to the Methow River. The HSC approved Grant PUD's final design of the Carlton Acclimation Facility and construction is expected to be completed in 2013. The facility will be capable of providing overwinter acclimation. Grant PUD is working on a lease agreement with Chelan PUD to accommodate Grant PUD's new infrastructure on Chelan PUD's property.

Costs associated with development of Wenatchee summer Chinook salmon facilities are included in Table 28

5.12.2.3 Operations and Maintenance

Under the long-term hatchery sharing agreement between Chelan PUD and Grant PUD, broodstock for the program was collected in 2012. Adults collected were transferred to Eastbank Hatchery where they were held and spawned. Incubation and early rearing also occurred at Eastbank where the fish will be reared until transfer to the Dryden Acclimation Facility in fall 2013 and released into the Methow River in spring 2014.

Table 28 Summer Chinook salmon annual expenditures for the Methow program as part of Grant PUD's mitigation requirement for the operation of the Priest Rapids Project.

Year	Annual Expenditures*			
	Capital	**O&M**	**M&E**	**Totals**
1997-2007	$130,000	NA	NA	$130,000
2008	$32,442	NA	NA	$32,442
2009	$159,422	NA	NA	$159,422
2010	$356,065	NA	NA	$356,065
2011	$80,400	NA	NA	$80,400
2012	$660,498	$125,038	NA	$785,536
Totals	**$1,418,827**	**$125,038**	**NA**	**$1,543,865**

*ALL COSTS ARE ESTIMATES ONLY AND ARE LIKELY TO BE UNDERESTIMATES. These expenditures do not include Grant PUD staff labor or travel expenditures.

5.12.2.4 Monitoring and Evaluation

Grant PUD began contributing to the M&E of this program in 2012. Previously, Chelan PUD had been conducting long-term monitoring of their summer Chinook salmon mitigation program. Progress on an ecological risk assessment and identification of reference streams occurred during 2012 as part of a work effort by the Hatchery Evaluation Technical Team.

5.12.3 Okanogan Summer Chinook Program Background

Grant PUD began discussions with the Colville Confederated Tribes in 2006 regarding a potential cost-share in the proposed Chief Joseph Hatchery. In August of the following year, a Memorandum of Understanding was signed with BPA, Grant PUD, Chelan PUD, and Colville Confederated Tribes to fund the Chief Joseph Hatchery through a cost-share agreement. In 2010, a tri-party agreement with BPA, Colville Confederated Tribes, and Grant PUD was signed allocating funds for the construction and operation of the Chief Joseph Hatchery. Grant PUD has committed to funding 18.3% of the total construction costs, estimated at $54 million.

5.12.3.1 Hatchery Planning Documents

The HGMP is currently being developed for the Chief Joseph Hatchery. The quantitative objectives were approved by the PRCC Hatchery Subcommittee in January 2009. Grant PUD submitted an APP for the Methow summer Chinook program to the PRCC Hatchery Subcommittee on April 17, 2009 and to NMFS on September 30, 2009. The APP was approved by the PRCC HSC on September 23, 2010. The HGMP and APP were submitted to FERC on September 30, 2010 and approved by FERC on Oct. 13, 2011.

5.12.3.2 Facilities

In November 2010, Grant PUD issued payment of $6,026,506 for its share of the construction costs associated with production of Okanogan summer Chinook. Additional payments in 2011 and 2012 resulted in almost $7 million for capital costs paid by Grant PUD for the design and construction of the Chief Joseph Hatchery (Table 29). Grant PUD is committed to funding 18.3% of the operation, maintenance, repair, and replacement of the facility, which is expected to produce 2.9 million spring and summer Chinook. Grant PUD's production allocation is 305,000 summer/fall Chinook yearling smolts annually. The construction of the Chief Joseph Hatchery funded under the Northwest Power and Conservation Council's Fish and Wildlife Program (BPA funding) and Grant PUD cost-share began in early June 2010. The construction was divided into two separate phases (Phase-1 and Phase-II). Phase-I construction targeted the construction of two acclimation ponds on the Okanogan River (Omak and Riverside acclimation ponds), construction of four residences and three RV pads near the main hatchery site located near Bridgeport, WA, and construction of the groundwater wells for the hatchery. Phase-II targeted the main hatchery construction (raceways, rearing ponds, reservoir water supply, adult fishway and holding facility, building structures, water conveyance piping, electrical, mechanical, communications, backup generators, site grading etc.) and an upgrade of the Foster Creek Substation to accommodate the power demand for the main hatchery facility. Based on the new construction schedule, the spring and summer Chinook fish production at the Chief Joseph Salmon Hatchery is anticipated to begin with 2013 BY adult collection from July-Sept. 2013 for summer Chinook.

Table 29 Summer Chinook salmon annual expenditures for the Okanogan program as part of Grant PUD's mitigation requirement for the operation of the Priest Rapids Project.

Year	Annual Expenditures*			
	Capital	**O&M**	**M&E**	**Totals**
2010	$6,026,506	NA	NA	$6,026,506
2011	$109,572	NA	NA	$109,572
2012	$802,030	NA	NA	$802,030
Totals	**$6,938,108**	**NA**	**NA**	**$6,938,108**

*ALL COSTS ARE ESTIMATES ONLY AND ARE LIKELY TO BE UNDERESTIMATES. These expenditures do not include Grant PUD staff labor or travel expenditures.

5.12.3.3 Operations and Maintenance

No fish have been produced to date for this program. Pending permits and available facilities, broodstock collection could occur as early as 2013.

Acclimation site locations are currently under evaluation for the summer Chinook APP. Grant PUD's mitigation for this program is 305,000 summer/fall Chinook released into the Okanogan or Columbia rivers.

5.12.3.4 Monitoring and Evaluation

Chief Joseph Hatchery is still under construction and is tentatively scheduled for operation in 2013. As with design, construction, and O&M costs, Grant PUD is committed to funding 18.3% of the M&E costs for the spring Chinook program resulting from the Chief Joseph Hatchery.

5.13 Sockeye Protection Program

Grant PUD, in consultation with the PRCC, has developed and implemented a comprehensive Sockeye Protection Program for the sockeye populations in the mid-Columbia region affected by the Project. This includes a program to achieve NNI of the operations of the Project on sockeye populations that pass through the Project area and is comprised of the following components: Program Performance Standards; a Passage Program for the Project; 7% compensation provided through an Artificial Propagation Program and 2% compensation provided through the habitat program described (in the SSSA).

5.13.1 Program Background

There are two sockeye populations within the upper Columbia River, the Wenatchee and Okanogan river stocks, neither of which are listed under the Endangered Species Act. These populations are healthy enough to allow tribal fisheries in Washington and Canada, with periodic recreational fisheries in Lake Wenatchee, the mainstem Columbia River, and selected tributaries and lakes.

Recognizing that the Okanogan River, which includes nursery/rearing lakes in British Columbia, is the best option for long-term sockeye mitigation opportunity the PRCC HSC and PRCC approved in 2008 Grant PUD's plan to fund an experimental program to reintroduce sockeye into Skaha Lake in British Columbia. On Oct. 21, 2010, the PRCC HSC approved to extend this sockeye program for an additional 5 years (SOA-2010-08) and on Nov. 1, 2011, Grant PUD entered into a 49-year agreement with the Okanagan Nation Alliance (ONA) to co-fund a new sockeye hatchery, hatchery operations and maintenance costs, and a monitoring and evaluation program.

5.13.2 Hatchery Planning Documents

The HGMP was developed for the sockeye reintroduction program and the quantitative objectives were approved by the PRCC HSC in January 2009. Grant PUD submitted an HGMP to the PRCC HSC on April 17, 2009 and to NMFS on September 30, 2009. The HGMP was submitted to FERC January 28, 2011 and approved by FERC on Nov. 15, 2011.

5.13.3 Facilities

The ONA has hired the professional services of multiple environmental consultants to assist with the design of the new hatchery on tribal land in Penticton, British Columbia, Canada. The 66% facility design drawings were reviewed by the design team in 2012 and are being finalized. The

ONA will obtain all the permits necessary for the construction of this facility; permits are approved primarily through the Indian and Northern Affairs Canada process.

The sockeye program currently uses the Shuswap Hatchery, owned by the Department of Fisheries and Oceans Canada and operated by Wolski Environmental, to incubate sockeye and rear sockeye salmon to the release stage. Because more hatchery capacity is needed as the program develops, several acres of land have been acquired in Penticton, British Columbia, Canada. The new hatchery will have access to multiple wells producing 2,000 gallons per minute of water, and surface water from Shingle Creek. Hatchery production at the Shuswap Hatchery will be phased out as the new hatchery begins production. The first capital expenditures for the new facility, mostly design work, occurred in 2012 (Table 30 and construction of the new facilities is scheduled for 2013.

Table 30 Sockeye fry released into Skaha and/or Osoyoos Lakes funded by Grant PUD as part of the ONA 12-year Reintroduction program.

Year	Numbers of Fish Released	Annual Expenditures*		
		Capital	O&M/M&E	Totals
2005	1,205,500		$377,203	$377,203
2006	913,440		$504,115	$504,115
2007	976,140		$263,685	$263,685
2008	584,430		$340,137	$340,137
2009	1,065,438		$738,056	$738,056
2010	581,262		$391,184	$391,184
2011	594,000		$553,915	$553,915
2012	552,948	**$453,737**	$604,921	$1,058,658
Mean	809,145	**$453,737**	$471,652	$528,369
Totals	6,473,158	**$453,737**	$3,773,216	$4,226,953

*ALL COSTS ARE ESTIMATES ONLY AND ARE LIKELY TO BE UNDERESTIMATES.
These expenditures do not include Grant PUD staff labor or travel expenditures.

5.13.4 Operations and Maintenance

Broodstock for the program is collected by seining adult sockeye in the Okanagan River, near the town of Oliver, B.C. Gametes are transferred to the Shuswap Hatchery before fertilization. In general, sockeye fry are released into Skaha Lake, but in 2009 (approximately half the fry) and 2011 (all fry) were released into Osoyoos Lake. The objective of the paired release strategy is to evaluate fry to pre-smolt survival among cohorts within both rearing lakes. The summary of fry released into the Okanogan basin since Grant PUD involvement is found in Table 30 and total expenditures for the O&M and M&E program are more than $3.7 million.

5.13.5 Monitoring and Evaluation

To ensure that sockeye reintroduction does not negatively affect kokanee populations, fishery agencies (including ONA) developed a comprehensive monitoring and evaluation plan, of which Grant PUD assists in funding. However because sockeye have not shown any detrimental effects on Skaha kokanee, the Canadian and US committees have agreed to extend the program for an additional five years beyond the original 2017 termination date.

In addition to monitoring the kokanee for the recreational fishery, a suite of other activities are conducted on an annual basis (Table 31) all of which have been approved by committee and contained in Grant PUD's M&E plan.

Table 31 Monitoring and evaluation activities for Okanogan River sockeye salmon; partially funded by Grant PUD.

Activity	2004	2005	2006	2007	2008	2009	2010	2011	2012
brood collection	X	X	X	X	X	X	X	X	X
spawning	X	X	X	X	X	X	X	X	X
tagging	X	X	X	X	X	X	X	X	X
release	X	X	X	X	X	X	X	X	X
smolt abundance	X	X	X	X	X	X	X	X	X
carcass recoveries	X	X	X	X	X	X	X	X	X
redd surveys	X	X	X	X	X	X	X	X	X

5.14 Coho Protection Program

A Coho salmon reintroduction program intended to develop a locally adapted and naturally spawning population from lower Columbia River stock has been implemented by the Yakama Nation. Grant PUD entered into a 10-year funding agreement with the Yakama Nation to assist in developing their Mid-Columbia Coho Restoration Program. This $7.4 million agreement is for the period 2008-2018.

As a result of the Coho program, Coho salmon redds and carcasses have been observed in the Wenatchee and Methow rivers. However, the extent to which natural production is occurring has not yet been determined. As more information becomes available and the future of this population has been reviewed and discussed, a decision can be made regarding the long-term management of UCR Coho salmon. Grant PUD will work with the PRCC HSC to adaptively manage the Coho program to achieve program goals and objectives. Until that time, survival studies for Coho through the Project are not proposed.

5.14.1 Hatchery Planning Documents

The HGMP and APP for the UCR Coho reintroduction program were submitted to FERC in February 2011 and approved by FERC on October 13, 2011.

5.14.2 Facilities

Funding provided by Grant PUD and other partners involved with the Mid-Columbia Coho Restoration Program, is being used by the Yakama Nation to develop and operate facilities to support the program.

5.14.3 Operations and Maintenance

Hatchery supplementation of Coho salmon in the Upper Columbia River occurs in two river basins; the Wenatchee and Methow. Adult broodstock for the Wenatchee Basin is collected at Dryden Dam, Tumwater Dam, and the Leavenworth National Fish Hatchery. Adults are transported to the Entiat National Fish Hatchery where they are spawned and their eggs are incubated and hatched prior to release into acclimation ponds the following spring.

Coho salmon broodstock for the Methow Basin is collected primarily at Wells Dam and transported to the Winthrop National Fish Hatchery. However, returns are also collected and spawned at the hatchery. Juvenile Coho salmon are held on station until released into acclimation ponds the following spring. The Coho reintroduction program and data reporting run on a cycle

of October 1 through September 30. Therefore, Coho program summary information for the current year of this report is not available at the time of writing. Previous year's data are reported for the Coho program (October 1, 20011 – September 30, 2012).

5.14.3.1 Smolt production

Grant PUD first contracted with the Yakama Nation to initiate the Coho reintroduction program in October 2007, and extended the contract for 10 years the following spring. Since then, Grant PUD has provided funding for about 25% of the program (Table 32 in 2008 - 2012.

Table 32 Total number of Coho smolts released as part of the Yakama Nation Coho reintroduction program.

Year	Numbers of Fish Released	Annual Expenditures Totals***
2007*	1,561,768	
2008	1,509,093	$43,504
2009	1,424,578	$727,094
2010	1,443,480	$624,459
2011	1,297,974	$665,274
2012	1,529,678	$486,637
Mean	1,461,095	$515,083
TOTAL	**8,766,571**	**$2,060,331**

* Initial contract period. **Grant PUD funds the activities associated with approximately 373,296 fish annually.
***ALL COSTS ARE ESTIMATES ONLY AND ARE LIKELY TO BE UNDERESTIMATES. These expenditures do not include Grant PUD staff labor or travel expenditures.

5.14.3.2 2012 Broodstock Collection

The Wenatchee River Basin broodstock was comprised of 908 adult Coho (426 female, 482 male), which produced 522,443eggs. Broodstock were collected at Dryden Dam, Tumwater Dam, and Leavenworth National Fish Hatchery.

The Methow River Basin broodstock was comprised of 779 adult Coho (327 females, 452 males), which produced 772,706 eggs. Broodstock were collected at Wells Dam, Winthrop National Fish Hatchery, and Methow Hatchery.

5.14.4 Monitoring and Evaluation

As part of the reintroduction program, the Yakama Nation has established an extensive monitoring and evaluation program in both basins where hatchery supplementation is occurring. Regular spawning-ground surveys are conducted in main stems and tributaries, while redds and live fish are enumerated and carcasses are collected for tag recovery and acquiring biological data (Table 33). A smolt trap is operated in the Wenatchee River during the juvenile Coho salmon out-migration to provide smolt-abundance estimates. Other M&E activities partially funded by Grant PUD are listed in Table 34.

Table 33 Monitoring and Evaluation Plan on Coho salmon, 2012.

River	Redds	Carcasses Recovered
Wenatchee*	571	168
Methow*	197	79

Note:* Includes tributaries.

Table 34 Monitoring and Evaluation Activities for Wenatchee and Methow Coho salmon that are partially funded by Grant PUD.

Activity	2005	2006	2007	2008	2009	2010	2011	2012
brood collection	X	X	X	X	X	X	X	X
spawning	X	X	X	X	X	X	X	X
tagging		X	X	X	X	X	X	X
release		X	X	X	X	X	X	X
smolt abundance		X	X	X	X	X	X	X
carcass recoveries		X	X	X	X	X	X	X
redd surveys		X	X	X	X	X	X	X

5.15 Okanogan Basin Spring Chinook

Grant PUD began discussions with the Colville Confederated Tribes in 2006 regarding the proposed Chief Joseph Hatchery. In August of the following year, a Memorandum of Understanding was signed with BPA, Chelan PUD, Grant PUD, and Colville Confederated Tribes to fund the Chief Joseph Hatchery through a cost-share agreement.

In 2010, a tri-party agreement with BPA, Colville Confederated Tribes, and Grant PUD was signed allocating funds for the construction and operation of the Chief Joseph Hatchery. Grant PUD has committed to funding 18.3% of the construction costs, estimated at $54.1 million. In November 2010, Grant PUD issued payment of $2,173,494 for its share of the construction costs associated with production of Okanogan spring Chinook (Table 35). Additional capital payments by Grant PUD for design and construction of the Chief Joseph Hatchery were made in 2011 and 2012. Grant PUD is committed to funding 18.3% of the operation, maintenance, repair, and replacement of the facility, which is expected to produce 2.9 million spring and summer Chinook. Grant PUD's production allocation is 110,000 spring Chinook smolts annually.

Table 35 Spring Chinook salmon annual expenditures for the Okanogan program as part of Grant PUD's mitigation requirement.

Year	Annual Expenditures			
	Capital *	O&M	M&E	Totals
2010	$2,173,494	NA	NA	$2,173,494
2011	$39,518	NA	NA	$39,518
2012	$451,142	NA	NA	$451,142
Totals	**$2,664,154**			**$2,664,154**

*These expenditures do not include Grant PUD staff labor or travel expenditures.

5.15.1 Hatchery Planning Documents

The HGMP is currently being developed for the Chief Joseph Hatchery. The quantitative objectives were approved by the PRCC HSC in January 2009. Grant PUD submitted an APP for the Methow spring Chinook program to the PRCC HSC on April 17, 2009 and to NMFS on September 30, 2009. The APP was approved by the PRCC HSC on September 23, 2010. The HGMP and APP were submitted to FERC on September 30, 2010 and the APP was approved on Dec. 14, 2011.

5.15.2 Facility Development

The construction of the Chief Joseph Salmon Hatchery funded under the Northwest Power and Conservation Council's Fish and Wildlife Program (BPA funding) and Grant PUD cost-share began in early June 2010. The construction was divided into two separate construction phases (Phase-1 and Phase-II). Phase-I construction targeted the construction of two acclimation ponds on the Okanogan River (Omak and Riverside acclimation ponds), construction of four residences and three RV pads near the main hatchery site located near Bridgeport Washington, and construction of the ground water wells for the hatchery. Phase-II targeted the main hatchery construction (raceways, rearing ponds, reservoir water supply, adult fishway and holding facility, building structures, water conveyance piping, electrical, mechanical, communications, backup generators, site grading etc.) and an upgrade of the Foster Creek Substation to accommodate the power demand for the main hatchery facility.

The original completion date for the hatchery facility (Phase-1 and Phase-2 construction elements) was April 30, 2012. Due to unforeseen site conditions, the final construction date has been pushed back to the spring of 2013 with the first several brood takes expected to be taken from the Leavenworth National Fish Hatchery.

A pilot weir on the Okanogan River downstream of Malott, WA was installed and operated during the summer of 2012. The purpose was to test for trapping and passage effectiveness as well as to evaluate the potential for using a similar structure in adult management (both hatchery and natural-origin fish). Overall the results are encouraging and an additional year of weir operation is scheduled for 2013.

5.15.3 Operations and Maintenance

No fish have been produced yet, however pending permits and completion of the construction project could provide the first brood take in 2013. Site locations are currently under evaluation for the spring Chinook artificial propagation program.

5.15.4 Monitoring and Evaluation

Chief Joseph Hatchery is still under construction and tentatively scheduled for operation in 2013. As with design, construction, and O&M costs, Grant PUD is committed to funding 18.3% of the M&E costs for the spring Chinook program resulting from the Chief Joseph Hatchery.

6.0 Priest Rapids Coordinating Committee Habitat Subcommittee

Since January 2005, the PRCC Habitat Subcommittee has met monthly to undertake and oversee the planning and implementation of the necessary program elements to support habitat protection and restoration programs. The committee operates on consensus regarding decisions directly linked to project management. Unresolved disputes may be elevated to the PRCC, which will use the 2006 SSSA process for dispute resolution if necessary. Decisions regarding management of

anadromous fishery resources in the UCR basin not directly linked to the Project are the purview of the agencies and Tribes. When carrying out activities that may affect local tributary habitat, the PRCC Habitat Subcommittee should seek advice from local entities, including the Upper Columbia Salmon Recovery Board in development of such activities.

The PRCC Habitat Subcommittee is the primary forum for implementing and directing habitat protection and restoration measures for the Project's anadromous fish programs covered under both the BiOp and the SSSA. Under the provisions of these mandates and obligations, three funds were created by Grant PUD (Section 6.2).

A total of eight meetings, one conference calls, and one field trip to the McIntyre Dam were held by the PRCC Habitat Subcommittee members during calendar year 2012 (Table 36). Agendas and meeting minutes are available at Grant PUD's website.

Table 36 PRCC Habitat Subcommittee 2012 meetings.

PRCC Habitat	January 12, 2012	Meeting
PRCC Habitat	February 9, 2012	Meeting
PRCC Habitat	March 8, 2012	Meeting
PRCC Habitat	May 10, 2012	Meeting
PRCC Habitat	June 14, 2012	Meeting
PRCC Habitat	July 12, 2012	Meeting
PRCC Habitat	September 4, 2012	Conference Call
PRCC Habitat	September 13-14, 2012	Field Trip
PRCC Habitat	October 11, 2012	Meeting
PRCC Habitat	November 8, 2012	Meeting

Since inception, a total of 12 projects have been funded by account 601 (NNI), 13 projects from 602 (Habitat Supplemental Fund) and 23 from 603 (Habitat Conservation Fund). Seventeen new projects were approved by either the PRCC or PRCC Habitat Subcommittee in 2012 (Table 37). Of the $14.6 million approved from the NNI and habitat accounts, $9.2M has been spent and the remaining balances are encumbered for ongoing projects or can be used for future proposals.

Table 37 Summary of habitat projects to date, funded in part or wholly approved by the PRCC and/or PRCC Habitat Subcommittee. Projects are grouped by type; No-Net-Impact (601), Habitat Conservation (602) and Habitat (603) funding accounts, by year completed and whether they have been completed or still ongoing.

Grouped Project Titles	Account	Benefits	Year Initiated	Year Completed	Expenditure to Date	Total Approved Cost
Predator Study	601	Predator Removal	2008	2012	$2,428,176	$2,447,907
McIntyre Dam	601	Fish Passage	2008	Ongoing	1,500,608	$1,770,055

ORRI Phase 1	601	Habitat Restoration	2009	2009	$411,000	$411,000
Tall Timber	601	Conservation Easement	2010	2010	$55,000	$55,000
JSAT Steelhead & Pikeminnow Derby	601	Steelhead Study/Predation	2011	2011	$2,008,635	$2,012,939
Pikeminnow Derby	601	Predation	2012	2012	$23,669	$25,000
Fish Screen Monitoring, Northern Pikeminnow, Methow Bridge 1, GeoChemical Analysis	601	Habitat Improvement/Predator removal/Land Acquisition/Research	2012	Ongoing	$427,770	$1,571,959
Nason Creek-Godwin & Hardesty	602	Land Acquisitions	2007	2007/2008	$650,059	$897,910
Trinidad Creek	602	Land Acquisition	2009	Ongoing	$28,053	$117,000
Vertical Drop Structure 13	602	Spawning Habitat Improvement	2011	Ongoing	$0	$65,141
Sugar Dike	602	Land Acquisition	2011	2011	$168,366	$170,366.48
Nason Creek B+ Reconnection, Wenatchee Nutrient Enhancement, Entiat Stormy Reach	602	Habitat Restoration and Assessment/Land Acquisition	2011/2012	Ongoing	$54,495	$991,000
Lower Wenatchee Instream Flow	602	Water Acquisition	2012	2012	$300,000	$300,000
ORRI Phase II, Icicle Creek Boulder Field, Shuttleworth Creek & Tyee Ranch	602	Habitat Restoration, Fish Passage Assessment, Water Acquisition and Conservation Easement	2012	Ongoing	$258,902	$1,704,032
Nason Creek-Godwin	603	Land Appraisal	2007	2007	$3,409	$3,409
Fulton Diversion Dam & Omak Creek	603	Fish Passage/ Culvert Replacement	2006	2006	$126,971	$150,971

Skookumchuck & Kitsap County LiDAR	603	Land Acquisition & Topographic Survey Data	2006	2007	$516,719	$524,000
Upper Columbia Basin LiDAR	603	Topographic Survey	2007	2007	$60,000	$60,000
Wenatchee River Irrigation Diversion & Antoine Creek	603	Water Acquisition & Habitat Restoration	2007	2008	$85,950	$91,970
Mission Creek Barrier Removal, Blackbird Island Phase I & Entiat River Knapp-Wham	603	Fish Passage/ Habitat Restoration/Irrigation Diversion	2008	2009	$123,141	$132,935
Blackbird Island Phase II & Knapp-Wham Irrigation Diversion	603	Habitat Restoration	2009	2009	$133,398	$136,500
Bonaparte Creek	603	Livestock Exclusion	2009	2010	$24,078	$27,578
Trinidad Creek	603	Land Acquisition	2010	Ongoing	$84,851	$117,000
Nason Creek LWP	603	Alternatives Analysis Design and Report	2010	2011	$45,722	$49,583
White River Nason View Cedar Bend	603	Land Acquisition	2010	2012	$455,600	$454,422
Libby Creek	603	Land Acquisition	2011	2011	$131,537	$206,600
Entiat Stormy Reach Phase II	603	Land Acquisition	2012	2012	$10,000	$10,000

White River Gage Station, Nason Creek Lower White Pine Ponds, Lower Chewuch Beaver Project & Barkley Irrigation Diversion	603	O&M Streamflow Monitoring	2012	Ongoing	$179,980	$227,5000

6.1 Habitat Plan

As required under the 2004 and 2008 BiOps for the Project, issued by NMFS and the 2006 SSSA, Grant PUD, in consultation with the PRCC Habitat Subcommittee, developed a draft habitat plan for Chinook salmon and steelhead affected by operation of the Project. This plan was developed to shepherd the development and implementation of the protection and restoration programs that promote the rebuilding of self-sustaining and harvestable populations of Chinook salmon and steelhead, and to mitigate for a portion of unavoidable losses resulting from Project operations. This plan was submitted to FERC on June 30, 2009 and received FERC approval on March 5, 2010. As required by Grant PUD's license (Article 401(a)(3)), this plan is now being updated and finalized in consultation with the PRCC Habitat Subcommittee.

6.2 Habitat Account

Grant PUD allocates annual funds to a Priest Rapids Habitat Conservation Account in order to finance tributary or mainstem habitat projects to benefit UCR spring Chinook and UCR steelhead (Habitat Fund – BiOp). The SSSA requires additional allocations related to projects identified in the Project Habitat Plan for non-listed species (Habitat Supplemental Fund), and projects to help achieve juvenile survival standards (NNI Fund). Deposits to these accounts occur annually on February 15, concurrent with the filing of this annual FERC report. Expenditures from the NNI Fund occur in consultation with the PRCC, and expenditures of the Habitat Supplemental and Habitat BiOp funds are in consultation with the PRCC Habitat Subcommittee (Table 38. The 2013 deposit for the NNI-601 is $1,881,316; the Habitat Supplemental-602 is $995,421; and Habitat BiOP-603 is $355,587.

Table 38 PRCC Habitat account balances and expenditures as of December 31, 2012.

Account	Beginning Balance	Expenditures	Unencumbered Balance
No Net Impact Fund		$1,166,656	$3,942,534
Habitat Supplemental Fund	$5,032,881	$2,489,244	$2,489,244
Habitat Fund (BiOp)	$737,107	$203,545	$1,032,981
Total	**$10,879,178**	**$3,859,445**	**$7,019,733**

7.0 Consultation

Grant PUD meets monthly with the PRCC, which includes representatives of NMFS, U.S. Fish and Wildlife Service, Washington Department of Fish and Wildlife, Colville Confederated Tribes, and Yakama Nation.

In addition, all reports and documents, such as this one, are distributed to the PRCC 30 days prior to filing with FERC for review and comments. The 2012 Activities under the Priest Rapids Hydroelectric Project License (FERC No.2114) report was distributed on March **4**, 2013 to the PRCC for review and comment. Comments were received by the USFWS and the NMFS, and were generally related to grammatical errors or clarifications within the above text, with one exception submitted by the NMFS.

This one exception was related to a figure titled "*Flow chart showing proposed decision process used to modify or develop additional downstream passage measures at Wanapum Dam"* that had been previously commented on and included in previous reports. NMFS's main concern was that the figure emphasized dam passage versus project survival and that therefore did not accurately reflect requirements contained within the 2008 NMFS Biological Opinion and Priest Rapids Salmon and Steelhead Settlement Agreement. Based on the need to discuss further with the PRCC and to accurate portray requirements within a flow chart, Grant PUD removed this flow chart from the document. It is anticipated that the PRCC and Grant PUD will continue to discussion and develop a more accurate flow chart over the coming year.

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Appendix A
Priest Rapids Project 2012 Spill Summary

Table 1

SPILL PATTERN - During Fish Spill 2012 WANAPUM DAM

Total Spill In KCFS	Gate Number 1	2	3	4	5	6	7	8	9	10	11	12	Sluice Gate	WFUFB
	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	20 kcfs

Note: All fish spill goes through the Wanapum Future Unit Fish Bypass (WFUFB) - 24/7

Table 2

2012 WANAPUM DAM SPILL GATE OPERATIONS FOR INADVERTENT SPILL

During Fish Spill **(4-23-2012)**

Total Spill In KCFS	Gate Number												Sluice Gate	Total Opening In Feet
	1	2	3	4	5	6	7	8	9	10	11	12		
2.2						1								1
4.4					1	1								2
6.6					1	1	1							3
8.8				1	1	1	1							4
11.0				1	1	1	1	1						5
13.2				1	1	1	1	1	1					6
15.4				1	1	2	1	1	1					7
17.6				1	2	2	1	1	1					8
19.8				1	2	2	2	1	1					9
22.0				1	2	3	2	1	1					10
24.2				1	2	3	2	2	1					11
26.4				1	2	3	3	2	1					12
28.6			1	1	2	3	3	2	1					13
30.8			1	1	2	3	3	2	1	1				14
33.0			1	1	2	3	3	2	1	1	1			15
35.2			1	2	2	3	3	2	1	1	1			16
37.4			1	2	3	3	3	2	1	1	1			17
39.6			1	2	3	3	3	2	2	1	1			18
41.8			1	2	3	3	3	2	2	1	1	1		19
44.0			1	2	3	3	3	3	2	1	1	1		20
46.2		1	1	2	3	3	3	3	2	1	1	1		21
48.4		1	1	2	3	3	3	3	2	2	1	1		22
50.6		1	1	2	3	3	3	3	2	2	2	1		23
52.8		1	1	2	3	3	3	3	3	2	2	1		24
55.0		1	1	3	3	3	3	3	3	2	2	1		25
57.2		1	2	3	3	3	3	3	3	2	2	1		26
59.4		1	2	3	3	4	3	3	3	2	2	1		27
61.6		1	2	3	3	4	4	3	3	2	2	1		28
63.8		1	2	3	4	4	4	3	3	2	2	1		29
66.0		1	2	3	4	4	4	4	3	2	2	1		30
68.2		1	2	3	4	4	4	4	4	2	2	1		31
70.4		1	2	3	4	4	4	4	4	3	2	1		32
72.6		1	2	3	4	4	4	4	4	3	2	2		33
74.8		2	2	3	4	4	4	4	4	3	2	2		34
77.0		2	3	3	4	4	4	4	4	3	2	2		35

79.2		2	3	4	4	4	4	4	4	3	2	2	36
81.4		2	3	4	4	4	4	4	4	4	2	2	37
83.6		2	4	4	4	4	4	4	4	4	2	2	38
85.8	1	2	4	4	4	4	4	4	4	4	2	2	39
88.0	1	2	4	4	4	4	4	4	4	4	3	2	40
90.2	1	3	4	4	4	4	4	4	4	4	3	2	41
92.4	1	3	4	4	4	4	4	4	4	4	4	2	42
94.6	2	3	4	4	4	4	4	4	4	4	4	2	43
96.8	2	4	4	4	4	4	4	4	4	4	4	2	44
99.0	2	4	4	4	4	5	4	4	4	4	4	2	45
101.2	2	4	4	4	4	5	4	5	4	4	4	2	46
103.4	2	4	4	4	4	5	4	5	4	4	4	3	47
105.6	2	4	4	5	4	5	4	5	4	4	4	3	48
107.8	2	4	4	5	4	5	5	5	4	4	4	3	49
110.0	2	4	4	5	5	5	5	5	4	4	4	3	50
112.2	2	4	4	6	5	5	5	5	4	5	4	3	51
114.4	2	4	4	5	5	5	5	5	5	5	4	3	52
116.6	2	4	5	5	5	5	5	5	5	5	4	3	53
118.8	2	4	5	5	5	5	5	5	5	5	5	3	54
121.0	2	4	5	5	5	6	5	5	5	5	5	3	55
123.2	2	4	5	5	5	6	5	6	5	5	5	3	56
125.4	2	4	5	5	5	6	6	6	5	5	5	3	57
127.6	2	4	5	6	5	6	6	6	5	5	5	3	58
129.8	2	4	5	6	5	6	6	6	5	6	5	3	59
132.0	2	4	5	6	6	6	6	6	5	6	5	3	60
134.2	2	4	5	6	6	6	6	6	6	6	5	3	61
136.4	2	4	6	6	6	6	6	6	6	6	5	3	62
138.6	2	4	6	6	7	6	6	6	6	6	5	3	63
140.8	2	4	6	6	7	6	7	6	6	6	5	3	64
143.0	2	4	6	6	7	6	7	6	7	6	5	3	65
145.2	2	4	6	6	7	7	7	6	7	6	5	3	66
147.4	2	4	6	6	7	7	7	7	7	6	5	3	67
149.6	2	4	6	7	7	7	7	7	7	6	5	3	68
151.8	2	4	6	7	7	8	7	7	7	6	5	3	69
154.0	2	4	6	7	7	8	7	8	7	6	5	3	70
156.2	2	4	6	7	7	8	8	8	7	6	5	3	71
158.4	2	4	6	7	7	8	8	8	8	6	5	3	72
160.6	2	4	6	7	8	8	8	8	8	6	5	3	73
162.8	2	4	6	7	8	8	8	8	8	7	5	3	74
165.0	2	4	6	8	8	8	8	8	8	7	5	3	75
167.2	2	4	7	8	8	8	8	8	8	7	5	3	76

169.4	3	4	7	8	8	8	8	8	8	7	5	3		77
171.6	3	5	7	8	8	8	8	8	8	7	5	3		78
173.8	3	5	7	8	8	8	8	8	8	8	5	3		79
176.0	3	5	7	8	8	8	8	8	8	8	5	4		80
178.2	3	5	7	8	8	8	8	8	8	8	6	4		81
180.4	3	5	8	8	8	8	8	8	8	8	6	4		82
182.6	3	5	8	8	8	9	8	8	8	8	6	4		83
184.8	3	5	8	8	8	9	8	9	8	8	6	4		84
187.0	3	5	8	8	9	9	8	9	8	8	6	4		85
189.2	3	5	8	8	9	9	9	9	8	8	6	4		86
191.4	3	5	8	8	9	9	9	9	9	8	6	4		87
193.6	3	5	8	9	9	9	9	9	9	8	6	4		88
195.8	3	5	8	9	9	9	10	9	9	8	6	4		89
198.0	3	5	8	9	9	10	10	9	9	8	6	4		90

Note:
1. Spill based on reservoir elevation of 570 feet.
2. Spillway with spill deflector (flip-lip) functioning in spillbays 1-12.
3. Spillbay discharge based upon the June 23, 1999 revised spillway discharge table.
4. Deflector performance is assumed lost after 4 feet opening.

Table 3

Inadvertent SPILL PATTERN during PRFB Construction
Version 5 -
4/23/2012

PRIEST RAPIDS DAM

Total Spill In KCFS	Gate Number																				Sluice	Total Opening
					Top	Spill																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Gate	In Feet
0.0																		closed	closed	closed	closed	closed	0
1.5			1															closed	closed	closed	closed	closed	1
3.0			2															closed	closed	closed	closed	closed	2
4.5			2	1														closed	closed	closed	closed	closed	3
6.0			2	2														closed	closed	closed	closed	closed	4
7.5		1	2	2														closed	closed	closed	closed	closed	5
9.0		1	2	2			1											closed	closed	closed	closed	closed	6
10.5		1	2	2			1	1										closed	closed	closed	closed	closed	7
12.0		1	2	2			2	1										closed	closed	closed	closed	closed	8
13.5		1	2	2			2	2										closed	closed	closed	closed	closed	9
15.0		1	2	2			2	2	1									closed	closed	closed	closed	closed	10
16.5				1	open	open												closed	closed	closed	closed	closed	
18.0				1	open	open	1											closed	closed	closed	closed	closed	
19.5				2	open	open	1											closed	closed	closed	closed	closed	
21.0			1	2	open	open	1											closed	closed	closed	closed	closed	
22.5			1	2	open	open	2											closed	closed	closed	closed	closed	
24.0			1	2	open	open	2	1										closed	closed	closed	closed	closed	
25.5		1	1	2	open	open	2	1										closed	closed	closed	closed	closed	
27.0		1	1	2	open	open	2	1	1									closed	closed	closed	closed	closed	
28.5		1	2	2	open	open	2	1	1									closed	closed	closed	closed	closed	
30.0		1	2	3	open	open	2	1	1									closed	closed	closed	closed	closed	

31.5		1	2	3	open	open	2	2	1						closed	closed	closed	closed	closed
33.0		1	3	3	open	open	2	2	1						closed	closed	closed	closed	closed
34.5		1	3	3	open	open	3	2	1						closed	closed	closed	closed	closed
36.0	1	1	3	3	open	open	3	2	1						closed	closed	closed	closed	closed
37.5	1	2	3	3	open	open	3	2	1						closed	closed	closed	closed	closed
39.0	1	2	3	3	open	open	3	2	1	1					closed	closed	closed	closed	closed
40.5	1	2	3	3	open	open	3	2	2	1					closed	closed	closed	closed	closed
42.0	1	2	3	3	open	open	3	3	2	1					closed	closed	closed	closed	closed
43.5	1	2	3	3	open	open	3	3	2	1	1				closed	closed	closed	closed	closed
45.0	1	2	3	3	open	open	3	3	3	1	1				closed	closed	closed	closed	closed
46.5	1	2	3	3	open	open	3	3	3	2	1				closed	closed	closed	closed	closed
48.0	1	2	3	3	open	open	3	3	3	3	1				closed	closed	closed	closed	closed
49.5	1	2	3	3	open	open	3	3	3	3	1	1			closed	closed	closed	closed	closed
51.0	1	2	3	3	open	open	3	3	3	3	2	1			closed	closed	closed	closed	closed
52.5	1	3	3	3	open	open	3	3	3	3	2	1			closed	closed	closed	closed	closed
54.0	1	3	3	4	open	open	3	3	3	3	2	1			closed	closed	closed	closed	closed
55.5	1	3	3	4	open	open	4	3	3	3	2	1			closed	closed	closed	closed	closed
57.0	1	3	3	4	open	open	4	4	3	3	2	1			closed	closed	closed	closed	closed
58.5	1	3	4	4	open	open	4	4	3	3	2	1			closed	closed	closed	closed	closed
60.0	2	3	4	4	open	open	4	4	3	3	2	1			closed	closed	closed	closed	closed
61.5	2	3	4	4	open	open	4	4	3	3	2	1	1		closed	closed	closed	closed	closed
63.0	2	3	4	4	open	open	4	4	3	3	2	2	1		closed	closed	closed	closed	closed
64.5	2	3	4	4	open	open	4	4	4	3	2	2	1		closed	closed	closed	closed	closed
66.0	2	3	4	4	open	open	4	4	4	3	3	2	2		closed	closed	closed	closed	closed
67.5	2	3	4	4	open	open	4	4	4	4	3	2	2		closed	closed	closed	closed	closed
69.0	2	3	4	4	open	open	4	5	4	4	3	2	2		closed	closed	closed	closed	closed
70.5	2	3	4	4	open	open	4	5	4	4	3	2	2	1	closed	closed	closed	closed	closed
72.0	2	3	4	4	open	open	4	5	4	4	4	2	2	1	closed	closed	closed	closed	closed
73.5	2	3	4	4	open	open	4	5	4	4	4	3	2	1	closed	closed	closed	closed	closed
75.0	2	3	4	4	open	open	4	5	5	4	4	3	2	1	closed	closed	closed	closed	closed

76.5	2	3	4	4	open	open	4	5	5	4	4	4	2	1		closed	closed	closed	closed	closed
78.0	2	4	4	4	open	open	4	5	5	4	4	4	2	1		closed	closed	closed	closed	closed
79.5	2	4	4	5	open	open	4	5	5	4	4	4	2	1		closed	closed	closed	closed	closed
81.0	2	4	4	5	open	open	5	5	5	4	4	4	2	1		closed	closed	closed	closed	closed
82.5	2	4	4	5	open	open	5	5	5	4	4	4	3	1		closed	closed	closed	closed	closed
84.0	2	4	4	5	open	open	5	5	5	4	4	4	3	1	1	closed	closed	closed	closed	closed
85.5	2	4	4	5	open	open	5	5	5	4	4	4	3	2	1	closed	closed	closed	closed	closed
87.0	2	4	4	5	open	open	5	5	5	5	4	4	3	2	1	closed	closed	closed	closed	closed
88.5	2	4	4	5	open	open	5	6	5	5	4	4	3	2	1	closed	closed	closed	closed	closed
90.0	2	4	4	5	open	open	5	6	6	5	4	4	3	2	1	closed	closed	closed	closed	closed
91.5	2	4	5	5	open	open	5	6	6	5	4	4	3	2	1	closed	closed	closed	closed	closed
93.0	2	4	5	5	open	open	6	6	6	5	4	4	3	2	1	closed	closed	closed	closed	closed
94.5	2	4	5	5	open	open	6	6	6	5	5	4	3	2	1	closed	closed	closed	closed	closed
96.0	2	4	5	5	open	open	6	6	6	5	5	4	4	2	1	closed	closed	closed	closed	closed
97.5	2	4	5	5	open	open	6	6	6	5	5	5	4	2	1	closed	closed	closed	closed	closed
99.0	2	4	5	5	open	open	6	6	6	5	5	5	4	3	1	closed	closed	closed	closed	closed
100.5	2	4	5	5	open	open	6	6	6	5	5	5	4	3	2	closed	closed	closed	closed	closed
102.0	2	4	5	5	open	open	6	6	6	5	5	5	4	4	2	closed	closed	closed	closed	closed
103.5	2	4	5	5	open	open	6	6	6	6	5	5	4	4	2	closed	closed	closed	closed	closed
105.0	2	4	5	6	open	open	6	6	6	6	5	5	4	4	2	closed	closed	closed	closed	closed
106.5	2	4	5	6	open	open	6	6	6	6	6	5	4	4	2	closed	closed	closed	closed	closed
108.0	2	4	5	6	open	open	6	6	6	6	6	5	5	4	2	closed	closed	closed	closed	closed
109.5	2	4	5	6	open	open	6	7	6	6	6	5	5	4	2	closed	closed	closed	closed	closed
111.0	2	4	5	6	open	open	6	7	6	6	6	5	5	4	2	closed	closed	closed	closed	closed
112.5	2	4	5	6	open	open	7	7	6	6	6	5	5	4	2	closed	closed	closed	closed	closed
114.0	2	4	6	6	open	open	7	7	6	6	6	5	5	4	2	closed	closed	closed	closed	closed
115.5	2	4	6	7	open	open	7	7	6	6	6	5	5	4	2	closed	closed	closed	closed	closed
117.0	2	4	6	7	open	open	7	7	7	6	6	5	5	4	2	closed	closed	closed	closed	closed
118.5	2	4	6	7	open	open	7	7	7	7	6	5	5	4	2	closed	closed	closed	closed	closed
120.0	2	4	6	7	open	open	7	8	7	7	6	5	5	4	2	closed	closed	closed	closed	closed

121.5	2	4	6	7	open	open	7	8	8	7	6	5	5	4	2		closed	closed	closed	closed	closed
123.0	2	4	6	7	open	open	7	8	8	7	6	5	5	4	3		closed	closed	closed	closed	closed
124.5	2	4	6	7	open	open	7	8	8	7	6	5	5	5	3		closed	closed	closed	closed	closed
126.0	2	4	6	7	open	open	7	8	8	8	6	5	5	5	3		closed	closed	closed	closed	closed
127.5	2	4	6	7	open	open	7	8	8	8	7	5	5	5	3		closed	closed	closed	closed	closed
129.0	2	4	6	7	open	open	7	8	8	8	7	6	5	5	3		closed	closed	closed	closed	closed
130.5	2	4	6	7	open	open	7	8	8	8	7	6	6	5	3		closed	closed	closed	closed	closed
132.0	2	4	6	7	open	open	7	8	8	8	7	7	6	5	3		closed	closed	closed	closed	closed
133.5	2	4	6	7	open	open	7	8	8	8	8	7	6	5	3		closed	closed	closed	closed	closed
135.0	2	4	6	7	open	open	7	8	9	8	8	7	6	5	3		closed	closed	closed	closed	closed
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138.0	2	4	6	8	open	open	8	8	9	8	8	7	6	5	3		closed	closed	closed	closed	closed
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141.0	2	4	6	8	open	open	8	8	9	9	8	7	7	5	3		closed	closed	closed	closed	closed
142.5	2	4	6	8	open	open	8	8	9	9	8	8	7	5	3		closed	closed	closed	closed	closed
144.0	2	4	6	8	open	open	8	8	9	9	9	8	7	5	3		closed	closed	closed	closed	closed
145.5	2	4	6	8	open	open	8	9	9	9	9	8	7	5	3		closed	closed	closed	closed	closed
147.0	2	4	6	9	open	open	8	9	9	9	9	8	7	5	3		closed	closed	closed	closed	closed
148.5	2	4	6	9	open	open	9	9	9	9	9	8	7	5	3		closed	closed	closed	closed	closed
150.0	2	4	6	9	open	open	9	9	9	9	9	8	7	6	3		closed	closed	closed	closed	closed
151.5	2	4	6	9	open	open	9	9	9	10	9	8	7	6	3		closed	closed	closed	closed	closed
153.0	2	4	6	9	open	open	9	9	10	10	9	8	7	6	3		closed	closed	closed	closed	closed
154.5	2	4	6	9	open	open	9	9	10	10	9	9	7	6	3		closed	closed	closed	closed	closed
156.0	2	4	6	9	open	open	9	10	10	10	9	9	7	6	3		closed	closed	closed	closed	closed
157.5	2	4	6	9	open	open	9	10	10	11	9	9	7	6	3		closed	closed	closed	closed	closed
158.5	2	4	6	9	open	open	9	10	11	11	9	9	7	6	3		closed	closed	closed	closed	closed
160.0	2	4	6	9	open	open	9	10	11	11	10	9	7	6	3		closed	closed	closed	closed	closed
161.5	2	4	6	9	open	open	9	10	11	11	11	9	7	6	3		closed	closed	closed	closed	closed
163.0	2	4	6	9	open	open	9	10	11	11	11	9	8	6	3		closed	closed	closed	closed	closed
164.5	2	4	6	9	open	open	9	10	11	11	11	10	8	6	3		closed	closed	closed	closed	closed

166.0	2	4	6	9	open	open	9	10	11	11	11	10	9	6	3		closed	closed	closed	closed	closed
167.5	2	5	6	9	open	open	10	10	11	11	11	10	9	6	3		closed	closed	closed	closed	closed
169.0	2	5	7	9	open	open	10	10	11	11	11	10	9	7	3		closed	closed	closed	closed	closed
170.5	2	5	7	9	open	open	10	10	11	11	11	10	9	7	4		closed	closed	closed	closed	closed
172.0	2	5	7	9	open	open	10	10	11	11	11	10	10	7	4		closed	closed	closed	closed	closed
173.5	2	5	7	9	open	open	10	11	11	11	11	10	10	7	4		closed	closed	closed	closed	closed
175.0	2	5	7	9	open	open	10	11	12	11	11	10	10	7	4		closed	closed	closed	closed	closed
176.5	2	5	7	9	open	open	10	11	12	12	11	10	10	7	4		closed	closed	closed	closed	closed
178.0	3	5	7	9	open	open	10	11	12	12	12	10	10	7	4		closed	closed	closed	closed	closed
179.5	3	5	8	9	open	open	10	12	12	12	12	10	10	7	4		closed	closed	closed	closed	closed
181.0	3	5	8	9	open	open	10	12	12	12	12	11	10	7	4		closed	closed	closed	closed	closed
182.5	3	5	8	9	open	open	11	12	12	12	12	11	10	7	4		closed	closed	closed	closed	closed
184.0	3	5	8	9	open	open	11	12	13	12	12	11	10	7	4		closed	closed	closed	closed	closed
185.5	3	5	8	9	open	open	11	12	13	13	12	11	10	7	4		closed	closed	closed	closed	closed
187.0	3	5	8	9	open	open	11	12	13	13	13	11	10	7	4		closed	closed	closed	closed	closed
188.5	3	6	8	9	open	open	11	12	13	13	13	12	10	7	4		closed	closed	closed	closed	closed
190.0	3	6	9	9	open	open	11	12	13	13	13	12	10	7	4		closed	closed	closed	closed	closed
191.5	3	6	9	9	open	open	11	12	13	13	13	12	10	7	4		closed	closed	closed	closed	closed
193.0	3	6	9	9	open	open	11	12	13	13	13	12	10	7	5		closed	closed	closed	closed	closed
194.5	3	6	9	9	open	open	11	12	13	13	13	12	10	8	5		closed	closed	closed	closed	closed
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197.5	3	6	9	9	open	open	11	13	13	13	13	12	11	8	5		closed	closed	closed	closed	closed
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202.0	4	6	9	10	open	open	11	13	14	13	13	12	11	8	5		closed	closed	closed	closed	closed
203.5	4	6	9	10	open	open	11	13	14	14	13	12	11	8	5		closed	closed	closed	closed	closed
205.0	4	6	9	10	open	open	11	13	14	14	13	12	11	8	6		closed	closed	closed	closed	closed
206.5	4	6	9	10	open	open	11	13	14	14	13	12	11	9	6		closed	closed	closed	closed	closed
208.0	4	6	10	10	open	open	11	13	14	14	13	12	11	9	6		closed	closed	closed	closed	closed
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211.0	4	7	10	10	open	open	11	13	14	14	13	12	12	9	6		closed	closed	closed	closed	closed

212.5	4	7	10	10	open	open	11	13	14	14	14	12	12	9	6		closed	closed	closed	closed	closed
214.0	4	7	10	10	open	open	11	13	14	14	14	13	12	9	6		closed	closed	closed	closed	closed
215.5	4	7	10	10	open	open	11	13	14	14	14	13	12	9	7		closed	closed	closed	closed	closed
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220.0	4	7	10	11	open	open	12	13	14	14	14	13	12	10	7		closed	closed	closed	closed	closed
221.5	4	7	10	11	open	open	12	14	14	14	14	13	12	10	7		closed	closed	closed	closed	closed
223.0	5	7	10	11	open	open	12	14	14	14	14	13	12	10	7		closed	closed	closed	closed	closed
224.5	5	7	10	11	open	open	12	14	14	14	14	14	12	10	7		closed	closed	closed	closed	closed
226.0	5	7	10	11	open	open	12	14	14	14	14	14	13	10	7		closed	closed	closed	closed	closed
227.5	5	7	11	11	open	open	12	14	14	14	14	14	13	10	7		closed	closed	closed	closed	closed
229.0	5	7	11	11	open	open	12	14	14	14	14	14	13	10	8		closed	closed	closed	closed	closed
230.5	5	7	11	11	open	open	12	14	14	14	14	14	13	11	8		closed	closed	closed	closed	closed
232.0	5	7	11	12	open	open	12	14	14	14	14	14	13	11	8		closed	closed	closed	closed	closed
233.5	5	7	11	12	open	open	12	14	15	14	14	14	13	11	8		closed	closed	closed	closed	closed
235.0	5	7	11	12	open	open	12	14	15	15	14	14	13	11	8		closed	closed	closed	closed	closed
236.5	5	7	11	12	open	open	12	14	15	15	15	14	13	11	8		closed	closed	closed	closed	closed
238.0	5	7	11	12	open	open	12	14	15	15	15	15	13	11	8		closed	closed	closed	closed	closed
239.5	5	7	11	12	open	open	13	14	15	15	15	15	13	11	8		closed	closed	closed	closed	closed
241.0	5	8	11	12	open	open	13	14	15	15	15	15	13	11	8		closed	closed	closed	closed	closed
242.5	5	8	11	12	open	open	13	15	15	15	15	15	13	11	8		closed	closed	closed	closed	closed
244.0	5	8	11	12	open	open	13	15	16	15	15	15	13	11	8		closed	closed	closed	closed	closed
245.5	5	8	11	12	open	open	13	15	16	16	15	15	13	11	8		closed	closed	closed	closed	closed
247.0	5	8	11	12	open	open	13	15	16	16	16	15	13	11	8		closed	closed	closed	closed	closed
248.5	5	8	11	12	open	open	14	15	16	16	16	15	13	11	8		closed	closed	closed	closed	closed
250.0	5	8	11	12	open	open	14	15	16	16	16	15	14	11	8		closed	closed	closed	closed	closed

Note: Spill based on reservoir elevation of 486 feet.

Table 4

2012 SPILL PATTERN during Fish Spill

PRIEST RAPIDS DAM

Total Spill In KCFS	Gate Number																				Sluice Gate
				Top Spill																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
28.0	closed	closed	closed	4	OPEN	OPEN	4	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed	closed

Note: Spill based on reservoir elevation of 486 feet.

Appendix B
Proposed Revised Management Plan for Tailrace Pumping System for Fishway Water Supply submitted to FERC on March 4, 2013

Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

VIA ELECTRONIC FILING

March 4, 2013

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
Mail Code: DHAC, R1-12
888 First Street, N.E.
Washington D.C. 20426

RE: **Priest Rapids Hydroelectric Project No 2114**
License Article 403 Tailrace Pumping System for Fishway Water Supply – Revision to Management Plan

Dear Secretary Bose:

On October 15, 2010, Public Utility District No. 2 of Grant County, Washington (Grant PUD) submitted to the Federal Energy Regulatory Commission (FERC) a plan for meeting the requirements within license article 403 Tailrace Pumping System for Fishway Water Supply at the Priest Rapids hydroelectric project (Project). On October 20, 2011, FERC issued an order approving the submitted plan.

Within the Plan, Grant PUD proposed to install two additional pumps in the existing left bank fish ladder pump house and install an independent gravity supply to the right bank fish ladder attraction water supply system. The additional pumping capacity for the left bank ladder would allow the pump house to supply all three fish ladder entrances at the Project while maintaining 1 foot differentials up to the 5 percent exceedence flow. The right bank ladder gravity supply would increase system flexibility and allow attraction water to be supplied up to the 5 percent exceedence flow independent of the left bank attraction water supply.

The plan presented a schedule as follows:

- Spring 2011 - computational fluid dynamics and physical modeling would be conducted as required as well as necessary rock removal in front of the pump house intakes would be completed
- September 2011 - The final engineering design would be completed submitted to the FERC's Division of Dam Safety and Inspections
- March 2012 - Construction of the proposed pump house modifications and right bank supply configurations would commence in March 2012 and be completed by the fish ladder operation season of 2014 (April 1).

During additional engineering review and design for the two additional pumps for the left bank fish ladder; Grant PUD now believes that it will be able to satisfy the requirements of license article 403 by using the installed capacity of the new Right Bank Gravity Supply (RBGS) and recommends that the installation of the two additional pumps on the left bank pumphouse be deferred for the following reasons:

- The design capacity for the RBGS is equal to the previously proposed pump capacity (~850 cfs) and flow will be achieved for all three entrances to be operated at minimum criteria up to the 5% exceedence flow (total of 2,480 cfs through the entrances);
- It will reduce and possibly eliminate the use of the Gravity Intake Gate (GIG); and
- It will provide a water supply that allows the two fish ladders at Priest Rapids Dam to operate independently of one another.

It is anticipated that the RBGS will be a robust and reliable system based on a throttling plug valve and an energy dissipating manifold in the Right Bank Attraction Water Supply Pool. Additionally, it will be capable of supplementing the pumphouse output during regular fishway operation, thereby resulting in a decreased water demand from the GIG by approximately 850 cfs. The RBGS will also be capable of independent operation of the right bank fish ladder at minimum criteria up to a 3% exceedance flow (895 cfs). The proposed RBGS design to supplement the present pumphouse will also meet the two primary objectives recommended by the National Marine Fisheries Service (NMFS) in their letter dated August 18, 2009 (Attachment A).

Based on a review of the original engineering design, ability to meet the NMFS primary objectives and an updated economic analysis; Grant PUD re-initiated discussion with the Priest Rapids Coordination Committee (PRCC) in June 2012.

On June 27, 2012, the PRCC[1] members approved Grant PUD's proposal to continue to use the installed "new" capacity of the new right bank gravity supply to satisfy the requirements of license article 403 to provide attraction water at the Priest Rapids Right Bank Ladder and defer installation of the two additional pumps (Attachment B). The PRCC also agreed that if the expected performance of the Right Bank Gravity Supply is not realized, then Grant PUD and the PRCC would reconsider installation of the two additional pumps as originally proposed. Grant PUD also consulted with the Washington Department of Ecology (WDOE) to the possible impacts to license article 401(a)(21) Fish Ladder Water Supply Monitoring Study Plan and Section 6.6.2 of the Priest Rapids Project 401 Water Quality Certification. WDOE also supports Grant PUD's proposal (see Attachment C).

As originally planned and approved by FERC, Grant PUD is continuing to install the RBGS at Priest Rapids Dam, which will provide a new primary water source for the right bank fish ladder. The RBGS will be capable of supplementing the pumphouse output during regular fishway operation, thereby resulting in a decreased water demand from the GIG and will be capable of

[1] Participating PRCC members include NMFS, US Fish and Wildlife Service, Washington Department of Fish and Wildlife, Confederated Tribes of the Colville Reservation, Yakama Nation and Grant PUD.

independent operation of the right bank fish ladder. This will achieve the two primary objectives recommended by NMFS.

After receipt of the FERC approving order in October 2011, Grant PUD proceeded with final engineering for the right bank facilities. Grant PUD has awarded the contracts for the procurement of materials and construction of the project. Construction of the right bank improvements is in progress and scheduled to be complete in the second quarter of 2013. Testing will occur during the operation season of 2013. Grant PUD does not anticipate any issues to meet the April 1, 2014 deadline defined in the FERC approving order.

With this letter, Grant PUD is requesting to revise the management plan which FERC approved on October 20, 2011 to continue to use the installed "new" capacity of the new right bank gravity supply to satisfy the requirements of license article 403 to provide attraction water at the Priest Rapids Right Bank Ladder and defer installation of the two additional pumps.

For any questions related to this filing, please contact Grant PUD Fish, Wildlife and Water Quality Manager Tom Dresser at (509) 754-0500 extension 2312.

Sincerely,

Julie E. Pyper, License Compliance Manager
jpyper@gcpud.org
Telephone: (509) 754-5089

Attachment(s):Attachment A: National Marine Fisheries Service letter dated August 18, 2009
Attachment B: PRCC Meeting Minutes dated June 27, 2012
Attachment C: WADOE support letter dated November 19, 2012

Attachment A
National Marine Fisheries Service letter dated August 18, 2009

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OREGON 97232-1274

August 18, 2009

Tom Dresser, Manager
Fish, Wildlife and Water Quality
Public Utility District No. 2 of Grant County
P.O. Box 878
Ephrata, Washington 98823

Re: Priest Rapids Hydroelectric Project (FERC Project No. 2114), Comments on Article 403 filing – Tailrace Pumping System Plan for Priest Rapids Dam

Dear Mr. Dresser:

The National Marine Fisheries Service (NMFS) reviewed the above referenced Plan provided by Public Utility District No. 2 of Grant County (Grant PUD) at the July 22, 2009 meeting of the Priest Rapids Coordinating Committee. The following are our review comments, which generally follow the numbering scheme in the Plan.

1.0 Introduction
The language of Article 403 states "...installing and operating a tailrace pumping system for each fishway water supply." This language implies that a tailrace pumping system should be installed for the right bank fishway and improved at the left bank fishway.

It is not a reasonable first step to investigate closure of the collection channel, thereby losing one-third of the fishway entrances and about one-third of the fishway attraction flow, as a solution for a license obligation under license Article 403.

As we understood Grant PUD's intent in relicensing, Article 403 is a means to increase reliability of the Attraction Water Supply (AWS) system, and to provide Grant PUD the ability to generate power from flow currently provided from forebay via the Gravity Intake Gate (GIG). Closure of the collection channel does not accomplish these objectives.

Independent of Grant's obligations under Article 403, Grant PUD has committed to improving lamprey passage at the Priest Rapids project. In addition, Grant PUD has committed to a Fishery Operations Plan (per Article 404) that includes operation of three fishway entrances at Priest Rapids Dam, with specific hydraulic operational requirements. Deviation from these fishway operations requires approval from NMFS, in regard to salmonid passage.

There is no indication that collection channel closure may improve lamprey passage. There is evidence of substantial use of the collection channel and its two fishway entrances (LSE-2 at the downstream end of the collection channel, and LSE4/5 at the upstream end) by salmonids. The

1993 radio-telemetry study showed that about one-fourth of the spring Chinook entered through the downstream collection channel entrance. This study also showed that many fish delay in the collection channel, and many fish fell out of the collection channel through orifice gate entrances (since closed) and the downstream entrance. A subsequent radio-telemetry study in 1996 specifically recommended that the downstream entrance of the collection channel not be closed, because of substantial use by salmonids.

Fishway inspections often indicated problems with fishway operations, including sticking fishway entrance weirs and areas of low (near zero) velocity in the collection channel. Since the 1993 study was completed, many improvements have been made to the collection channel that rectified these issues. These include:

1) Replacement of variable crest weir entrances with fixed slots, thereby eliminating sticking gates and allowing hydraulic conditions within the collection channel and at the fishway entrances to better achieve fishway operational criteria.

2) Operational changes that increased water surface gradient in the collection channel, thereby increasing channel velocity at locations where velocity had been near zero, and stabilizing hydraulics along the channel.

3) Automation of the fishway operation system, allowing the fishway to adjust quickly to changing tailwater elevations.

4) Closure of orifice gates, allowing AWS flows to be optimally used and eliminating the majority of locations where fish fell back into the tailrace after entering the fishway.

Taken in total, the recent several years have demonstrated that operations of the fishways at Priest Rapids Dam are substantially more consistent in achieving operational criteria for the fishways, in comparison to the conditions tested in the mid-1990. In NMFS opinion, fish passage conditions have likely been improved as a result, with collection channel delay and collection channel fallout unlikely to remain as passage issues for salmonid.

Given that lamprey passage improvements have been designed and approved by fisheries parties, and will presumably be installed during the 2009-10 winter fishway outage, lamprey passage will likely be improved as a result. As such, it is premature for Grant PUD to consider closure of a major fish passage route for ESA listed salmonids, especially as a first step in improving the reliability of the AWS system at Priest Rapids Dam fishways.

4.0 Identification of Changes to Original Investigation

Rock deposition

We acknowledge that rock deposits at the intake of the AWS pump-house will affect hydraulic performance. However, we view this as an ongoing operations and maintenance issue, not as an issue that could potentially change the scope of intent of Article 403. If rock deposits are producing head loss at the pump-house intake, regular removal of this rock would enhance the performance of the AWS system, and NMFS recommends this as a regular maintenance activity.

Additional fishway flow, due to post 1997 fishway modifications

It is unclear how additional fishway flow could not have been a consideration when Grant PUD proposed modifications to the pump station component of the AWS system in their license application. NMFS does not understand how this could be considered a change to the original investigation for Article 403, because any fishway alterations that modified flow 1) have been in place for several years; 2) were required under the Salmon and Steelhead Settlement Agreement; 3) were required under both Biological Opinions written for the project, and 4) were ultimately required by the new FERC license for the project.

Other projects being studied that affect fishway flow

NMFS currently recommends that a minimum of 3 percent of mean annual river flow be provided for attraction flow at mainstem Columbia and Snake River fishway entrances. For Priest Rapids Dam, we calculate this to be about 3520 cfs, meaning that the minimum attraction flow (currently about 3000 cfs) at Priest Rapids is below the minimum recommended flow. Any changes in fishway flow that further reduce fishway attraction flow opposed by NMFS.

4.2 Additional Flow

NMFS is not aware of any changes to the AWS system that have increased required maximum AWS flow amounts due to post-1997 fishway improvements. The AWS has not been expanded since its original construction, other than operational automation and required maintenance.

NMFS considers it to be most important that the fishway be operated within established criteria between the 95 percent and 5 percent Columbia River exceedence flow. Criteria for operation of the fishways under these conditions include running the west spillway entrance (RSE-2) at 1.5 feet of head, LSE-2 at 1.2 feet of head and LSE-4/5 at 1.5 feet of head. At flows above the 5 percent exceedence flow, we expect slower in-river migration, especially where tailrace flows concentrate and maximize velocity below dam locations. The 5 percent exceedence flow is about 218 kcfs, which correlates to a tailwater elevation of about 415 feet.

In this report, Grant PUD states that 4800 cfs is required and is cost prohibitive. Using entrance-rating tables provided by Grant PUD, NMFS estimates that about 2,910 cfs is required to achieve these criteria. Because about 180 cfs is provided through the ladders from forebay, this means that 2,730 AWS flow is required to provide good passage conditions about 95percent of the time, and an expanded AWS capacity to 3,340 cfs would meet the NMFS 3percent of mean annual flow AWS recommendation. With a 3,340 cfs AWS pump house capacity, the minimum one-foot of entrance head could be provided at all three entrances for river flows up to about 365 kcfs. The fishway entrance head target criterion (2 entrances at 1.5 feet, the other at 1.2 feet) could be achieved at river flows up to about 310 kcfs. During infrequent higher river flow events, the GIG could be used to augment pump-house AWS flows to achieve target criterion.

5.0 Other Projects

Again, the NMFS does not support closure of the powerhouse collection channel, to remedy an undefined lamprey passage problem.

We note that the most demanding conditions for the AWS system would be during the higher flows during the spring Chinook passage season. As such, it does not truly measure the

performance of the fishway system to test with summer Chinook and steelhead, when lower river flows are likely present. In addition, it is unlikely that a two-year comparison test would provide useable results when comparing passage rates, because attraction flow is best tested under high flow conditions and it is unlikely that high flow conditions will occur in the two planned study years that will allow comparison of tailrace passage conditions.

NMFS Recommendations

1) Test improvements that are currently planned for lamprey passage, before deciding the next step. The half-duplex PIT study could accomplish this.

2) Test collection channel improvements that are currently in place for salmonid passage to verify that hydraulic corrections have rectified passage problems in the channel. Radio or acoustic telemetry arrays should be set up beginning at the downstream extent of the Priest Rapids project tailrace and ending at the Wanapum exit to examine how adult salmonid passage is affected by the juvenile bypass system discharges at each project.

3) If either test listed above show adverse passage conditions exist, look for solutions based on specific test data collected.

4) Install a discrete right bank AWS facility that will allow each ladder to operate independently at full attraction flow. If this is done, at least one ladder can operate while an AWS system for the other is taken down for routine or emergency maintenance. This would shorten winter outage time and increase the opportunity for listed steelhead to pass the project. Currently, the AWS system serves both ladders on each side of the project. We note that no other Columbia River dams have this substantial operational constraint and lack of redundant systems.

5) Consider using a turbine driven pump (on the right bank) that diverts a small flow from forebay to turn a pump that diverts required larger AWS flows from the tailrace to the right bank supply pool for RSE-2 attraction flow. There appears to be plenty of space on the right bank to site such a facility.

6) Do not close the Priest Rapids collection channel, which has a downstream entrance that has been demonstrated to be used by up to 25 percent of the spring Chinook. It is plausible to consider that use of this entrance is even higher than previously recorded, because of the potential for attraction of adult fish by the top spill bulkhead flow, because of more consistent fish spill flows, because of orifice gate closure and because of better hydraulic conditions at the entrance and within the collection channel.

7) Keep the GIG operational as a redundant AWS component, and for high flow.

8) Establish a design goal to reduce or eliminate flow from the GIG during normal river operations, up to the 5 percent exceedence flow.

Once again, thank you for the opportunity to comment on Grant PUD's Tailrace Pumping System Plan for Priest Rapids Dam, under license article 403. Bryan Nordlund (360-534-9338) or Scott Carlon (503-231-2379) can address questions or comments on the preceding text.

Sincerely,

Keith Kirkendall

Keith Kirkendall, Chief
FERC and Water Diversion Branch
Hydropower Division

cc: Eric Lauver, Grant PUD, PO Box 878,Ephrata, Washington 98823
Curt Dotson, Grant PUD, PO Box 878,Ephrata, Washington 98823
Jim Craig, USFWS, Leavenworth National Fish Hatchery
Bob Heinith, CRITFC, 729 NE Oregon, Ste 200, Portland, OR 97232
Bob Rose, Yakama Tribe, PO Box 151, Toppenish, WA 98948
Bill Tweit, WDFW, PO Box 40100, Olympia, WA 98504
Jerry Marco, Colville Tribe, PO Box 150, Nespelem, WA 99155

Attachment B
PRCC Meeting Minutes dated June 27, 2012

Priest Rapids Coordinating Committee

27 June 2012

9:00 a.m. – 1:00 p.m.

WebEx Conference

PRCC Members

Scott Carlon, Bryan Nordlund, NMFS	Jim Craig, USFWS
Jerry Marco, CCT	Bill Tweit, Teresa Scott, WDFW
Bob Rose, YN	Carl Merkle, CTUIR
Tom Dresser, Curt Dotson, GCPUD	Denny Rohr, Facilitator

Attendees: (*Denotes PRCC member)

Scott Carlon, NMFS*	Bryan Nordlund, NMFS*
Bob Rose, YN*	Jerry Marco, CCT*
Jim Craig, USFWS*	Teresa Scott, WDFW
Skylar Street, GCPUD	Leah Sullivan, Blue Leaf Environmental
Tom Dresser, GCPUD*	Curt Dotson, GCPUD*
Debbie Williams, GCPUD	Denny Rohr, Facilitator

Action Items:

1. Nordlund asked that data in Table 1 of the draft Avian Predation letter be reviewed for accuracy, assure that the correction factor being applied is correct, add a block of rows discussing potential avian predation in the Hanford Reach, and that heading titles are clarified.
2. Dotson will take the first cut at re-drafting the Avian Predation letter, discuss it with Nordlund and Teresa Scott, then send to Rohr for distribution to the PRCC for their review.
3. Jim Craig will send his comments to Version 3 of the draft Avian Predation letter to Dotson.
4. Jim Craig asked if WDFW is concerned that ensuring long-term perpetuation of each species, predator and prey, would cause problems with invasive species. Teresa will get WDFW's position on this question.

5. Grant PUD will take the initial shot at placing Steelhead Action Plan Table of Recommendations tasks onto a time line and distribute to PRCC members as soon as possible. PRCC members can then move items on the timeline as they see fit. Please provide comments to the Steelhead Action Plan and Table of Recommendations to the entire PRCC, in track changes. A table will be added to the back of the SAP to track how comments are addressed.
6. Regarding the Fish Marking Assignment to the PRCC Hatchery SC, Rohr will review meeting minutes and other information in an effort to determine how the decision was made to decline the assignment. Rohr will ask McManus to help with getting the HSC to complete the assignment. PRCC members will discuss this with their respective HSC members.
7. Rohr will ask Counihan if the PRCC should expect an integrated NNI Predator Index report.
8. Craig will forward information on the Lake Wenatchee Predation meeting to Rohr.
9. Review May 23, 2012 meeting minutes.

Decisions:

1. PRCC members approved the proposal regarding the Priest Rapids Fish Attraction Pump Project, and the primary source of increased water supply to the right bank ladder. Installation of two pumps in the original approved plan will not be installed, and the installed capacity of the new Right Bank Gravity Supply will be used to provide attraction water at the Priest Rapids Right Bank Ladder. Nordlund asked that the following caveat be placed on the approval: If the expected performance of the Right Bank Gravity Supply isn't realized, then Grant PUD and the PRCC will reconsider installation of the two additional pumps as originally proposed.

Final Meeting Minutes

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

II. **Agenda Review** – No additions were made to the agenda. Rohr reported that all PRCC member interviews have been completed and that he will discuss his findings at the July 25th PRCC meeting.

III. **Action Items Review** - Action items identified during the May 23, 2012 PRCC meeting were complete or discussed during today's meeting.

IV. **ACTION ITEM FOR VOTE: Priest Rapids Fish Attraction Pump – License Article 403** – Skylar Street, Grant PUD Hydro Engineer, presented a PowerPoint presentation on Grant PUD's proposal to use the installed capacity of the new Right Bank Gravity Supply (RBGS) to satisfy the requirements of License Article 403, and defer installation of additional pumps in the Left Bank Pumphouse. On April 28, 2010, the PRCC approved a plan

to install a Right Bank (RB) Gravity Supply and add two 550 hp fish attraction pumps to the present fish ladder Pumphouse. The Federal Energy Regulatory Commission (FERC) approved that plan on October 20, 2011. PRCC approval is again, being requested, because Grant PUD believes the following proposal will produce the same results as the PRCC/FERC approved plan.

Dresser said that since FERC's approval, Grant PUD Hydro Engineering staff has conducted a cost/benefit analysis on several of Grant PUD's proposed projects. The internal process flagged this project for an updated economic re-evaluation. Power prices have decreased significantly since the last economic analysis was performed on the project, and costs have increased causing this project to be uneconomical. Dresser went onto say that during relicensing, the main reason this project was proposed as an action item was because of the economic benefit of moving it forward, as well as the National Marine Fisheries Service's (NMFS) recommendations of reducing, or eliminating, use of the Gravity Intake Gate (GIG) at the Left Bank Fish Ladder, and providing a discrete/independent water supply for the Right Bank Fish Ladder (NMFS, 2009).

Street explained that the RBGS is designed to meet the following two criteria outlined by NMFS:

- To reduce, and possibly eliminate, the use of the GIG. (Design capacity for the RBGS is equal to the previously proposed additional two pump capacity (~850 cfs), and sufficient to supplement the present Pumphouse for supply of attraction water to all three entrances at minimum criteria up to the 5% exceedance flow (2480 cfs attraction flow.)
- Provide a water supply that allows the two fish ladders at Priest Rapids Dam (PRD) to operate independently of one another. (RBGS will be installed at the Right Bank Fish Ladder and through use of the Cross-Conduit Closure Gate (CCG) would allow isolation and independent operation of each fish ladder.)

The RBGS would augment the present pumphouse, and the GIG would remain in service to supplement during high flows, or serve as a back-up supply. Pumphouse improvements would include replacement of 5 gearboxes in the present pumphouse. This upgrade will result in increased reliability of the existing pumps.

Street explained that valve procurement is in process, with bids opening on July 3, 2012. The pipeline installation contract will be issued in July 2012 with a phased installation. Phase 1: Trashrack and upstream penetration of concrete dam. 4th Quarter 2012 through March 31, 2013. Phase 2: Right Bank Fish Ladder AWS pool work. February and March 2013. Phase 3: Install remaining items (out of water work), test and commission. December 2013 at the latest, depending on the testing window. Street noted that the bidding process is part of the original PRCC approved plan and would have been conducted whether this proposal had been brought to the PRCC, or not.

After discussion, PRCC members approved the proposal regarding the Priest Rapids Fish Attraction Pump Project, and the primary source of increased water supply to the right bank ladder. Installation of two pumps in the original approved plan will not be installed, and the installed capacity of the new Right Bank Gravity Supply will be used to provide attraction water at the Priest Rapids Right Bank Ladder. Nordlund asked that the following caveat be placed on the approval: If the expected performance of the Right Bank Gravity Supply isn't realized, then Grant PUD and the PRCC will reconsider installation of the two additional pumps as originally proposed.

Grant PUD staff will draft an amendment to FERC. Skyler Street invited PRCC members to visit the University of Iowa (IIHR) on July 11th and 12th to witness the final manifold configuration in the Right Bank supply model. Additional testing could be added to test other alternatives at that time.

V. Juvenile Steelhead Action Plan (SAP)

A. Report of IAPWG Activities and Meeting Schedule – The Inland Avian Predation Work Group (IAPWG) meeting scheduled for June 26th was canceled. The next meeting is scheduled for July 24, 2012. Rohr emailed a press release from U.S. Rep. Doc Hasting, R-WA, to PRCC members. A letter, written by Hasting, directing federal agencies to protect Northwest salmon from predatory birds on the Columbia River, passed the House of Representatives last week by a vote of 255 to 165.

B. Discussion of Draft Avian Predation Letter – A letter to the IAPWG, drafted by Grant PUD, was distributed to PRCC members for review. Edits were provided by Teresa Scott and Bryan Nordlund. There was some disagreement as to structure and content of the letter. Nordlund noted that the most important part of the letter is the data in the Table 1 because it affects the Priest Rapids Project (PRP), as well as the Hanford Reach (HR). **Nordlund asked that data in Table 1 be reviewed for accuracy, assure that the correction factor being applied is correct, add a block of rows discussing potential avian predation in the HR, and that heading titles are clarified.** The correction factor in the table is the best estimate of what survival could be if the terns removed.

PRCC members agreed the purpose of the letter is to provide information to the IAPWG so they are aware of the impact avian predation is having on steelhead smolts within the PRP, as well as the Upper Columbia. It was suggested that individual agencies and tribes provide comments on the IAPWG Plan when it comes out. PRCC members agreed that **Dotson take the first cut at re-drafting the letter, discuss it with Nordlund and Teresa Scott, then send it to Rohr for distribution to the PRCC for their review**. **Jim Craig will send his comments to Version 3 of the IAPWG letter to Dotson.**

C. Report on Question of WDFW Policy on Tern Displacement from Goose Island – Teresa Scott clarified that the Washington Department of Fish and Wildlife (WDFW) wants to ensure the perpetuation of both predator and prey populations while recognizing the value of Caspian terns in the Columbia Basin. Jim Craig asked if WDFW is concerned that ensuring long-term perpetuation of each species, predator and prey, would cause problems with invasive species. **Teresa will get WDFW's position on this question.** She said that WDFW realizes that avian predation management has to be a part of the broader balanced approach and not a disproportionate burden on avian predation, above other mortality factors. Management actions should be directed at specific populations based on scientific evidence, and that adequate monitoring needs to be conducted to insure that actions taken, either work, or not. WDFW wants to assure that predation doesn't shift to other vulnerable populations. Management programs can not result in increased cost to WDFW; stable long-term funding resources need to be identified. Public information should be incorporated into any predation management programs.

Teresa Scott reported that Matt Monda, WDFW, is participating in the IAPWG forum on a regular basis, and that WDFW is working with the local Bureau of Reclamation (BOR) office on a proposed alternative for Goose Island. The alternative would then need to be monitored and evaluated to see if it had the intended affect.

She asked if Grant PUD had already supplied the IAPWG with data on avian predation in the PRP, and if that data was being used to draft the Avian Management Plan. WDFW supports providing specific information to the IAPWG when available. Leah Sullivan, Blue Leaf Environmental, said that to date, all of the management decisions have been based on the benefits analysis (BA) conducted by Real Time Research, Oregon State University, and the United States Geological Survey (USGS). The IAPWG has the last 3 to 4 years of technical research data from the PRP. She didn't believe that at this time, any of the information has been used for management purposes. Leah said that the BA shows more predation on juvenile steelhead than what's being presented in Table 1 of the IAPWG letter. The BA shows 11-15% of upper Columbia River steelhead being taken by Caspian terns at Goose Island. Leah noted that impacts they are seeing from the BA are greater than what Grant PUD's analysis has shown so far, but noted that the BA covered an area from Rock Island tailrace to the McNary forebay, while the data from Table 1 is showing only impacts to the PRP.

D. 2013 Actions Based on SAP – Dresser reminded PRCC members that if there are things the PRCC would like to do in 2013, the amount of time it takes for contracting needs to be considered.

E. Continued Review/Prioritization of Table of Recommendations (TOR) – PRCC members agreed that in order to prioritize tasks

outlined in the SAP TOR, tasks should be placed onto a timeline. This will help identify tasks that are currently being implemented, tasks that need to be done immediately, as well as tasks that can be implemented in the short and long-term. **Grant PUD will take the initial shot at placing Steelhead Action Plan Table of Recommendations tasks onto a time line and distribute to PRCC members as soon as possible. PRCC members can then move items on the timeline as they see fit. Please provide comments to the Steelhead Action Plan and Table of Recommendations to the entire PRCC, in track changes. A table will be added to the back of the SAP to track how comments are addressed**.

F. Assignments for July 25th PRCC meeting – See Action Items identified above.

VI. Discussion of Fish Marking Assignment to PRCC Hatchery Subcommittee – Rohr reminded PRCC members that in a document dated 9/29/2011, the PRCC tasked the PRCC Hatchery Subcommittee (HSC) with evaluating four separate fall Chinook marking strategies. Elizabeth McManus, HSC Facilitator, took the document to the HSC. Mike Tonseth, WDFW's HSC representative, produced a document after taking the first cut at evaluating the marking strategies. After Tonseth completed the document, the HSC declined to accept the assignment as fulfilled, and did not review the document. **Rohr will review meeting minutes and other information in an effort to determine how the decision was made to decline the assignment. Rohr will discuss completing the assignment with McManus.**

Because this is an outstanding PRCC issue that needs to be resolved, Rohr suggested the assignment be sent back to the HSC, and that those members who would like to review it, do so. Rohr commented that if this issue can't be resolved by the PRCC, there are some who feel it needs to be elevated to the PRCC Policy Committee. **Rohr asked PRCC members to talk to their HSC representatives regarding this issue**.

VII. 2012 Spill Operations – Dotson reported that exceedances of hydraulic capacity is occurring at all projects on the Columbia River, and that Total Dissolved Gas (TDG) has been an issue. Grant PUD does conduct Gas Bubble Trauma (GBT) monitoring of Chinook and steelhead smolts. On 6/21/2012, 117 fish had been evaluated for GBT, as well as 150 fish on 6/26/2012. Of the fish evaluated, a few (3 – 5) had minimal signs of GBT. River flows are anticipated to be high through July.

VIII. Status of NNI Predator Index Reports – Rohr forwarded a link to the NNI Predator Index reports sent by Tim Counihan, USGS. Dotson noted that one of USGS's responses to a PRCC question made mention that the question was more of a topic for the integrated report, than the 2011 report. Dotson asked the following questions: Is there a separate report vs. an integrated report, is the PRCC expecting any further reports, and if PRCC members want to comment on the USGS reports? Rohr said he isn't expecting any

further reports from USGS, but will **discuss this matter with Counihan and report back.**

IX. Updates

A. Priest Rapids Bypass – Dotson reported that high flows have created issues with work barges in the tailrace, but that work is progressing slowly. A second concrete pour on the downstream pier noses took place Tuesday night, 6/26/2012.

B. White River Acclimation – Dresser provided the following update. On 6/4/2012, per FERC's order, Grant PUD sent a letter to Chelan County (CC) offering assistance in development of their updated Shoreline Management Plan so that it would allow activities, such as acclimation, within a natural environment. Grant PUD has had no response back from CC yet.

On 7/19/2012, CC is hosting a workshop titled "Evaluations of Limiting Factors on Resident and Anadromous Salmonids in Lake Wenatchee." Jim Craig said it's an ecosystem analysis looking at predator-prey interactions, and that USFWS will be in attendance. **Craig will forward information on the meeting to Rohr.**

C. Nason Creek Permits – Dresser reported Grant PUD is currently working with WDFW on the Hydraulic Project Application (HPA) for this project. The 401 Certification, and Shoreline Conditional Use permit, that needs to be developed by the Washington Department of Ecology (WDOE), has been drafted and is undergoing an internal review. A management decision should be out by 7/12/2012. It will then go out for public review and comment. The 404 United States Corp of Engineers (USCOE) permit is waiting on the Biological Opinion (BiOp).

Bidding was opened yesterday for the acclimation facility. If the Grant PUD Commission approves the contract, it will be awarded on 7/23/2012. Upland work is expected to begin in 2012. In-water work for the intake structure will take place in 2013. If all goes as planned, the facility will be ready to accept fish for over-winter acclimation in 2013.

D. Committee Reports – The Fall Chinook Work Group and PRCC Habitat Subcommittee reports were sent via email by Rohr.

E. NNI and Habitat Funds Report – Rohr distributed via email. Habitat Funds currently total:

- **No Net Impact Fund 601** - $3,925,814.
- **Habitat Supplemental Fund 602** - $3,545,688.
- **Habitat Fund 603** - $823,611.

X. Review of Next Month's Agenda Topics

– Rohr's discussion with PRCC members, PR turbine upgrade by Brad Strickler, Grant PUD, SAP priorities, draft avian letter, NNI reports, and usual updates.

XI. Approval of Meeting Minutes

A. **April 25, 2012** – Approved

B. **May 23, 2012** – **Grant PUD asked for additional time to review comments provided by Nordlund. After review, minutes will be distributed by Williams**.

XII. Next Meeting: July 25, 2012, Grant PUD's SeaTac Office, Seattle, WA.

XIII. PARKED AGENDA ITEMS

A. **Sub-yearling Chinook White Paper**

B. **NNI Fund Application**

C. **Future Funding for Quincy Valley Tourism Fishing Derby Sponsors**

Attachment C
WADOE support letter dated November 19, 2012

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
4601 N Monroe Street • Spokane, Washington 99205-1295 • (509)329-3400

November 19, 2012

Mr. Tom Dresser
Manager, Fish, Wildlife and Water Quality
Grant County Public Utility District
P.O. Box 878
Ephrata, Washington 98823

RE: Request for Support – Priest Rapids Hydroelectric Project No. 2114
License Article 403 Tailrace Pumping System for Fishway Water Supply –
Revised Management Plan

Dear Mr. Dresser:

We have received your letter dated November 15, 2012, regarding the revision of the October 20, 2011, FERC approved plan to satisfy the requirements of license article 403.

Thank you for the opportunity to discuss the revisions to the October 20, 2011, Tailrace Pumping System for Fishway Water Supply for Priest Rapids Plan during a conference call on November 6, 2012.

We have reviewed the plan and revisions, your November 15, 2012, letter and the PRCC meeting notes. We support the revision to the plan as approved by the PRCC on June 27, 2012.

We appreciate your continued coordination and consultation regarding this matter. Please feel free to contact me at (509) 329-3450 or by email at dman461@ecy.wa.gov if you have any further questions.

Sincerely,

D. Marcie Mangold

D. Marcie Mangold
Water Quality Program

DMM:dw
cc: Theresa Scott, WDFW
James M. Bellatty, Ecology/WQP