Grant County
PUBLIC UTILITY DISTRICT
Excellence in Service and Leadership

Priest Rapids Fish Forum
Meeting

Wednesday, 5 November 2014
9:00 a.m. – 12:00 p.m.
Grant PUD, 11 Spokane St., Suite 205B, Wenatchee, WA
Call-In Number: 1-800-977-8002, Bridge: 7422882

AGENDA

I. Welcome and Introductions (9:00 to 9:10)

II. Agenda Review (9:10 to 9:15)
   - A. Additional agenda items (All)
   - B. Approve October Meeting Notes (All)
   - C. Review Action Items from October meeting (All)

III. Update on Wanapum Dam and fish passage (9:15-9:45)

IV. Update on PLMP (9:45-10:40)
   - A. NNI update (Rose and Clement)
   - B. Lamprey passage and monitoring (Clement)
   - C. Lamprey Regional Implementation Planning Process (Nelle)
   - D. Other lamprey items (All)

V. Update on WSMP (10:40-11:35)
   - A. Update on rearing (Rose and Miller)
   - B. Monitoring updates (Clement)
   - C. Phase 2 Sturgeon Conservation Program (All)
   - D. Other white sturgeon items (All)

VI. Next Meeting: 3 December 2014 – Grant PUD Natural Resources Wenatchee Office

Priest Rapids Fish Forum

Wednesday, 05 November 2014
Grant PUD Wenatchee Office

PRFF Members

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

Attendees:

Patrick Verhey, WDFW
Bob Rose, YN
Kirk Truscott, CCT
Steve Lewis, USFWS (Via phone)
Mike Nicholls, GCPUD (Via phone)
Mike Clement, GCPUD
Chris Mott, GCPUD
Chad Jackson, WDFW
RD Nelle, USFWS
Doris Squeochs, Wanapum
Tom Skiles (Via phone)
Aaron Jackson, CTUIR (Via phone)
Debbie Williams, GCPUD
Tracy Hillman, Facilitator

Distributed Items:

1. No Net Impact and Mid-Columbia Regional Coordination, 5-Year Action Plan for Pacific Lamprey

Action Items:

1. PRFF members were tasked with identifying areas of the "No Net Impact and Mid-Columbia Regional Coordination, 5-Year Action Plan for Pacific Lamprey" that differ from the PLMP.
2. Rose will assign tasks 5-9 to each of the objectives, 1 – 4 of the "No Net Impact and Mid-Columbia Regional Coordination, 5-Year Action Plan for Pacific Lamprey."
3. Hillman will get growth and survival data for fish at Marion Drain.
4. Clement will send Truscott the last couple years of the WSMP annual report.
5. Williams will send the PRFF Box.net link to Truscott.
6. Clement will talk to Chelan PUD regarding the use of their Ecopath/Ecosim model.
7. Mott will talk to Golder about the appropriateness of using the model and report back next month regarding whether the model will be used.
8. Clement will send Jackson information on the Upper Columbia River White Sturgeon Recovery meeting being held on Nov. 18-19, in Coeur d'Alene, ID.

9. Hillman will find out if Miller has sent white sturgeon histology samples to U of I?

Final Meeting Minutes

I. Welcome and Introductions – Chris Mott, was introduced as Grant PUD's new PRFF sturgeon representative.

II. Agenda Review

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

B. Meeting Minute approval – 01 October 2014 – Approved subject to Jason McLellan's approval.

C. Action Items from last meeting

1. PRFF members will review the Pacific Lamprey Management Plan. Ongoing
2. Mike Clement will send lamprey PIT-tag data to Tom Skiles pending 2014 results. As soon as ladders are taken out, results will be finalized and data will be sent to Skiles.
3. Tracy Hillman will append Bob Rose's email comments on the sturgeon stocking decision 2015 to these minutes. Complete
4. Jason McClellan will send the sturgeon indexing data table to Debbie Williams for incorporation into the meeting minutes. Complete

III. Update on Wanapum Dam and Fish Passage – Grant PUD provided an update on issues at Wanapum Dam. The update described the results from the steelhead and yearling Chinook salmon survival studies conducted in 2014, ongoing cleaning of aquatic vegetation from the pump screens, the planned removal of the Fishway Exit Passage Systems from the dam, and the status of installation of tendons in the monolith piers.

At Wanapum, survival of yearling Chinook was about 94% and survival of steelhead was about 93%. Approximately 55% of the steelhead and 35% of the yearling Chinook passed Wanapum Dam through non-turbine passage routes (spillway and bypass). At Priest Rapids, survival of both yearling Chinook and steelhead was about 96%. About 69% of the steelhead and 65% of the yearling Chinook passed through non-turbine routes at Priest Rapids Dam.

Grant PUD described the planned removal of the Fishway Exit Passage Systems from Wanapum dam. The plan is to remove the exit passage systems in the dry before the anticipated pool raise occurs later this year. Removal work will begin on 17 November. It is projected that both ladders will be dewatered at the same time for no longer than 1 - 2 weeks during mid-December.

A total of 15 tendons have to be installed before the pool can be raised to 558-562 feet. Currently, 13 tendon holes have been drilled and sheathed. The pool will be refilled at a rate of three feet per day with monitoring occurring as the pool is refilled. The goal is to have the reservoir to 571.5' by April 1, 2015.

IV. Update on PLMP

A. NNI Update – The PRFF received a draft of the "No Net Impact and Mid-Columbia Regional Coordination, 5-Year Action Plan for Pacific Lamprey" (Concept Paper) prepared by the Yakama Nation, Umatilla's, WDFW, Colville Tribes, and WDFW. The purpose of the Concept Paper is to develop a five-year action plan for Pacific lamprey. To that end, the Concept Paper provides context and meaning of NNI, and clarity in its application. The paper identifies nine

tasks, which are linked to Grant PUD's Pacific Lamprey Management Plan, NNI, and/or adaptive management.

Rose explained that in 2011, the Columbia River Inter-tribal Fish Commission (CRIFTC) developed a tribal recovery plan and regional goal to obtain 80% interim passage at all dams and fishways within a 10 year period. He believes this concept paper is the first step in achieving the recovery goal. Clement argued that some of the objectives listed in the Concept Paper are not requirements of the Pacific Lamprey Management Plan (PLMP) that was approved by FERC, and that Grant PUD will only agree with objectives that apply to the PLMP. PRFF members were tasked with identifying areas of the Concept Paper that differ from the PLMP. Rose will assign tasks 5-9 to each of the objectives 1 - 4.

B. Lamprey Passage and Monitoring – Mike reported that a total of 139 unique PIT-tagged adult lamprey have been detected at Priest Rapids Dam. These fish were tagged downstream in the Columbia River. About 91% of the tagged fish passed Priest Rapids Dam. A total of 118 unique tags were detected at Wanapum Dam. About 61% of these passed the dam. There are currently 14 tagged lamprey in the Left Bank Ladder at Wanapum Dam. The PRFF will tour the adult fish ladders in January or February.

C. Lamprey Regional Implementation Planning Process – RD Nelle explained that local experts met to fill out templates for the Pacific Lamprey Regional Implementation Planning process. Templates for all Upper Columbia areas have been completed.

D. Other Lamprey Items – None

V. Update on WSMP

A. Update on Rearing – Juvenile sturgeon rearing at Marion Drain and at WDFW facilities from the 2014 brood year are doing well. Truscott asked if there are annual rearing reports for Marion Drain. Clement noted that Grant PUD's annual plan provides the size of fish at tagging and release. Hillman will get growth and survival data for fish at Marion Drain.

B. Monitoring Updates – Golder will download receivers and provide results in December or January. Clement will send Truscott the last couple years of the WSMP annual report. Williams will send link to Truscott for PRFF. Next year, full suite of M&E, natural production, broodstock collection will take place next year. Hildebrand hopes to move juvenile indexing back a year because it was just conducted.

C. Phase 2 Sturgeon Conservation Program – Grant PUD, in coordination with Golder and Chelan PUD, will evaluate the feasibility and application of using the Ecopath/Ecosim model as a way to estimate sturgeon carrying capacity within the project area. This information may be used to determine how many juvenile sturgeon will be released into the project area annually. Clement will talk to Chelan PUD regarding the use of their model. Mott will talk to Golder about the appropriateness of using the model and report back next month regarding whether the model will be used. Clement will send Jackson information on the Upper Columbia River White Sturgeon Recovery meeting being held on Nov. 18-19, in Coeur d'Alene, ID.

D. Other White Sturgeon items – Grant PUD is considering funding one or two boats to collect white sturgeon broodstock downstream from McNary Dam in 2015. Hillman will find out if Donella has sent histology samples to U of I? Jackson said to consider getting Transport Permits to him early because Kerwin, WDFW, is retiring and the position won't be back filled until the first of next year.

E. Benthic Surveys – Grant PUD reported that they will provide the PRFF with a draft report later this month on their assessment of benthic organisms stranded in Wanapum Reservoir due to water level reductions. They noted that most macroinvertebrates were found below the ordinary low-water mark. Rare species such as ashy pebblesnails, floater mussels, and pearlshell mussels were found in Wanapum reservoir. No invasive species were found.

VI. Next Meeting – 3 December 2014 at Grant PUD's Hatchery/Habitat Wenatchee office.

No Net Impact and Mid-Columbia Regional Coordination

5-Year Action Plan for Pacific Lamprey

Proposed by

Yakama Nation
Confederated Tribes of the Umatilla Indian Reservation
Confederated Tribes of the Colville Reservation
Washington Department of Fish and Wildlife
U. S. Fish and Wildlife Service

Concept Paper

For Evaluations to Determine Project Effects

and

Implementation of No Net Impact

Presented to the

Priest Rapids Fish Forum

Nov 5, 2014

Introduction

The Priest Rapids Fish Forum (Forum) functions to support the implementation of the Priest Rapids Settlement Agreement in general, and the Pacific Lamprey Management Plan (PLMP) specifically in addition to implementation of the 401 Water Quality Certification. Given that so little is understood about many aspects of the biology and behaviors of Pacific lamprey, the PLMP was written with a full expectation by the Forum that the notion of Adaptive Management would be central in our progress towards determining and eliminating Project effects on the species. Additionally, it was understood during the development of the PLMP that there would likely be Project effects that cannot be completely eliminated (either in the near term or longer term) and that mitigation would be required such as to render the Project operations as having No Net Impact (NNI) on the species.

To date, the majority of the ongoing effort has been associated with improving and measuring adult passage in the Project fishways. Many members of the Forum believe there are Project effects beyond adult passage issues but are stymied by the lack of technology and proven methods to quantify these potential effects. These members also recognize it is a responsibility of the Forum to implement reasonable and feasible actions to advance our understanding of these potential impacts in the face of uncertainty and to advance our goals and objectives as effectively and efficiently as possible, as discussed in more detail below. Therefore, the Forum concludes it is reasonable and useful to employ the NNI concept to mitigate ***and*** to advance our knowledge of lamprey biology and behaviors relevant to Project operations and Project effects.

Recognizing this need a regional holistic proposal incorporating 10 Objectives has been introduced to the Forum by the Yakama Nation (YN), Confederated Tribes of the Umatilla Indian Reservation (CTUIR), Washington Department of Fish and Wildlife (WDFW) and the United States Fish and Wildlife Service (USFWS). This same proposal has been introduced and discussed in the Douglas County PUD and the Chelan County PUD Fish Forum and its core components are embedded in the USFWS Pacific Lamprey Conservation Agreement. This holistic approach goes beyond addressing potential direct effects within the Project Area with the objective of substantially increasing lamprey productivity and spatial structure within the tributary streams of the Upper Columbia River (from Priest Rapids Dam to Chief Joseph Dam). By necessity, this approach recognizes the severely reduced lamprey population is a regional problem, which necessitates a regional response.

As stated above, many of the Forum members believe there are Project impacts related to the operation of the Priest Rapids and Wanapum dams and that it is appropriate to apply the NNI concept. Furthermore many Forum members agree that it is warranted to define and incorporate mitigation measures into the existing PLMP, as provided by the State of Washington 401 Certification fish use section 5.3. As such, the Forum concludes and recommends that the proposal provided in this document, with an intended effective time frame of 5-years, is the appropriate manner in which to sufficiently address mitigation during this time and advance our understanding of Pacific lamprey in relation to the Priest Rapids hydroelectric Project. The following outlines the general concept and identifies specific actions to be applied under the FERC License requirement and actions implemented under the NNI concept.

Purpose
The purpose of this document is to provide to the Forum a conceptual context and meaning of No Net Impact (NNI) and clarity in its application over the next five years (2015 – 2019).

Goal
The goal of the PLMP is to identify ongoing Project-related impacts on Pacific lamprey; implementing reasonable and feasible measures to reduce or eliminate such impacts; and implementing on-site or off-site measures to address unavoidable impacts in an effort to achieve NNI as identified in the 401 Certification.

The PLMP will be based on adaptive management, allowing for the adjustment of goals and objectives through a collaborative process, based on new information and ongoing monitoring results. Adaptive management is defined in Grant PUD's Water Quality 401 Certification (Section (6.2 (2)), which specifies that "the Adaptive Management process has been and will continue to be used for the protection of aquatic species.

The PLMP emphasizes a monitoring program that will necessitate future consultation with the PRFF to evaluate monitoring results and develop recommendations for program direction. Accordingly, the PLMP will be reviewed on a periodic basis by the PRFF to allow for planning and future adjustments over the term of the license.

Objective 1: No Net Impact (NNI). Identify, address, and fully mitigate Project effects to the extent reasonable and feasible.

Objective 2: Provide safe, effective, and timely volitional passage (as defined by the PRFF) for adult upstream and downstream migration.

Objective 3: Provide safe, effective, and timely volitional passage (as defined by the PRFF) for juvenile downstream migration.

Objective 4: Avoid and mitigate Project impacts on rearing habitat.

The PMEs contained in this [PLMP] management plan will: 1) protect, mitigate, and enhance lamprey resources for the term of the New License; 2) ensure that the ongoing operation of the Project will not adversely impact lamprey; 3) minimize the effect of any incidental injury or mortality to lamprey that may occur as a result of Project operation or Project effects to lamprey habitat; and 4) ensure adequate monitoring and reporting of results.

No Net Impact – The Concept

Definition: The Forum defines No Net Impact as actions provided by Grant County PUD that mitigate Project effects on Pacific lamprey such that the presence and operation of the Priest Rapids Hydroelectric Projects, including the reservoir up to the tailwater of Rock Island Dam, is essentially "invisible" to impacts towards abundance, productivity, spatial distribution and genetic diversity of the species.

More specifically, during the term of this 5-year Action Plan, GCPUD will substantially support a trap and haul (translocation) program guided by the fisheries co-managers and will contribute $X dollars to an account managed by the PUD for the purpose of (1) measuring the benefits of

this translocation program, (2) to assist resource managers in identifying and correcting passage problems in the tributary streams and to (3) support identification of potential juvenile entrainment issues in the tributary streams and correction of these issues. Actions associated with this account are discussed in more detail below.

Application: Ideally, this definition requires perfect knowledge of both lamprey biology and Project effects. The Forum acknowledges problems associated with enumerating adult or juvenile mortality due to Project operations (either direct or indirect effects) and the incomplete understanding of lamprey biology. However, neither of these limitations precludes the Forum from using existing information and, through consensus, define reasonable mitigation actions that are appropriate over a defined timeframe. The definition of Adaptive Management within the Settlement Agreement recognizes this notion. In addition, it is appropriate and reasonable to define NNI actions in a way that not only benefits the species but also implements actions that increases our knowledge of lamprey behavior and biology useful in measuring Project effects at some future time. It is intended that this information will be useful in determining reasonable and feasible actions to reduce, eliminate or as necessary mitigate for Project effects. These actions are described in more detail below.

Rational for Employing NNI: The Forum recognizes three specific facts that are the basis for the use of NNI at this time, including – but not necessarily limited to adult passage, uncertainties related to the reservoir and predation of juveniles in the turbine boils:

First, adult passage in the Priest Rapids fish ladders, as currently being measured, is likely below 80%. This does not include any unmeasured effects from ladder entrance efficiency or potential issues associated with the reservoir. Although it might be argued that this passage rate is *similar to other passage measurements on the Columbia River*, a passage rate of 80% contributes substantially to cumulative effects. For example, if three dams had 80% passage efficiency in the upper Columbia, less than half of the adults "destined" to migrate above these dams would make it (33% for 5 dams). Currently passage rate of 80% has not been achieved by any of the dams on the Columbia River. Applying NNI is consistent with Objectives 1 and 2 of the PLMP as stated above.

Second, nearly 70% of the fish that enter the Priest Rapids Project are not accounted for at the Rock Island Dam count window. There are no significant tributary streams for these fish to enter into from the reservoir. This situation may be attributed partly to Rock Island passage issues, but this is unknown. The Forum is well aware of this situation and it is appropriate for Grant County PUD to work closely with the PRFF in providing an appropriate evaluation, consistent with Objectives 1 and 2 of the PLMP. It is also consistent with the principles of Adaptive Management, outlined below.

Third, although not confirmed, there is reasonable cause to believe that predation on juveniles by Northern pikeminnow may be pronounced in the turbine boils where these predators are generally known to exist in established feeding stations. Although the PUD has an active predator control program, it is not clear to what extent the current pikeminnow removal program benefits lamprey. It is reasonable to evaluate the potential for increased predator control in the turbine boil area, consistent with Objective 3 of the PLMP.

Adaptive Management

Adaptive Management is defined in the 401 Certification.

Within this Certification, Ecology has required the use of an Adaptive Management process to meet a number of State water quality standards. As used in this Certification, Adaptive Management means an iterative and rigorous process used to improve decision-making and achieve objectives in the face of uncertainty. It is intended to improve the management of natural resources affected by Project in order to achieve desired objectives as effectively and efficiently as possible. For purposes of this Certification, Adaptive Management involves the following steps:

a) Develop initial hypothesis regarding any Project effects and potential remedial measures
b) Develop objectives for addressing such impacts
c) Develop and implement reasonable and feasible measures in accordance with an established schedule
d) Develop or identify monitoring and evaluation methodologies for determining whether such objectives have been achieved
e) Monitor and evaluate the implementation of such measures and their effectiveness toward achieving such objectives
f) Review monitoring and evaluation efforts
g) Confirm such objectives have been achieved or, if not achieved, evaluate additional or revised measures, and implement any appropriate and reasonable measures.

The Forum recognizes the importance of several key concepts in this definition, including:

- iterative and rigorous process …in the face of uncertainty,
- intended to improve the management of natural resources…
- in order to achieve desired goals and objectives as effectively and efficient as possible…

With this understood, it is the intention (and the obligation) of the Forum to apply these Adaptive Management principles to actions directed under the FERC License and mitigation actions developed under the NNI. The importance of this cannot be understated because it is only through these principles that the Forum can measure and be assured that actions implemented by Grant PUD are in fact, *achieving the desired goals and objectives in an effective and efficient manner*.

Implementation Plan

The following is a brief summary of the 9 Objectives which have been under consideration by the Forum and proposed to be fully developed for both FERC License Requirements and NNI. The first five Objectives are relevant to the FERC license and must be accomplished accordingly. The last four Objectives are appropriate for NNI considerations.

Appropriate Actions Implemented through the FERC License

1. Mainstem Fishway Entrance, Passage and Exit Efficiency

Determine the proportion of tagged adult lamprey that successfully (1) enter fishways entrances (Fishway Efficiency), (2) ascend and exit mainstem fishways (Passage Efficiency) and (3) leave the forebay area without falling back. Describe behavioral attributes associated with general lamprey movements and elapsed time at fishway entrance and within fishways.

Task	Continue to evaluate specific areas within the fishways (as identified by the Forum) for passage improvement and implement actions recommended by the Forum in a timely manner.
Rationale	Consistent with the Goal and Objectives 1 and 2 of the PLMP and the 401 Certification.
Timing	Ongoing

2. Fate of Adults in Reservoirs

Determine fate of adults that enter into PUD reservoirs with regards to:

- movement behavior through reservoir (passage success and timing, over-winter, etc),
- successful passage up to the next counting window, and
- mortality / predation within reservoir.

Task	Evaluate efficacy of using active tags to track or locate adults in the reservoir especially during the winter months of inactivity.
Rationale	Consistent with the Goal and Objective 1 of the PLMP and the intent of the 401 Certification. It is unknown what is happening with a substantial number of migrating adults within the Project Area after they exist the Priest Rapids and Wanapum fishways.
Timing	Initial evaluations in 2016-2017, utilizing tagged adults for other evaluations. Study period anticipated to be approximately 3-years.

3. Predation on Juveniles in Tailrace

Determine the relative level of predation on juvenile lamprey in turbine boils and tailrace areas and implement measures to further reduce excessive predation, as warranted.

Task	Tasks not yet identified. Evaluation of additional fishing effort from powerhouse deck.
Rationale	Consistent with the Goal and Objectives 1 and 3 of the PLMP and the intent of the 401 Certification.
Timing	Initial evaluations anticipated to begin in 2017.

4. Juvenile Occupancy and Use of Reservoir Habitat Measure juvenile lamprey presence and relative abundance in habitat areas that may be affected by ongoing Project operations. Identify and measure Project effects on lamprey in these areas, if any.	
Task	Continue to evaluate presence/absence and relative abundance in habitat areas that may be affected by ongoing Project operations.
Rationale	Consistent with the Goal and Objective 4 of the PLMP and the intent of the 401 Certification.
Timing	Planning for future actions completed in 2016. Begin implementation in 2017-2018.

Appropriate Actions Implemented through NNI

5. Adult Translocation Research Implement a translocation program and evaluate the success of translocated adult lamprey in producing viable redds, eggs, larvae and early age ammocoetes in key stream reaches (many of which are identified in the Pacific Lamprey Artificial Propagation and Rearing Investigations: Rocky Reach Pacific Lamprey Management Plan).	
Task	Trap and Haul: Grant PUD will provide sufficient effort trap X adults from Priest Rapids Project and translocate into tributary streams. Adult Tagging – Radio: Grant PUD will provide $X sufficient funding to radio tag 120 (TBD) adults per year for three years (2015 - 2017) to be released at locations specified by the Forum. (Funded by PUD) Telemetry Equipment Setup: Grant PUD will provide $X sufficient funding into the NNI Account to support establishing radio receivers at the mouths of the W-E-M-O prior to 2015 adult migration and maintain equipment through 2017 migration. Air Radio Telemetry Surveys: Grant PUD will provide $X sufficient funding into the NNI Account to support performance of air surveys twice per year for two years in the W-E-M-O preferably in October and May-June, or as determined by the Forum (2015 – 2017). Field Radio Telemetry Surveys: Grant PUD will provide $X sufficient funding into the NNI Account to support USFWS survey capacity to provide mobile field telemetry tracking of adults to determine spawning locations (2015 – 2017).

	Field Juvenile Distribution and Abundance Surveys: Grant PUD will provide $X sufficient funding into the NNI Account to support existing tribal survey capacity providing surveys in Index Sites to determine juvenile relative abundance and spatial distribution. Genetic Samples: Grant PUD will provide sufficient funding into the NNI Account to support genetic analysis of translocated adults and subsample of juveniles found in the W-E-M-O during 2019 field surveys. Analyze genetic samples from W-E-M-O to estimate proportion of juveniles produced from translocation program. Numbers of adults and juveniles sampled to be determined by the Forum.
Rationale	Translocation is the primary means to mitigate for Project effects. Appropriate monitoring is obligated through the PLMP and 401 Certification to determine benefits to the species for this mitigation.
NNI Funding	$X to support field efforts for both adult surveys (2015-2017) and juvenile surveys (2017-2019) and genetic analysis.

6. Proportion of Adults Ascending Tributaries

Estimate the proportion of migrating adult lamprey that leave the Mid-Columbia reservoirs and permanently ascend the Wenatchee, Entiat, Methow and Okanogan tributaries. Describe behavioral attributes associated with general lamprey movements and elapsed time as lamprey leave the reservoir and enter lower mainstem tributary reaches ("affirming" establishment into that tributary).

Task	Contribute $X into the NNI Account funding to support for radio telemetry in the upper Columbia. Support trapping and tagging sufficient adults (TBD by Forum) for migration – behavior evaluation. Employ USFWS to establish and maintain receivers, download and evaluate information and report on findings.
Rationale	Consistent with the Goal and Objective 1 of the PLMP and the intent of the 401 Certification.
Timing	Equipment in place for the 2015 adult migration.

7. Regional Establishment Baseline / Status and Trend Information Establish baseline information by enumerating (relative abundance) local populations (watershed scale) of adults and juveniles in priority watersheds and stream reaches. • Track and understand behavioral characteristics and long-term changes of both juvenile and adult local populations in priority monitoring locations (index sites) over time. • Compare and evaluate these changes relative to other Columbia Basin regions.	
Task	Establish long term "Index Sites" in the Wenatchee, Entiat, Methow and Okanogan subbasins to monitor and track changes in juvenile abundance, spatial distribution and population age/size-class characteristics. Monitor juvenile presence, relative abundance and age/size class characteristics using screw traps, fyke-nets, electroshocking or other monitoring methods. Consolidate and evaluate data and report on findings.
Rationale	Baseline information is critical to establish to determine long-term benefits of lamprey NNI mitigation measures associated with supplementation and natural production of the local populations.
NNI Funding	Grant PUD will provide $X sufficient funding into the NNI Account for two years (2015-2016) to support existing tribal juvenile survey capacity at Index Sites to determine juvenile relative abundance and spatial distribution.
Timing	Funding available in Years 1 and 2. Baseline juvenile information completed in 2017.

8. Adult Passage in Tributary Streams Identify primary spawning areas of adult lamprey and establish, where feasible specific spawning locations and timing. Identify, evaluate and correct adult passage issues in priority areas within the Upper Columbia subbasin tributary streams.	
Task	Provide sufficient funding and excess telemetry receivers to support identification of potential adult passage issues in the W-E-M-O and implementation of corrective actions.
Rationale	Consistent with the Goal and Objective 1 of the PLMP. Mitigation for passage issues associated with the Priest Rapids and Wanapum dams.
NNI Funding	Grant PUD will provide $X sufficient funding into the NNI Account to support USFWS for radio telemetry installation and maintenance of equipment and retrieval, evaluation and reporting of information.
Timing	Established prior to March 2016 and maintained through 2018 to insure full two year (minimal) analysis.

9. Juvenile Entrainment: Irrigation Structures Evaluate and correct juvenile entrainment into irrigation facilities within priority watersheds / stream reaches in the Upper Columbia subbasin tributary streams.	
Task	Evaluate alternative strategies to prevent or minimize juvenile entrainment into irrigation ditches.
Rationale	Consistent with the Goal and Objective 1 of the PLMP.
NNI Funding	Grant PUD will provide $X funding into the NNI Account to support agency actions associated with this Objective.
Timing	Funding available for 3-years, 2016 - 2018.

Summary of Actions to be Implemented through NNI and/or Regional Coordination			
Objective	**Grant**	**Chelan**	**Douglas**
FERC Required Actions			
1. Mainstem Fishway Entrance, Passage and Exit Efficiency	Passage improvements needed – continued evaluation		
2. Proportion of Adults Ascending Tributaries	Evaluation required. 2015 - 2016		
3. Fate of Adults in Reservoirs	Ongoing consideration, preliminary acoustic evaluations warranted.		
4. Predation on Juveniles in Tailrace	Ongoing consideration Evaluation warranted	Contribution to JLAT development (Section 4.2.3)	Ongoing consideration Evaluation warranted
5. Juvenile Occupancy and Use of Reservoir Habitat	Additional evaluations deferred until 2018-2019	Additional evaluations deferred until 2018-2019	Preliminary evaluation needed (2016)
6. Juvenile Propagation Research	No Requirement	Contribution to ongoing efforts. Section 4.2.3	No Requirement
NNI / Regional Coordination Actions			
7. Adult Translocation Research	Trap and Haul for passage studies. Trap and Haul into Tribs. Contribute Funds to NNI.	Trap and Haul for passage studies. Trap and Haul into Tribs. Contribute Funds to NNI	Trap and Haul for passage studies. Trap and Haul into Tribs. Contribute Funds to Reg. Coord
8. Regional Establishment Baseline / Status and Trend Information	Contribute Funds to NNI.	Contribute Funds to NNI.	Contribute Funds to Reg Coord.
9. Adult Passage in Tributary Streams	Contribute telemetry equipment. Contribute Funds to NNI.	Contribute telemetry equipment. Contribute Funds to NNI.	Contribute telemetry equipment. Contribute Funds to Reg Co.
10. Juvenile Entrainment: Dryden Ditch / Other Irrigation Structures	Contribute Funds to NNI.	Contribute Funds to NNI. Evaluate and correct Dryden.	Contribute Funds to Reg. Co.