

Memorandum

To: Priest Rapids Coordinating Committee Hatchery Subcommittee Document Date: June 21, 2024

From: Tracy Hillman, PRCC Hatchery Subcommittee Facilitator

cc: Larissa Rohrbach and Natasha Winnacott, Anchor QEA

Re: Minutes of the May 15 and 16, 2024, PRCC Hatchery Subcommittee Meetings on the White River Hatchery Program

Two meetings of the Priest Rapids Coordinating Committee's Hatchery Subcommittee (PRCC HSC) focused on the White River (WR) Hatchery Program were held in person and virtually at the Douglas PUD Auditorium on Wednesday, May 15, 2024, from 1:00 p.m. to 4:50 p.m., and on Thursday, May 16, 2024, from 10:00 a.m. to 3:15 p.m.

Attendees are listed in Attachment A to these meeting minutes.

The following Action Item Summary documents tasks for the PRCC HSC members related to the WR hatchery program only. (Action items related to other ongoing business are documented in Action Item Summary and Minutes of the May 15, 2024, Joint HCP-HCs and PRCC HSC meeting.)

Action Item Summary

PRCC Hatchery Subcommittee – White River Hatchery Program

Near-Term (to be completed by next meeting)

White River Hatchery Program

Data Sources and Document List for Expert Panel (Item III-B):

- Grant PUD staff will assemble existing data sources to answer the questions in Table 1 of the *Update to the White River Spring Chinook Mitigation 2026 Decision Framework* (2018 WR Memorandum). (*Note: this item is ongoing.*)
- Katy Shelby will contact Jeff Caisman to determine whether additional otolith samples could be collected from WR juvenile spring Chinook Salmon. (*Note: this item is ongoing.*)
- Mike Tonseth will inquire about data outputs and potential future uses of Mark Sorel's Wenatchee River spring Chinook Salmon life-cycle model. (*Note: this item is ongoing.*)
- Mike Tonseth will inquire about availability of results from the Wenatchee River spring Chinook Salmon Relative Reproductive Success Study, specifically the following:
 - Results available about the WR spawners
 - Results for both hatchery-origin and natural-origin fish from WR and other tributaries

- Potential development assembly of previously reported results into a single document or an executive summary to support the WR Expert Review Panel
- Grant PUD will inquire about availability of egg-to-fry survival data.
- Rod O'Connor will assemble information about productivity of strays into the WR from the 10-year comprehensive report.
- Rod O'Connor will assemble information about genetic differentiation of the WR from the 10-year comprehensive report.
- Tim Taylor will advance the WR spring Chinook Salmon population viability analysis using existing monitoring and evaluation data. (*Note: this item is ongoing.*)
- Tim Taylor will summarize specific requests for habitat and life-cycle model outputs, as needed.
- Mat Maxey will inquire with U.S. Fish and Wildlife Service (USFWS) Ecological Services staff about information to support conclusions regarding potential impacts and benefits to Bull Trout.

Expert Panel Scope, Logistics, and Qualifications (Item III-C):

- Larissa Rohrbach and Tracy Hillman will summarize the key discussion points leading to answers to Steps 1 and 2 in the WR Decision Tree for inclusion in the package of information for the Expert Review Panel.
- Keely Murdoch will write a summary about available information for capacity, limiting life stages, and limiting factors.
- Mike Tonseth will write a summary about the sideboards limiting the size of a WR hatchery program.
- PRCC HSC members will review the preliminary list of potential expert panel members against the working list of competencies and selection criteria.

Broodstock Collection Feasibility (Item III-D):

- Grant PUD will prepare a brief summary of potential hatchery program details for NOAA Fisheries representatives to seek internal feedback on potential limitations that could be imposed on the program by their agency (see notes under Item II-B).
- Grant PUD will distribute the revised WR Broodstock Collection Feasibility Review for PRCC HSC review.

Decision Summary

- None

Agreements

- The PRCC HSC agreed to modify the WR Decision Tree to allow for convening an expert panel to address uncertainty about whether the WR hatchery program could increase the probability of meeting Recovery Plan criteria for the Wenatchee River spring Chinook Salmon population.

Review Items

- The PRCC HSC will review the Data Source Metadata spreadsheet and Bibliography distributed on May 20, 2024, to identify linkages between the two and identify which resources should be considered essential readings versus supplemental readings and add others.
- The PRCC HSC will review the Expert Panel Scope, distributed on May 20, 2024.
- The PRCC HSC will review the revised WR Broodstock Feasibility Review, distributed following the meeting.

Finalized Documents

- None

I. Welcome

A. Agenda, Approval of Past Minutes, Action Item Review

Tracy Hillman welcomed the PRCC HSC and reviewed the agendas on May 15, and again on May 16, 2024. No revisions to the agendas were requested, and the PRCC HSC representatives approved the agendas. The revised meeting minutes from April 18, 2024, were reviewed and approved by Parties that attended that meeting. Brett Farman did not attend that meeting and abstained from approving the minutes.

Action items from the PRCC HSC April 18, 2024, meeting were reviewed. (*Note: Italicized text below corresponds to action items from the previous meeting.*)

Long-Term

- *Tim Taylor will conduct a WR spring Chinook Salmon population viability analysis using existing monitoring and evaluation data (Item II-C).*

This item is ongoing.

Near-Term (to be completed by next meeting)

- *Tracy Hillman will contact Justin Yeager (National Oceanic and Atmospheric Administration [NOAA] Fisheries) to review materials on the relative importance of the WR spawning aggregate and invite him to attend the May meetings (Item II-B).*
This item is complete.
- *Katy Shelby will contact Jeff Caisman to determine whether additional otolith samples could be collected from WR juvenile spring Chinook Salmon (Item II-B).*
Shelby has sent Caisman a message. This item is ongoing.
- *Tracy Hillman will inquire about the status of the Northwest Fishery Science Center's (NWFSC's) Upper Columbia Basin Habitat Assessment and Restoration Planning (HARP) model (Item II-C)*
A response was distributed to the PRCC HSC via email on May 3, 2024. Hillman briefly summarized that the HARP model can calculate current habitat capacity and potential habitat capacity for spring Chinook Salmon, but results may not be available within 2024 for use by the expert panel. This item is complete.
- *Mike Tonseth will inquire about data outputs and potential future uses of Mark Sorel's Wenatchee River spring Chinook Salmon life-cycle model (Item II-C).*
Tonseth will meet with Sorel next week. This item is ongoing.
- *Grant PUD staff will assemble data sources to answer the questions in Table 1 of the 2018 WR Memorandum and report (Item II-C).*
This was addressed during the meeting.
- *PRCC HSC members will consider the working list of competencies and selection criteria for expert panel members and start considering potential panel members (Item II-D).*
This was addressed during the meeting.
- *Todd Pearsons will work on a written charge for the expert panel including specific responsibilities, expectations, and ground rules for achieving their objectives (Item II-D).*
Updates to these items were discussed in the meetings. These items are ongoing.

II. PRCC HSC – May 15, 2024**A. Decision Framework Review**

Tracy Hillman welcomed Justin Yeager, NOAA Fisheries' Interior Columbia Basin Office Branch Chief, to the meeting and reviewed Steps 1 and 2 of 2018 WR Memorandum (Attachment B to the April 17, 2024, minutes) for consideration by Yeager and Brett Farman in today's meeting.

B. Steps 1 and 2: Meeting Viable Salmonid Population Criteria

The PRCC HSC asked for feedback from the NOAA Fisheries staff on the first two steps of the 2018 WR Memorandum decision framework.

Regarding Step 1, Yeager and Farman agreed with the PRCC HSC that the likelihood of the WR meeting Viable Salmonid Population (VSP) criteria by the time a decision is needed on the WR hatchery program in 2025 is low. Yeager also agreed that no new data or analyses are likely to change that conclusion by 2025.

The PRCC HSC discussed Step 2 in the decision framework: whether the WR spawning aggregate is necessary for Wenatchee River spring Chinook Salmon population recovery. Responses to the PRCC HSC from NOAA Fisheries staff in 2020 were reviewed (Attachment C to the April 17, 2024, minutes) to confirm whether their responses are still relevant and how those should be interpreted. Questions from the PRCC HSC are bolded and italicized and followed by the responses from NOAA Fisheries.

Is the WR spawning aggregate necessary to the Wenatchee spring Chinook Salmon population in regards to meeting VSP criteria?

The current *Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan* (Recovery Plan)¹ states that four of five major spawning aggregates (MaSAs) must meet VSP criteria for recovery of the whole population. Yeager said it makes sense to keep options open and to pursue the most viable four MaSAs—those that have the highest likelihood of being successful and meeting VSP goals. There are three MaSAs that are underperforming (the upper mainstem Wenatchee, Little Wenatchee, and White rivers); the others (Chiwawa and Nason) are closer to meeting recovery goals. Yeager said it is risky to leap to the conclusion that the WR aggregate is necessary without having evaluated the likelihood of which aggregate would be most successful. Hillman concluded that the answer from NOAA Fisheries has not changed from the responses provided by Busack and Bambrick in 2020. Keely Murdoch said of all the underperforming spawning aggregates, the WR has been viewed as the one with the best chance of meeting the VSP criteria, and it is unlikely that VSP criteria could be achieved in the other spawning aggregates. So, realistically, the WR aggregate is necessary.

What is the NOAA Science Center's most recent view on the importance of the WR spawning aggregate?

No new discussion has occurred with NWFSC scientists who evaluated recovery status.

¹ Upper Columbia Salmon Recovery Board, 2007. *Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan*. August 2007. Available at: <https://www.ucsr.org/reports-plans/recovery-plan/>.

If the WR and Little Wenatchee spawning aggregates are important to recovery and both suffer from the same limiting factors, how will NOAA address recovery without one or both aggregates?

The Recovery Plan outlines criteria in matrices for each spawning aggregate (in Appendix B of the Recovery Plan). Yeager said that although recovery plans can be updated, that has not been done anywhere in the Pacific Northwest.

How important is the WR aggregate to the overall genetic diversity of Wenatchee spring Chinook Salmon?

Yeager said the WR has some unique attributes compared to tributaries to the Wenatchee River. NOAA Fisheries has acknowledged that the criteria for diversity are challenging to interpret. NOAA Fisheries staff are looking into how spatial structure and diversity criteria are applied in the West Coast region to develop and entertain some changes. That effort is in its early stages, and they hope to solidify the guidance before the next 5-year status review occurs. That effort will begin in 2025 at the earliest and will end in 2027 or 2028, which does not help this process.

The group discussed whether diversity metrics are limited to genetics or whether they consider life-history diversity. Several Technical Review Team documents were generated to support the Recovery Plan matrices for genetic, life history, and phenotypic variation. The scoring is not absolute; they identify risk, moderate risk, and low risk. The WR and Little Wenatchee Chinook Salmon aggregates use Lake Wenatchee in their life histories. The WR is the only glacial till system in the Wenatchee River basin and with climate change, an aggregate that uses a glacial system might be very important to diversity. The genetic distances (e.g., F_{ST}) from the other aggregates are small, but they are greater than any other aggregate in the system. A spawning aggregate could deviate genetically due to a founder effect. In that instance, genetic diversity is not an indicator of a strong population. That is why there is some allowance for strays in the Recovery Plan. Work done for the 10-year comprehensive report, and the most recent WDFW genetic report, indicate it is getting more difficult to discern the genetic difference between the WR and other aggregates. The diversity metric is considered at the population level. For example, loss of both aggregates that use the lake system would be a reduction in diversity. We assuming more variation is best. Any decisions contrary to that would move the population in the wrong direction.

Rod O'Connor suggested that the Recovery Plan matrices could be used as a tool for the expert panel to work through their questions. Yeager noted that the matrices have not been reviewed since development of the Recovery Plan, and the NWFSC does not use this table of criteria in their 5-year reviews. NWFSC is discussing these criteria and intends to include them in future evaluations of populations. Currently, evaluations are based only on abundance and productivity.

If the WR genetic signature is lost, can recovery still be achieved?

Yeager stated that excluding any spawning aggregate from recovery at this time would be risky given how far the population is from recovery. PRCC HSC members noted that Bambrick's answer suggests that recovery has more to do with spawning distribution than genetic signature. The charge for the expert panel is not to determine the best course toward recovery by comparing spawning aggregates; they will be asked whether a WR supplementation program would lead the Wenatchee population toward recovery.

Would NOAA support a composite broodstock hatchery program for the WR?

Yeager stated that NOAA would need more information about the program and agreed with the responses by Busack and Bambrick.

If WR spring Chinook Salmon are not genetically distinct from other Wenatchee spring Chinook Salmon aggregates, what would be NOAA's view on WR supplementation?

Yeager stated he would need more details about a potential program to respond differently; he was reluctant to conclude that a supplementation program is not needed at this time. Farman said the compositing of broodstock in the context of the logistical constraints of the program is a different question than whether there was a program that could successfully isolate and collect WR broodstock without affecting the other MaSAs. Pearsons said, for context, it could be feasible to implement a composite program, whereas it would be challenging to obtain sufficient numbers of brood to support an isolated WR program. It would be helpful to know whether compositing is something that NOAA would entertain, and if not, it is an alternative that should be taken off the list. Farman said compositing might overwhelm the genetic signature in the system and reduce the diversity criteria, but it may increase abundance. He said it is beyond his expertise to answer that question more directly.

Pearsons said his interpretation of the response from NOAA Fisheries is that it depends on the details of the program, and until we get more of those details, it is hard for them to make a decision at this time. O'Connor said Grant PUD is evaluating risk of a program within acceptable limits—one limit could be impact to genetic signature and another could be impacts on other species—and asked the NOAA Fisheries staff whether they know any other limitations that would bear on their decision-making. Farman said he would consider that and discuss this with others at NOAA Fisheries and said a brief document from Grant PUD summarizing details of a program would help them consider this point. Pearsons suggested that obtaining feedback on a brief one-to two-page summary of potential hatchery program details may allow for a better understanding of permitability for the expert panel.

The group then discussed within-basin straying from the Chiwawa and Nason hatchery programs into the WR and Little White River and the suggestion that compositing has occurred already, as indicated by a reduction of the genetic signal over time. Data summarized in the Chelan and Grant PUD 2022 Annual Monitoring and Evaluation Report indicate 50% or more of the carcasses observed in the WR are hatchery strays in some years, although this is based on low numbers of carcasses observed. Relative Reproductive Success (RRS) reports suggest the hatchery-origin returns (HORs) were actually more successful than the natural-origin returns (NORs) in the WR and Little White River; although, observations may be affected by spawning location (at least to the juvenile stage). Despite straying of HORs, the WR genetic signal is still present, and there is a need to determine whether that signal is worth preserving.

Farman responded there is a big difference between acknowledging a high stray rate and actively allowing for compositing in a hatchery program, which would compound that loss of diversity.

If HORs do not contribute to NORs, would adding another supplementation program in the Wenatchee contribute to recovery?

Farman and Yeager noted recovery goals are based on natural production. If a program is not supporting future natural production, it is harder to justify permitting unless the population is at critically low levels.

Yeager said under almost every scenario, he would want the expert panel to be convened. The only exception would be whether a comprehensive review of the upper Wenatchee determined that the WR aggregate would have no chance of success, and we are far from being able to conclude that. Farman agreed.

Additional specific questions were posed by Grant PUD to NOAA Fisheries.

How does NOAA Fisheries plan to deal with (new) information related to the productivity of the Wenatchee River spawning aggregate?

Information is available in annual reports but will require some additional thinking.

How does NOAA Fisheries plan to use the information from the expert panel? (I.e., if the answer from the expert panel is yes or no, how would NOAA Fisheries use that information?)

Farman said a lot of deference will be given to the expert panel's conclusion; whether a hatchery program in the WR moves the needle toward recovery may indicate whether it is necessary to maintain the MaSA.

How does NOAA Fisheries plan to evaluate risks of implementation?

Yeager said the focus for the Interior Columbia office is on Section 7 consultation for the construction of facilities and not the program's Hatchery and Genetic Monitoring Plan (HGMP). Farman said his role would be to review the HGMP and risks associated with the operations, ongoing action, and effects on other populations. He would use metrics like those in Appendix B of the Recovery Plan.

How should the expert panel consider risks to other spawning aggregates?

Farman said this could go beyond the scope of the panel but may also depend on who is on the panel. This will require evaluation of risks of impacts to the other MaSAs from operations that create risks like mortality, future straying, and ecological risks in the context of the inability to limit straying into the area. Murdoch noted that in the RRS study 2022 annual report, there was a higher stray rate for NORs within the Wenatchee basin than anticipated, and HOR fish should not be held to a higher standard than NOR populations. That may be expecting them to do something they cannot do.

How does NOAA Fisheries plan to address the Biological Opinion (BiOp) requirement if a hatchery program is NOT implemented? (How would Grant PUD meet their BiOp requirement?)

Yeager said alternatives to a hatchery program would be determined in collaboration with Grant PUD and others. This has not been discussed yet, and it is too early to determine that. Farman said actions would have to increase productivity at the level that would equate to a WR hatchery program—there is a wide range in the types of actions that could be implemented (increasing the productivity and capacity of the system). Yeager emphasized that habitat restoration is only one avenue.

The 2013 statement of agreement (SOA) did not consider evaluating other potential mitigation measures. That would be a PRCC Policy Committee decision. Language in the Settlement Agreement, which comes directly from the BiOp, requires this WR program. The task for the PRCC HSC is to make a recommendation to the PRCC Policy Committee regarding whether a hatchery program is viable at this time. Then, NOAA Fisheries would consult on it and determine through the BiOp process whether a program can be permitted, and side bars would be detailed. The PRCC HSC will need to inform the PRCC Policy Committee to that effect and provide some suggestions. NOAA Fisheries would have to decide whether what is proposed would be consistent with their BiOp with the Federal Energy Regulatory Commission for those programs. Yeager said, depending on the decision from the PRCC Policy Committee, NOAA Fisheries may have to amend the BiOp.

Grant PUD staff thanked Yeager for his participation. Yeager said he appreciates the PRCC HSC's efforts with these difficult questions.

III. PRCC HSC – May 16, 2024

A. Debrief on Meeting VSP Criteria

Step 1 was addressed in the May 15 meeting. All PRCC HSC members and Interior Columbia staff agreed that the Wenatchee River spring Chinook Salmon population is not meeting VSP criteria.

The PRCC HSC agreed to modify the potential answers from Step 2 in the 2018 WR Memorandum Decision Tree to accommodate the need to convene an expert panel without a definitive Yes or No answer from NOAA Fisheries. The answer “Yes” will be modified to “Yes/Maybe.” Convening an expert panel will help to address uncertainty and whether the WR hatchery program could increase the probability of meeting Recovery Plan criteria for the Wenatchee River spring Chinook Salmon population.

As part of developing the charge for the expert panel, the responses to Steps 1 and 2 will be described with more detail on how the PRCC HSC has arrived at those answers.

B. Data Source Updates and Document List for Expert Panel

Grant PUD has started a Data Source Metadata spreadsheet to show data sources and documents that inform each Key Question in the 2018 WR Memorandum Table 1, “White River Questions and Data.”

Grant PUD has proposed specific resources to obtaining information and data that can be useful to the PRCC HSC rather than leading the expert panel into a purely theoretical discussion. The PRCC HSC discussed the resources that inform each Key Question and refined the metadata spreadsheet during the meeting.

Key Questions 3.1 through 3.6

The group discussed how to provide the best information on capacity and productivity. Past estimates of capacity and productivity have been based on yearling smolts outmigrants from tributaries and may underestimate total productivity because they lack data on other life histories (e.g. subyearling outmigrants). The limiting life stage is unknown, lacking information about survival through portions of their life cycle outside of the WR, and it could be different for the different life-history types.

These questions are important, but if the people working in the basin have not answered them yet, it is unlikely the expert panel will be able to answer them. The expert panel will make a determination regarding whether supplementation in the WR will help recovery of the Wenatchee River population without considering the entire life cycle. Tools developed by the Regional Technical Team can be used to identify the limiting factors based on the best available information for the WR. The Upper

Columbia Salmon Recovery Board prioritization tool provides a range of answers, but there is not a lot of confidence in the existing information. Trends, or changes over time, are aspects to consider.

These should include very carefully defined limits of what is known about limiting factors. Evaluation of limiting factors should include the life cycle of the entire WR aggregate, including Lake Wenatchee, the Wenatchee River, the Columbia River, and the Pacific Ocean.

Smolt trap data can inform density dependence (e.g., whether juveniles move out of tributaries as subyearlings when tributary capacity is reached). An overwinter survival estimate for parr emigrants is needed; the passive integrated transponder (PIT)-tag barge detection data may inform subyearling overwinter survival for each of the tributaries soon. As hatchery spawners increase, then life-history diversity may increase with more subyearlings migrating. This may inform how many spawners should be allowed onto the spawning grounds. If overwinter survival outside the tributaries is low, allowing fewer spawners may be desirable to avoid exceeding the capacity. The fall-winter migrants could be standardized to the smolt outmigrants to crudely estimate capacity for an approach to try to address some of that uncertainty. The most simplistic approach would be to assume all life histories have the same survival rate, then to test this with the adult-to-adult model for survival by juvenile emigration stage. PIT-tag data could be leveraged to apply a multiplier on each of the parr that leave the Wenatchee River to estimate total number of smolts, then use that number in stock-recruitment relationships.

Data sources that are known to exist but may not have been written up or in publication include the following:

- The best available resource for estimating contributions from other life histories is recent life-cycle modeling work by Mark Sorel (WDFW).
- Sorel also tested progress toward recovery (additional NOR that may be expected) with different scenarios.
- The NWFSC HARP model can estimate potential productivity and capacity, or what the potential improvement for an area is. Estimates of current natural potential could be completed by early winter 2025. NWFSC staff are willing to join a meeting to provide information by the end of 2024 or early 2025.
- Wenatchee Spring Chinook Salmon RRS Study (annual reports exist, but there is no final synthesis report, and there is interest in tables that summarize RRS in tributaries). Some annual reports were more comprehensive than others, and they do not build on each other well each year. The PRCC HSC will probably have to rely on WDFW and Mike Ford (NWFSC) to provide the best reports. An executive summary can be requested before the expert panel is formed to get the most recent RRS information or summarization of the information to the panel. There have

been several products from the RRS that have resulted in publications; some were added to the table in the meeting.

- Chris Johnson's egg-to-fry survival report

The PRCC HSC will develop a coversheet to inform the expert panel about the state of the science on habitat capacity and where the key information exists, because it will be difficult for the panelists to answer these questions without guidance.

- The PRCC HSC will extract the data sources about capacity, limiting life stage, and limiting factors in the WR and provide it to the expert panel or refer the expert panel to locations in the existing reports.
- The cover sheet will be complete but brief to keep them moving forward through the questions efficiently and focus the majority of their time on the top-line question.
- The areas of uncertainties, description of quality of the available data, and data gaps will be clearly stated.
- The PRCC HSC can provide the range in capacity estimates, and the expert panel will not be asked to calculate capacity, although some participants could add to this information using their own models, tools, and expert opinion.
- A caveat will be included that the spawning habitat is addressed at the spatial scale of the WR, but the entire life cycle would be addressed at a broader spatial scale.
- Sideboards will also be provided to the panel. The best available information developed through the 2023 recalculation supports a program size of 75,000 smolts to stay within the bounds of the No Net Impact.
- The cover sheet would be a PRCC HSC-approved document with agreement on the information included and statements that the HSC believes this is the best available information.

The PRCC HSC assigned tasks associated with each sub-question from Table 1 of the 2018 WR Memorandum are as follow:

- 3.1: Keely Murdoch will develop a summary of available information on capacity, limiting life stages, and limiting factors in the WR and for the whole life cycle of the WR spawning aggregate.
- 3.2, 3.3, and 3.5: Mike Tonseth will summarize information and sideboards limiting the size of a hatchery program. He will work with Mike Hughes or other WDFW staff to assemble RRS outcomes for HOR and NOR, and potentially prepare an executive summary of results relevant to the WR. Item 3.5 relies almost entirely on the RRS study and is also informed by Before-After Control-Impact (BACI) analysis for the 10-year comprehensive review.
- 3.4: Regarding straying, a captive brood program is no longer being proposed. That was operated very differently than an adult-based supplementation program. Information can be presented on Nason or Chiwawa strays, including the concerns and context. Whether Chiwawa or

Nason strays can be successful in the WR basin relates to decisions about whether compositing could be successful, for instance. Information from the captive broodstock program should be included; it is interesting that it actually produced a fair number of adults (i.e., approximately 585 adults at Bonneville Dam from about only 3 females). One of the problems is the adults strayed or died before reaching the WR. There is an overall conclusion that the program failed, which is true in terms of adults returning to the White River, but there was success in terms of adults returning to Bonneville Dam. The expert panel might conclude that a captive broodstock is an answer and would benefit from having that context. This question was edited to insert Nason Creek strays. The 10-year comprehensive review did not include many of the full brood year returns for the Nason program. Rod O'Connor will summarize this information.

- 3.5: This informs whether the Nason and Chiwawa program have been successful. The intent of the question is to ask whether the fish are better left to spawn in the natural environment or taken into the hatchery. The answer depends on the number of fish taken into the hatchery and managing proportionate natural influence. The BACI analysis done for the 10-year comprehensive review can calculate the number of NOR back to the tributary; in many cases the NOR were lower than reference streams. The annual reports state that the number of NOR added through supplementation cannot be quantified, but RRS has verified that a HOR spawner has contributed NOR adults. The expert panel will need to rely on the RRS to answer this without explaining the extent to which hatchery programs have contributed to NOR abundance.
- 3.6: A literature review could help provide context on the size of supplementation programs, which adults are taken for broodstock, and whether they are genetically related. The Twisp spring Chinook Salmon program could be highlighted as an example of genetics within a relatively small hatchery program. There may be a need to reach out to a geneticist or a small genetics group, or ensure a geneticist is on the panel. Mike Tonseth will ask Mike Huges (WDFW) about whether the RRS results can provide clarity.

Key Question 3.7

- Genetic differentiation is addressed directly in Chapter 8 of the 10-year comprehensive report. Rod O'Connor will summarize relevant information.
- The PRCC HSC will consider who to include on the panel that can help interpret genetic differentiation among natural-origin fish.

Key Question 3.8

- Custom model runs may be needed to answer some of these questions. Tim Taylor will summarize information on the probability of persistence as he develops a population viability model.

- The PRCC HSC discussed whether the Upper Columbia HARP model may be useful for this purpose. It should not be used as a stand-alone piece of information, and NOAA Fisheries has clearly stated that habitat restoration actions are not the only actions that could be pursued to supplement the population. The HARP model could help inform habitat capacity of the system. The model can inform the decision process but will not dictate what the outcome should be.

Key Question 3.9 (New Question Added on Ecological Risk)

- The language is not concrete. Different agencies and different panel participants will have different positions on what are “acceptable” genetic or ecological impacts.
- The differences in perspectives on acceptable risks should be evaluated using the matrix in Appendix B of the Recovery Plan as the tool for reaching conclusions.
- A paper should be provided about the Grand Coulee project for historical context when making a determination about what is an acceptable genetic impact, what could be lost, and whether it can be regained in the future with different management actions. At one time, all species were trapped at Rock Island and taken to Nason Creek. Homogenization occurred; the genetic differentiation observed today is probably less than historical genetic differentiation. At the time, biologists thought the tributary populations were extirpated due to logging, channel-spanning dams, and dewatering due to irrigation withdrawals, so they thought it was under seeded habitat and fish collected at Rock Island were seen as a resource to seed that habitat. Some of this content is in the Recovery Plan. Older documents from Chapman et al. 1995 and Mullan’s 1980s spring Chinook Salmon report include relevant background information.
- Regarding likely impacts to other spawning aggregates and Non-Target Taxa of Concern, information is available from annual reports on straying.
- Regarding interactions with Bull Trout, USFWS will reach out to science staff and Ecological Services staff who prepare status assessment/threat updates and consultations on the programs that may touch on this. There is not likely to be any data that answer the question because it was not likely a concern for a spring Chinook Salmon supplementation program to be considered a threat to Bull Trout. Mat Maxey will coordinate with the Ecological Services and native fish office to compile that information. This will be presented as a risk-benefit analysis to acknowledge potential impacts and benefits to other species (e.g., habitat engineering, prey base, and nutrients).

Grant PUD will continue to revise the Data Source Metadata spreadsheet as information is identified. An initial attempt at a bibliography of all resources related to the program has been assembled by Grant PUD. These should be distilled to an “essential readings” list to be included in the Data Source Metadata spreadsheet, with additional resources for supplemental reading provided for information. The PRCC HSC was asked to review the draft bibliography to note how they relate to the Data Source

Metadata, identify which should be essential reading versus supplemental, and add any others that are not already on the list.

C. Expert Panel Scope, Logistics, Qualifications, Expectations, and Proposed Members

Grant PUD has prepared a draft version of the charge for the expert panel that includes their scope and expectations, approach and schedule, and qualifications.

Scope

Information will be organized ahead of time to make the task straightforward for the panel. Table 1 of the 2018 WR Memorandum lists data and information to be used to answer questions posed to the panel. There are some questions in Table 1 that should be answered by the expert panel and some that can better be answered by the PRCC HSC.

Refer to the discussion above on Data Source Updates with specific tasks for the PRCC HSC to assemble information.

Approach and Schedule

The 2013 WR SOA states that the "Framework and Structure" of the independence scientific review will be developed by the PRCC HSC and approved by the PRCC, then the PRCC HSC has 1 year to come to a recommendation. The PRCC HSC discussed what should be provided to the PRCC for their approval and when. The PRCC will be given the revised framework shown in the 2018 WR Memorandum and the expert panel scope in September for review and approval by October. Then the PRCC HSC will confirm expert panel participants. The expert panel will have 5 to 6 months to complete their task during the first half of 2025, so that the PRCC HSC can complete their recommendation to the PRCC Policy Committee by the end of 2025.

A verbal update of PRCC HSC's activities will be provided to the PRCC this month, and they will be reminded of the steps of the SOA to indicate where the PRCC HSC is in the process and inform them of when their engagement will be requested.

Qualifications

PRCC HSC members will move forward using recommendations derived from the Independent Science Advisory Board (ISAB) selection criteria discussed on April 17, 2024. These criteria will be incorporated into the draft charge for the expert panel and may be modified as they are used for considering nominees in the coming months.

Potential nominees were identified (not to be interpreted as formal nominations at this time). The final list will include people that represent the breadth of responsibilities that will be necessary.

Memorandum

- Mark Sorel
- Jeff Jorgensen
- Mike Ford
- Erik Buhle
- Dave Fast (retired)
- Rich Carmicheal
- William Smoker
- Craig Busack
- Marc Johnson
- Tom Quinn (currently on ISAB)
- Robin Waples (retired)
- Andy Appleby
- Tom Cooney
- Tim Essington
- Kurt Fausch (retired)
- Peter Moyle (retired)
- Alec Maule
- Stan Gregory
- Steve Schroder
- Laurie Weitkamp
- Jack Stanford
- Jack Williams
- Eric Laudenslager
- Paul Spruel
- Tim Copeland
- Ben Ditty
- Mark Chilcote
- Reg Reisenbeckler

By June 14, PRCC HSC members will review Grant PUD's draft scope document, suggest additional names, and begin determining whether nominees meet the draft qualifications for being an expert panel member. The goal is to achieve consensus on the final list in the June or July meeting, at which time Hillman will begin contacting nominees. Potential contracting details will be discussed at a future date.

D. Broodstock Collection Feasibility

Grant PUD has reviewed and prepared responses to comments in their initial draft broodstock collection feasibility assessment. A risk matrix comparing various collection methods was presented in the April 27 meeting. The following methods for broodstock collection were considered:

- Collection at Dryden Dam was added.
- Hook-and-line capture was suggested but not added because of high risk and likely low success; collection would have to occur in the mainstem Wenatchee River during high flows, and it poses a direct risk to fish that might not be ultimately used in the broodstock.
- A Merwin trap at the mouth of the WR was added.
- A fish wheel in the WR was added.

Grant PUD will work to finalize the document as a resource for the expert panel to review.

IV. Administration

A. Next Meetings

The next meetings of the PRCC HSC will be held on June 20, July 17, and August 21, 2024. Meetings will be held in person at Douglas PUD with a link for virtual attendance.

V. Attachments

Attachment A List of Attendees

Attachment A
List of Meeting Attendees

Name	Organization
Natasha Winnacott	Anchor QEA
Larissa Rohrbach	Anchor QEA
Tracy Hillman	BioAnalysts, Inc.
Rod O'Connor‡	Grant PUD
Deanne Pavlik-Kunkel°	Grant PUD
Todd Pearsons‡°	Grant PUD
Tim Taylor	Grant PUD
Katy Shelby (attended May 15 only)°	Washington Department of Fish and Wildlife
Mike Tonseth*‡°	Washington Department of Fish and Wildlife
Matthew Maxey*‡°	U.S. Fish and Wildlife Service
Bill Gale (attended May 15 only)°	U.S. Fish and Wildlife Service
Brett Farman*‡°	National Marine Fisheries Service
Justin Yeager (attended May 15 only)°	National Marine Fisheries Service
Keely Murdoch*‡	Yakama Nation
Kirk Truscott*‡	Confederated Tribes of the Colville Reservation

Notes:

* Denotes HCP-HCs member or alternate

‡ Denotes PRCC HSC member or alternate

° Joined remotely