FINAL

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ANCHOR QEA

Memorandum

To: Wells, Rocky Reach, and Rock Island HCP Coordinating Committees

Date: October 24, 2023

From: John Ferguson, HCP Coordinating Committees Chairman

cc: Kristi Geris, HCP Coordinating Committees Support

Re: Final Minutes of the September 26, 2023, HCP Coordinating Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plan (HCP) Coordinating Committees met in person at Wanapum Dam in Beverly, Washington, on Tuesday, September 26, 2023, from 9:00 a.m. to 1:30 p.m. Attendees are listed in Attachment A to these meeting minutes.

Action Item Summary

1. Chelan PUD will continue providing Rocky Reach Dam and Rock Island Dam turbine unit maintenance updates as information becomes available (Item I-C).
2. National Marine Fisheries Service (NMFS) will provide a summary of study fish and tagging protocols used in studies conducted at federal dams on the Columbia and Snake rivers in recent years (Item I-C).
3. Douglas PUD will draft for Wells HCP Coordinating Committee review an updated section in the Wells HCP 2023 No Net Impact (NNI) Comprehensive Progress Report that summarizes "whether each Plan Species is rebuilding," per the Wells HCP (Item I-C).
4. Douglas PUD will conduct a post-hoc analysis of passive integrated transponder (PIT) detections of steelhead within the east and west adult fish ladders at Wells Dam to evaluate passage rates during Pacific Lamprey trap operations from August 28 to September 15, 2023 (Item III-B).
5. Chelan PUD will distribute a revised *Rocky Reach Spring Chinook Salmon Adult Conversion Rate: Summary of Methods*, which will include late migrating spring Chinook Salmon, hatchery and wild, through September 30, for Rocky Reach HCP Coordinating Committee approval via email (Item III-A). *(Note: the final draft statement of agreement [SOA]* Approval of the Methodology to Evaluate the Adult Conversion Rate for Spring Chinook Through the Rocky Reach Project in 2023 *and appended revised methodology were distributed on September 30, 2023, for a vote via email by Friday, October 6, 2023.)*
6. Chelan PUD will follow up with U.S. Fish and Wildlife Service (USFWS) regarding the SOA *Approval of the Methodology to Evaluate the Adult Conversion Rate for Spring Chinook Through the Rocky Reach Project in 2023*, as revised, and forthcoming appended revised *Rocky Reach Spring Chinook Salmon Adult Conversion Rate: Summary of Methods* (Item III-A).
7. Chelan PUD will follow up with USFWS regarding the proposed start date of March 1 for the collection of additional run-timing information at Rock Island and Rocky Reach dams in 2024 (Item III-A).

8. Chelan PUD will distribute a patch occupancy model (POM) process diagram for consideration regarding the steelhead overshoots discussion (Item IV-A).
9. HCP Coordinating Committees representatives will identify questions that need to be resolved or data they have questions about to include in a steelhead overshoots summary table and will provide this input to Anchor QEA, LLC, which will coordinate with Washington Department of Fish and Wildlife (WDFW) regarding POM questions, for further discussion during the HCP Coordinating Committees meeting on October 24, 2023 (Item IV-A).
10. The Joint Fisheries Parties (JFP) will ask the Priest Rapids Coordinating Committee (PRCC) about the following: 1) holding a Subyearling Chinook Salmon Workshop on June 11, 2024; 2) a later start time for the PRCC meeting on October 24, 2023, to be determined (TBD); and 3) rescheduling the December 26, 2023, meeting to December 19, 2023 (Item VI-A and Item VI-B). *(Note: the PRCC confirmed the following: 1) the proposed subyearling workshop date; 2) a 2:00 p.m. start time for the October 24, 2023, meeting; and 3) the proposed December 19, 2023, meeting date.)*
11. The next scheduled HCP Coordinating Committees meeting is on Tuesday, October 24, 2023, from 9:00 a.m. to no later than 12:00 p.m. or 1:00 p.m. (TBD) and is to be held in person at the Wanapum Dam Hydro Office Building, Room 107, in Beverly, Washington (Item VI-B). *(Note: the PRCC confirmed a 2:00 p.m. start time for the October 24, 2023, PRCC meeting.)*

Decision Summary

1. The *Northern Pikeminnow Predator Control Program, Rocky Reach and Rock Island Hydroelectric Projects, Draft Summary Report 2021* and *Northern Pikeminnow Predator Control Program, Rocky Reach and Rock Island Hydroelectric Projects, Draft Summary Report 2022* were approved by the Rocky Reach and Rock Island HCP Coordinating Committees on September 22, 2023, after no disapprovals were received prior to the 60-day review period deadline.
2. Rocky Reach HCP Coordinating Committee representatives present approved the SOA *Approval of the Methodology to Evaluate the Adult Conversion Rate for Spring Chinook Through the Rocky Reach Project in 2023*, as revised, contingent upon approval of the forthcoming appended revised *Rocky Reach Spring Chinook Salmon Adult Conversion Rate: Summary of Methods*, which will include late migrating spring Chinook Salmon, hatchery and wild, through September 30 (Item III-A).
3. The Rocky Reach HCP Coordinating Committee approved via email or phone call the revised *Rocky Reach Spring Chinook Salmon Adult Conversion Rate: Summary of Methods*, as follows: the Yakama Nation (YN) on October 3; Chelan PUD on October 5; NMFS, USFWS, and WDFW on October 6; and the Confederated Tribes of the Colville Reservation (CTCR) on October 10, 2023 (Item III-A).
4. The Wells HCP Coordinating Committee approved via email, on October 3, 2023, modified fishway operations on the Wells Dam east fishway to lower the head differential from 1.5 feet to 1.0 foot during Coho Salmon trapping hours to facilitate improved collection in the west fishway

towards collecting broodstock for the Methow Coho Salmon Reintroduction Program, including Douglas PUD mitigation production. Continued modified operations is contingent upon Wells HCP Coordinating Committee review of any change in fishway distribution of or delayed passage of steelhead and Chinook Salmon passage.

Agreements

1. Rock Island and Rocky Reach HCP Coordinating Committees representatives present agreed to a proposed start date of March 1 for the collection of additional run-timing information at Rock Island and Rocky Reach dams in 2024 (Item III-B).

Review Items

1. The draft *Rock Island and Rocky Reach Anadromous Fish Agreements and Habitat Conservation Plans 2023 Comprehensive Progress Report* was distributed to the Rock Island and Rocky Reach HCP Coordinating Committees by Kristi Geris on February 10, 2023, and was available for a 60-day review, with edits and comments due to Lance Keller by April 11, 2023. This review period was extended to May 12, 2023. A draft Plan Species section of the Comprehensive Progress Report was distributed on September 12, 2023, and is available for a 30-day review with edits and comments due to Keller by October 12, 2023.
2. The final draft SOA *Approval of the Methodology to Evaluate the Adult Conversion Rate for Spring Chinook Through the Rocky Reach Project in 2023* and appended revised *Rocky Reach Spring Chinook Salmon Adult Conversion Rate: Summary of Methods* were distributed to the Rocky Reach HCP Coordinating Committee by Kristi Geris on September 30, 2023, for a vote via email by Friday, October 6, 2023 (Item III-A).
3. Wells Project Land-Use Permit Application for LUP 110-01 was distributed to the Wells HCP Coordinating Committee by Kristi Geris on October 2, 2023, and is available for a 30-day review with edits and comments due to Tom Kahler by November 1, 2023.
4. The *Rocky Reach and Rock Island HCPs, Draft 2023 Fish Spill Report* was distributed to the Rocky Reach and Rock Island HCP Coordinating Committees by Kristi Geris on October 23, 2023, and is available for a 30-day review with edits and comments due to Lance Keller by November 22, 2023.

Finalized Documents

1. The final *Rocky Reach Spring Chinook Salmon Adult Conversion Rate: Summary of Methods*, as revised, was distributed to the Rocky Reach HCP Coordinating Committee by Lance Keller on October 10, 2023 (Item III-A).
2. The final SOA *Approval of the Methodology to Evaluate the Adult Conversion Rate for Spring Chinook Through the Rocky Reach Project in 2023*, as revised, and appended *Rocky Reach*

Spring Chinook Salmon Adult Conversion Rate: Summary of Methods, as revised, was distributed to the HCP Coordinating Committee by Kristi Geris on October 11, 2023 (Item III-A).

3. The final 2021 Rock Island Confirmation Survival Study reports, *Yearling Chinook Salmon Survival through the Rock Island Hydroelectric Project in 2021*[1] and *HCP Confirmation Survival Study of Yearling Chinook Salmon through the Rock Island Project in 2021*[2], were distributed to the HCP Coordinating Committee by Kristi Geris on October 23, 2023.

I. Welcome

A. Review Agenda (John Ferguson)

John Ferguson welcomed the HCP Coordinating Committees and reviewed the agenda. Ferguson asked for any additions or changes to the agenda. No additions or changes were requested.

B. Meeting Minutes Approval (John Ferguson)

The HCP Coordinating Committees reviewed the revised draft August 22, 2023, meeting minutes. Kristi Geris said that all edits and comments received from members of the Committees were minor clarifying edits that were incorporated into the revised minutes. Geris also updated one action item. HCP Coordinating Committees representatives present approved the August 22, 2023, meeting minutes, as revised. NMFS abstained because a representative did not participate in the August 22, 2023, meeting.

C. Last Meeting Action Items (John Ferguson)

Action items from the HCP Coordinating Committees meeting on August 22, 2023, and follow-up discussions were as follows *(Note: Italicized text corresponds to agenda items from the meeting on August 22, 2023)*:

1. *Chelan PUD will continue providing Rocky Reach Dam and Rock Island Dam turbine unit maintenance updates as information becomes available (Item I-C).*
   This action item will be carried forward.
2. *NMFS will provide a summary of study fish and tagging protocols used in studies conducted at federal dams on the Columbia and Snake rivers in recent years (Item I-C).*
   This action item will be carried forward.
3. *Chelan PUD will inquire internally about the appropriate timing to engage the HCP Coordinating Committees in discussing the collection of additional run-timing information and conducting species composition monitoring at Rock Island Dam and Rocky Reach Dam in 2024 (Item I-C).*
   This will be discussed during today's meeting.

[1] Hatch et al. (2022). *Yearling Chinook Salmon Survival through the Rock Island Hydroelectric Project in 2021.*
[2] Skalski et al. (2021). *HCP Confirmation Survival Study of Yearling Chinook Salmon through the Rock Island Project in 2021.*

4. *Douglas PUD will draft for Wells HCP Coordinating Committee review an updated section in the Wells HCP 2023 NNI Comprehensive Progress Report that summarizes "whether each Plan Species is rebuilding," per the Wells HCP (Item I-C).*
   This action item will be carried forward.
5. *Douglas PUD will conduct a post-hoc analysis of PIT detections of steelhead within the east and west adult fish ladders at Wells Dam to evaluate passage rates during Pacific Lamprey trap operations from August 28 to September 15, 2023 (Item III-B).*
   This action item will be carried forward.
6. *Chelan PUD will verify the passage dates of the two PIT-tagged adult spring Chinook Salmon that were observed passing Rock Island Dam on or after July 1, 2022, which were excluded from the adult conversion rate in the 2022 Rocky Reach Confirmation Survival Study (CSS) (Item IV-A).*
   Lance Keller provided a summary of PIT-tagged adult spring Chinook Salmon passage dates on September 12, 2023, which Kristi Geris distributed to the HCP Coordinating Committees that same day.
7. *The Rocky Reach HCP Coordinating Committee will be prepared to vote on the SOA* Approval of the Methodology to Evaluate the Adult Conversion Rate for Spring Chinook Through the Rocky Reach Project in 2023 *and appended* Rocky Reach Spring Chinook Salmon Adult Conversion Rate: Summary of Methods *during the HCP Coordinating Committees meeting on September 26, 2023 (Item IV-A).*
   This will be discussed during today's meeting.
8. *WDFW will correct the sample sizes used to calculate Yakima River steelhead overshoots (Slide 5) and the proportion of wild Wenatchee steelhead overshoots detected in the Wenatchee River (Slide 11), as shown in the presentation,* UCR Overshoot Steelhead Part 4*, that was shared during today's meeting (Item V-A).*
   Andrew Murdoch provided a revised presentation on August 24, 2023.
9. *Anchor QEA will coordinate with Bryan Nordlund (PRCC chairman), Chelan PUD, and Douglas PUD regarding a possible joint session with the PRCC to discuss WDFW's memorandum, "Wild Spring Chinook Smolt Survival," during the HCP Coordinating Committees meeting on September 26, 2023 (Item V-B).*
   A joint session is planned, as discussed.
10. *The HCP Coordinating Committees will discuss a possible Subyearling Chinook Salmon Workshop to occur in the near future, during the HCP Coordinating Committees meeting on September 26, 2023 (Item VI-A).*
    This will be discussed during today's meeting. Additionally, Kristi Geris redistributed materials from the 2009 and 2016 Subyearling Chinook Salmon Workshops after the HCP Coordinating Committees meeting on August 22, 2023.

II. HCP Hatchery and Tributary Committees Update

A. HCP Hatchery and Tributary Committees Update (Tracy Hillman)

Tracy Hillman updated the HCP Coordinating Committees on the following actions and discussions that occurred during the HCP Tributary Committees meeting on September 14, 2023:

- *Budget Amendment*: In January 2023, the Rock Island HCP Tributary Committee received a budget amendment request from Chelan County Natural Resources Department on the Cascade Orchards Icicle Creek (COIC) Flow Restoration Project. The sponsor requested additional funding for the project because the cost to construct the project had increased significantly since the construction costs were estimated in 2019. As a result, the sponsor requested an additional $250,000 from the Rock Island HCP Tributary Committee (the Committee had already approved $500,000 for the project). After review, the Rock Island HCP Tributary Committee decided to table the budget amendment because they needed to review the Report of Examination for Water Right Change prepared by the Washington State Department of Ecology. Following the recent release of the final Report of Examination, the Rock Island HCP Tributary Committee re-reviewed the request for additional funding for the COIC Flow Restoration Project. After review of the final Report of Examination and the original budget amendment request, the Rock Island HCP Tributary Committee elected to contribute an additional $250,000 to the project. Therefore, the total contribution from the Rock Island Plan Species Account is $750,000 for the COIC Flow Restoration Project. Kirk Truscott asked about the revised total construction cost, and Hillman said he thinks it was approximately $5M. *(Note: Hillman later confirmed via email that the total construction cost was $5.2M.)*
- *Wenatchee Entiat Beaver-Powered Restoration Project Request*: In 2021, the Rocky Reach HCP Tributary Committee funded the Wenatchee Entiat Beaver-Powered Restoration Project. Before funds can be used to implement restoration work in a given stream, the sponsor (Trout Unlimited) must seek approval from the Committee. In August 2023, the sponsor asked the Committee whether they would support low-tech restoration work in South Fork Beaver Creek, a tributary to Beaver Creek in the Wenatchee River basin. The sponsor proposes to treat about 4,500 feet of stream. The highest density of structures will be located where culverts are removed. Because habitat conditions in the South Fork are relatively good, the Committee asked for more information on the habitat conditions in the area in which the work would occur. Once the Committee receives responses from the sponsor, they will decide whether they approve low-tech restoration work in South Fork Beaver Creek. John Ferguson asked what low-tech restoration involves. Hillman said that this includes beaver dam analogues and post-assisted log structures.
- *Icicle Peshastin Irrigation District (IPID) Screening Project Presentation*: WDFW gave a presentation on the IPID Screening Project. This was a joint meeting with the PRCC Habitat Subcommittee. The purpose of the presentation was to describe the implementation and

success of the project. This project was implemented in Icicle Creek in the Wenatchee River basin. WDFW described the before and after conditions of the project, cost of the project, challenges associated with the project, milestones, and the remaining few elements to be completed. WDFW was happy to report the project was a success and will be completed under budget. The total cost of the project was $2,444,237.

- *Next Meeting*: The next meeting of the HCP Tributary Committees will be on November 9, 2023. Some members will participate in the site tours in Canada from October 11 to 12, 2023.

Hillman updated the HCP Coordinating Committees on the following actions and discussions that occurred during the HCP Hatchery Committees meeting on September 20, 2023 (*Note: Joint HCP Hatchery Committees/PRCC Hatchery Subcommittee items are noted by "joint," Wells HCP Hatchery Committee items are noted by "Wells," and Rock Island and Rocky Reach HCP Hatchery Committees items are noted by "RI/RR"*):

- *Methow Spring Chinook Salmon (Wells)*: Douglas PUD reported that four female spring Chinook Salmon were not viable and were culled from broodstock. In addition, two wild-by-wild females tested very high for bacterial kidney disease. Following fish health guidance, Douglas PUD requested that the Wells HCP Hatchery Committee approve culling the eggs from these two females. Members present agreed that the eggs from those two fish should be culled. The Methow spring Chinook Salmon program should still be able to meet its production goal. Tom Kahler said that he had not yet discussed this with Kirk Truscott. Truscott said that he approves.
- *10-Year Comprehensive Hatchery Program Review Summary Report (joint)*: The HCP Hatchery Committees are developing a summary report based on results in the 10-year comprehensive reports. The Committees reviewed and worked on the spring Chinook Salmon tables that summarize key results from the comprehensive analysis. Once the spring Chinook Salmon section is completed, the Committees will work on the steelhead section. The Committees hope to have the entire report completed by the end of this year.
- *Site Visits (joint)*: During the afternoon, members of the Committees visited the two acclimation sites on the Chewuch River, the Twisp River Acclimation Pond, and the Carlton Acclimation Facility.
- *Next Meeting*: The next meeting of the HCP Hatchery Committees will be on October 18, 2023.

III. Chelan PUD

A. DECISION: 2023 Rocky Reach Confirmation Survival Study – Adult Conversion Methodology (Lance Keller)

The draft SOA *Approval of the Methodology to Evaluate the Adult Conversion Rate for Spring Chinook Through the Rocky Reach Project in 2023* and appended *Rocky Reach Spring Chinook Salmon Adult*

Conversion Rate: Summary of Methods were distributed to the Rocky Reach HCP Coordinating Committee by Kristi Geris on August 17, 2023. The YN provided comments on the draft SOA on September 22, 2023. Geris shared the YN's comments on WebEx.

Kirk Truscott said that the YN's proposed edits reflect what was discussed by the JFP. Regarding the edit about the "conversion rates as a substitute for adult survival do not entirely meet the intent of the adult survival metric which is to include direct, indirect, and delayed mortality whenever it may occur," he does not know when the science or technology will get to a point to measure indirect mortality for fish migrating through a project area. The language in the HCP identifies an intent to have a complete accounting of adult survival, but at this point, this cannot be done. The proposal by Chelan PUD to measure survival ladder to ladder may not include indirect mortality and does not likely include delayed mortality. He is hesitant to approve a methodology that falls short of the intent of the HCP, but he also recognizes it is unknown how long it will take before this can be measured. For this SOA, the CTCR can approve, provided that the language in the *Agreement Statement* and *Background* is consistent with the overall intent of the HCP and sets the stage for what is needed prior to the next CSS.

Keely Murdoch said that Truscott did well at describing the JFP discussions. Regarding her edits to this SOA, as mentioned in the email, she is not very pleased with the outcome of the discussions to date. She feels the Rocky Reach HCP Coordinating Committee has offered valid concerns about the way the adult conversion rates, as a substitute for survival, have been calculated. She feels that the adjustments are reasonable and addressable (e.g., adjusting the July 1 cutoff date or measuring by river kilometer). These are small improvements that do not get to the full intent of the survival metric but do represent continued progress in that direction. The lack of representation is her biggest concern (i.e., the July 1 cutoff). It is known that Wenatchee spring Chinook Salmon overshoot and fall back, and this methodology is not tracking that metric. It is known that Entiat spring Chinook Salmon are not included. It is unknown how to measure delayed mortality. When the HCPs were signed, she would think there was a way to calculate adult conversion rates, but the Parties included this language about not having the technology. She believes this SOA, as revised, is a good middle ground to show there are still concerns, acknowledges there are unresolved issues, and identifies what needs to be done before the next CSS. Similar language was also inserted in the hatchery recalculation SOAs.

K. Murdoch added that, apart from this SOA, she believes the HCP Coordinating Committees need to be thinking and talking about how to do better. She suggested a collaborative effort with all three PUDs. Perhaps an acoustic telemetry study using a representative sample of returning adults at Priest Rapids Dam (PRD) and tracking these fish through each project and into every tributary. This would show where these fish go and where they disappear. This would not get at delayed mortality, but

maybe there is a way through a collaborative approach. She thinks the HCP Coordinating Committees ought to spend time discussing this before the next CSS.

Scott Carlon said that he did not have as much discomfort as others with Dr. John Skalski and Dr. Rebecca Buchanan's (Columbia Basin Research, University of Washington) proposed adult survival estimate methodology. Carlon agreed with K. Murdoch that it would be interesting to see a collaborative study with the PUDs, and this might be something to further discuss. NMFS is ready to approve this SOA, as revised.

Chad Jackson said that WDFW is supportive of comments made by the CTCR and the YN. To note, WDFW is building the technical capacity to look into these types of technical issues further. For adult conversion rates, WDFW plans to take a deeper dive into the methodologies for application to all three PUDs. WDFW supports this SOA, as revised.

Lance Keller said that Chelan PUD appreciates all the coordination and discussions on this SOA that have taken place over the past three months, including during meetings and in between meetings. He recalled that Chelan PUD asked Skalski and Buchanan to recommend how to calculate an adult conversion rate, a recommendation was presented, and there was a question-and-answer session, which resulted in a recommendation to use the original methodology. Buchanan did caveat that there may be other ways to calculate adult conversion, but the proposed methodology is the best tool available. Chelan PUD has been reviewing PIT detections for years—this methodology is not perfect, and Chelan PUD acknowledges the comments by Truscott and K. Murdoch regarding delayed, direct, and indirect mortality; therefore, documenting these limitations in the *Background* of the SOA is appropriate. This SOA is not precedent setting, and Chelan PUD expects to re-evaluate the best tools available before the next CSS.

Keller said that Chelan PUD added a few more edits to the YN's version of the SOA, which Geris shared on WebEx. Keller said that Chelan PUD heard the Committee's desire to include fish after the July 1 cutoff date, and Chelan PUD has decided to include these fish in the evaluation, as requested. Therefore, under the *Background*, bullet No. 1 was revised to reflect this. Bullet No. 2 was edited to clarify areas outside the Rocky Reach Project area include the Wells tailrace and ladder and Rock Island fishway and reservoir. Catherine Willard (Chelan PUD) said that she edited bullet No. 3 to clarify that Chelan PUD was proposing to use the square root scaling consistent with previous years, and that the proposed methodology was chosen because Skalski and Buchanan found it was the best way to do it. In the first paragraph below bullet No. 3, she also added language to more accurately quote the Rocky Reach HCP. The Rocky Reach HCP Coordinating Committee then reviewed the entire SOA, from the *Agreement Statement* to the *Background*. Minor clarifying edits were added. *(Note: the final revised SOA with tracked changes is posted on the HCP Coordinating Committees Extranet Site under: Draft Documents > All by Mtg Date > 9/26/2023.)*

Keller noted that the *Rocky Reach Spring Chinook Salmon Adult Conversion Rate: Summary of Methods* appended to the SOA will also need to be updated by Skalski and Buchanan to include the later migrating fish. To do this, the Rocky Reach HCP Coordinating Committee will need to identify a new cutoff date so Skalski and Buchanan can re-run the analysis with the new date. Keller said that, from 2019 to 2022, there have been 14 PIT-tagged adult spring Chinook Salmon detected after the fishery cutoff date at Rock Island: four in June, eight in July, one in September, and one in October. As discussed in past meetings, the October detection is likely an outlier, and he suggested using September 30 as the new cutoff date.

K. Murdoch said that she appreciates Chelan PUD including fish after the July 1 cutoff date. She is supportive of the additional edits to the SOA but would like to review the revised methods appended to the SOA before a vote. She agreed that the October detection is likely an outlier or maybe a mismarked fish.

Rocky Reach HCP Coordinating Committee representatives present approved the SOA *Approval of the Methodology to Evaluate the Adult Conversion Rate for Spring Chinook Through the Rocky Reach Project in 2023*, as revised, contingent upon approval of the forthcoming appended revised *Rocky Reach Spring Chinook Salmon Adult Conversion Rate: Summary of Methods*, which will include late migrating spring Chinook Salmon, hatchery and wild, through September 30.

Chelan PUD will distribute a revised *Rocky Reach Spring Chinook Salmon Adult Conversion Rate: Summary of Methods*, which will include late migrating spring Chinook Salmon, hatchery and wild, through September 30, for Rocky Reach HCP Coordinating Committee approval via email. *(Note: the final draft SOA and appended revised methodology were distributed on September 30, 2023, for a vote via email by Friday, October 6, 2023.)*

Chelan PUD will follow up with USFWS regarding the SOA *Approval of the Methodology to Evaluate the Adult Conversion Rate for Spring Chinook Through the Rocky Reach Project in 2023*, as revised, and forthcoming appended revised *Rocky Reach Spring Chinook Salmon Adult Conversion Rate: Summary of Methods*.

The Rocky Reach HCP Coordinating Committee approved via email or phone call the revised *Rocky Reach Spring Chinook Salmon Adult Conversion Rate: Summary of Methods*, as follows: the YN on October 3; Chelan PUD on October 5; NMFS, USFWS, and WDFW on October 6; and the CTCR on October 10, 2023.

The final *Rocky Reach Spring Chinook Salmon Adult Conversion Rate: Summary of Methods*, as revised, was distributed to the Rocky Reach HCP Coordinating Committee by Keller on October 10, 2023.

The final SOA *Approval of the Methodology to Evaluate the Adult Conversion Rate for Spring Chinook Through the Rocky Reach Project in 2023*, as revised, and appended *Rocky Reach Spring*

Chinook Salmon Adult Conversion Rate: Summary of Methods, as revised, was distributed to the HCP Coordinating Committee by Geris on October 11, 2023.

B. Collection of Additional Run-Timing Information (Kirk Truscott and Lance Keller)

Kirk Truscott said that, while he requested this agenda item, in discussing this with Lance Keller, Chelan PUD was equally as anxious to get this topic on the agenda. Keller agreed and recalled expressing in past meetings Chelan PUD's intention to put this topic on this month's agenda.

Truscott recalled that the last investigation of run-timing at Rock Island and Rocky Reach dams was performed in 2014 and the Rock Island and Rocky Reach HCPs specify that this be re-evaluated every 10 years, which is coming up in 2024. He wants to be confident that dam operations are providing the requisite protection for Plan Species, notably for spring Chinook Salmon. Additionally, he would like to see protocols in place to differentiate between wild- and hatchery-origin fish, so he has confidence the current bypass and spill operations are providing the same level of protection to both wild- and hatchery-origin spring Chinook Salmon. He knows that there is a difference in opinion in how to interpret the HCPs, but he believes that the intent of the HCPs is to support recovery. He was not certain whether Chelan PUD was planning for this effort, but Keller has assured him Chelan PUD has accounted for this effort in their 2024 budget.

Keller said that he and Truscott did chat, and these extended operations have been on Chelan PUD's calendar for implementation in 2024. These last occurred in 2014, at which time, the Rock Island and Rocky Reach HCP Coordinating Committees elected to evaluate the end of bypass operations. Therefore, the Rock Island and Rocky Reach bypasses operated past August 31, into September. Chelan PUD kept the Rock Island and Rocky Reach HCP Coordinating Committees updated, there was a brief meeting on September 11, 2014; passage numbers were low; and the Committees agreed to end the extended operations on September 15, 2014. In March 2023, while discussing the 2023 Rock Island and Rocky Reach juvenile sampling facility (RIJSF and RRFSF) protocols, Truscott made it clear he planned to push it to the limit to collect information during expanded operations in 2024. It was also made clear that the Rock Island and Rocky Reach HCP Coordinating Committees' desire was to evaluate early operations before April 1. Based on this feedback, Chelan PUD has been coordinating internally to make the appropriate arrangements with staff, maintenance schedules, budgets, and other details to operate the bypasses sometime ahead of April 1, 2024.

Keller said that, regarding differentiating between hatchery and wild origin fish, thinking back to the meeting in March 2023 and Truscott expressing his disappointment in how Chelan PUD was unable to scan for coded wire tags (CWTs) did not fall on deaf ears. Chelan PUD has contemplated how to make this happen; Keller thinks that they have found a solution, so Chelan PUD will start scanning for CWTs at both facilities throughout the entire season starting in 2024. This will involve V-Block (or V-Detector) setups. There are still some ongoing discussions about how to minimize interference in

these environments and how to integrate the data into all of the datasets. The plan is to scan all yearling and subyearling Chinook Salmon and steelhead to determine origin. Chelan PUD is proposing to not scan Coho Salmon, given that Coho Salmon are not 100% CWT-tagged and one cannot say for certain whether a Coho Salmon without a wire is wild. This is the same situation for Sockeye Salmon.

Chad Jackson said that WDFW appreciates this effort. Truscott asked whether fish will also be scanned for PIT tags. Keller said that yes, all fish are pre-scanned for PIT tags to avoid false positives. Andrew Murdoch said that WDFW can provide guidance if Chelan PUD has questions about data collection. Keller said that he appreciates this. John Ferguson asked whether this effort will require more staff or more equipment. Keller said that it would require both—more staff, notably during the peak migration, and Chelan PUD plans to purchase more V-Blocks.

Truscott said that he appreciates that Chelan PUD was not only listening but also hearing. He said that another topic he and Keller recently discussed was sampling scheme. At Rocky Reach, index sampling is only performed at the top of the hour between 0800 and 1100. His concern is the possibility that this is not when wild fish are moving. Keller's response was that to change this means changing the sampling schedule for the entire outmigration so that pre-April sampling is consistent with post-April sampling, and if change is made, the 2024 data collection is not consistent with the long-term dataset. Keller said that Truscott is correct. At Rock Island, there is 24-hour data collection, but at Rocky Reach, this is index sample data that is calibrated against data in the Columbia River Data Access in Real Time database (DART). Chelan PUD has consulted with Dr. John Skalski on this, and as long as the index sampling is conducted in the same fashion as previous years, DART can pattern match to past years. Chelan PUD would propose to extend the index sampling at Rocky Reach into March 2024, in a consistent way. Truscott said that he wants to think on this more to figure out if this is the best approach.

Keely Murdoch asked how early these extended operations will be performed and whether this is stipulated in the HCPs. Keller said that the HCPs only say to evaluate outside of normal bypass operations, so a start date is a question for the Committees. K. Murdoch said that, unless there is an emergency release from a hatchery, she would not expect hatchery fish to be outmigrating in March. Wild fish only represent approximately 1% to 2% of the total run, and the Rock Island bypass might detect approximately 1% of this total, so one to two fish collected during Rocky Reach index sampling could represent a large portion of the wild run. At Rocky Reach, if index sampling is only occurring during a portion of the day, she wants to be sure that the PIT detection system is operating. Although index sampling captures some fish, it does not collect fish passing during non-index times. Keller said that Chelan PUD's intent is to have the surface collector PIT array (site code RRJ in PTAGIS) operational during bypass operations. At Rock Island, the bypass trap is always operational when the bypass is operating, so there is no gap there either. K. Murdoch clarified that

based on previous discussions, she understands that Rock Island only detects a small percentage of the run and Rocky Reach intercepts a lot more fish, so it is important to operate the PIT detectors at Rocky Reach.

K. Murdoch agreed with Truscott that the Committees need to talk about the most appropriate time to sample at Rocky Reach, because wild fish do move at night. Keller said that the Committees also need to be mindful of the intention of the HCPs, which is to make sure there is 95% coverage for spring migrating species. To do this at Rocky Reach, there needs to be a consistent comparison across the season and from year to year. K. Murdoch asked whether there is a way to calibrate the run, because the Committees are trying to learn something new, and this will not happen if things are done the same way. As Truscott mentioned, the purpose of the HCPs is to support recovery, and she does not believe the intent was to not give wild fish the same protection as hatchery fish.
A. Murdoch said that, to get at K. Murdoch's and Truscott's question, Chelan PUD would just need to expand the data. Keller said that this would need to be done for all spring species.

Scott Carlon said that, first, he is interested to hear what the Committees believe is a good startup date. In Oregon, he was surprised to see subyearlings moving out of the tributaries in mid- to late March, so maybe 3 weeks early is a good startup date. Secondly, he agrees with Chelan PUD about needing to maintain sample times consistent with past years to match the calibrated data in DART, but it would also be interesting to see what is moving during other periods. He hopes there is a way to figure this out.

Jackson said that he has nothing additional. A. Murdoch said that there are definitely fish migrating very early out of the Wenatchee River, and he suggested a startup date of March 1. It seems early in the run, and fish also have slower migration times, so starting any earlier than March 1 would probably just result in zeros. Keller asked what A. Murdoch was basing migration timing out of the Wenatchee River on, and A. Murdoch said the smolt trap at Cashmere, Washington. Each year, WDFW starts operating the trap in February, and the trap collects fish the next day. Sometimes there are zeros after, but fish are moving by then.

John Ferguson said that more discussion is needed regarding additional sampling beyond the typical Rocky Reach index sampling. Keller agreed that he needs to discuss this internally. Ferguson asked about a startup date. Keller said that Chelan PUD had not intended to get this far today, but Carlon suggested 3 weeks early and A. Murdoch suggested March 1. In the interest of providing as much planning time as possible, Chelan PUD would be agreeable to March 1.

Rock Island and Rocky Reach HCP Committees representatives present agreed to a proposed start date of March 1 for the collection of additional run-timing information at Rock Island and Rocky Reach dams in 2024. Chelan PUD will follow up with USFWS regarding this proposed start date.

A. Murdoch asked whether Wells Dam has this same requirement for extended bypass operations. Tom Kahler said no. A. Murdoch asked about Section 4.3.2 of the Wells HCP, which talks about bypass operations and re-evaluating them every 10 years. Kahler said that Wells bypass operations are re-evaluated but in a different way. Operations were initially based on hydroacoustic data, calibrated with fyke net data. When fyke netting was discontinued, Douglas PUD used a passage-dates analysis that collects data from PIT-tagged fish originating above Wells Dam and detections at the Rocky Reach Juvenile Fish Bypass to estimate bypass passage timing at Wells Dam. In 2011, Wells bypass operation dates were updated based on this analysis, and a few years ago, operations were changed again to use detections at Rocky Reach to determine start of spill at Wells Dam. A. Murdoch said, but there is PIT detection at Wells Dam. Kahler said, yes but only in one bay, and distribution of fish across the dam changes with species. To note, the PIT-tag detection system at Wells Dam in Spillway 2 was damaged last spring. Four of sixteen antennas were rendered inoperable due to debris during high river flow. The system could not be repaired during bypass operations, so the system was removed in August 2023, after bypass operations. The plan is to repair and reinstall the system before next spring 2024.

C. Rock Island Dam Powerhouse 1 Maintenance Update (Lance Keller)

Lance Keller said that work continues on Turbine Unit B3. The return-to-service date is Q1/Q2 2024. To note, in Powerhouse 2, crews are disassembling Turbine Unit U5, which is progressing well. There are a lot of activities ongoing at Rock Island, with approximately 70 to 100 workers on site.

D. Rocky Reach Dam Turbine Units Maintenance Update (Lance Keller)

Lance Keller said that work continues on Turbine Unit C11 by Chelan PUD in coordination with Voith Hydro. All parts are out and are with Voith in Virginia. The return-to-service date is Q1 2024. Once complete, repair of the last of the large units, Turbine C10, will begin.

Chelan PUD will continue providing Rocky Reach Dam and Rock Island Dam turbine unit maintenance updates as information becomes available.

IV. WDFW

A. Steelhead Overshoots Follow-Up and Next Steps (Chad Jackson and Andrew Murdoch)

John Ferguson summarized that the HCP Coordinating Committees have now heard a few presentations. In general, there are two disparate datasets, POM versus PIT tag. The question is where to go from here.

Chad Jackson asked whether Chelan PUD is still interested in reviewing the Fuch et. al (2015 to 2016) radio-telemetry data. Lance Keller said eventually, but he is unsure when Chelan PUD will have the

internal capacity to review it. He noted that last month, Chelan PUD mentioned to Jackson about possibly requesting these data in the future.

Keller asked about developing a summary table to show a side-by-side comparison of data.

Andrew Murdoch said that the POM uses adults PIT-tagged at PRD. The known overshoot analysis using the PIT-tag dataset is driven by the proportion of downstream juveniles that were tagged, which is not constant over time. Caution should be given when only using known overshoots because it is unknown what this really represents. This is the benefit of using a random sample at PRD (POM dataset), because it does not include uncertainties with juveniles. What is consistent between datasets is the presence of overshoots every year.

A. Murdoch said that the Columbia River Inter-Tribal Fish Commission (CRITFC) just released a 2021 to 2022 analysis of steelhead overshoots and observed versus expected genetic stock identification assignments, which indicated that 10% to 25% of fish incorporated into Upper Columbia River broodstocks are from out-of-basin sources. In the Wenatchee River, the out-of-basin fish averaged 10% of the broodstock, and in the Wells and Methow rivers it was up to 25%. Most of these overshoots were lumped into the lower Snake River population, which he describes as left bank fish down to John Day Dam. There were very few Yakima fish. He brings this up because PIT tags are only as good as the PIT tags sampled. That is, this higher proportion of overshoots may be due to a small sample size, which might skew the data. This is why there is a benefit to relying on representation at PRD (POM). Ferguson asked whether A. Murdoch can share the CRITFC reports, which he provided as distributed to the HCP Coordinating Committees by Geris during the meeting on September 26, 2023.

A. Murdoch said that WDFW is not proposing anything yet, and there does not need to be agreement on everything. There are a lot of fish from downstream populations that could benefit from better management practices, and there are Upper Columbia fish that could benefit from higher conversion rates.

Jackson said that, at the 65% passage date, the early WDFW forecast is 1,500 overshoots over PRD. This prediction helps with broodstock collection protocols and other planning. Catherine Willard asked how this is estimated. Jackson said that he believes this is an average rate.

Ferguson said that the Committees need to figure out how to get these data to a usable place, and Willard added that the Committees also need to figure out how these data fit into the HCPs.

Keely Murdoch said that she has a concern with developing a summary table and does not want to lose sight of the HCP Coordinating Committees' job, which is to implement NNI. Her concern with the PUDs' analyses presented to date is that it seems the PUDs are attempting to create a different narrative by evaluating PIT tags by geographical region such that there does not appear to be an issue or to speculate about whether fish are better off in other places. This is not the Committees'

role. There is a large portion of fish overshooting Upper Columbia projects, and to create a summary table about this different narrative will only continue to deflect from the Committees' actual job. Regarding how this relates to the HCPs, there is a section in the HCPs that essentially says as long as 2% adult mortality is met, fallbacks are not an issue. Her concern is that adult survival has never been measured in a manner that includes fallbacks, so it is unknown how overshoots affect adult survival. The adult survival metric has always used populations originating from above Wells Dam. It seems the two options to get as close to NNI as possible are as follows: 1) figure out how to measure adult survival; or 2) in the absence of this, provide a downstream passage route to demonstrate an effort to get these fish downstream. Chelan PUD and Douglas PUD operate the only dams in the system that do not provide a downstream passage route for adult steelhead. She does not know whether what the federal dams are doing is adequate, but doing nothing is probably less than adequate.

Ferguson said that the HCPs focus on Plan Species, and this is a Snake River steelhead discussion. Just something to keep in mind. K. Murdoch agreed that the HCPs focus on Plan Species; however, the HCPs list 'Steelhead' as Plan Species and do not specify 'Upper Columbia Steelhead'. The permits, however, do specify Upper Columbia Steelhead and do not include incidental take on other populations, but now there are data showing there is take, so maybe this is a NMFS issue. Willard said that this is a good point, that Snake River steelhead are not a Plan Species and Chelan PUD is already discussing this with NMFS to see how to address this.

Tom Kahler said that whatever NMFS decides for Chelan PUD would apply to Douglas PUD, as well. He added that Douglas PUD's presentation of data was not intended to spin the conversation away from what WDFW was presenting. From a consultation perspective, NMFS needs to know what proportion of the run-at-large these overshoots represent. This was the purpose. Regarding adult survival, in the 1990s, almost a decade of radio-telemetry studies was conducted on all Plan Species by various scientists—including NOAA—in preparation for the HCPs, and the results of these studies suggested that 2% mortality was a good number.

Scott Carlon said that, regarding consultation, Kahler is correct, and a summary table would be helpful. Ferguson offered to compile PIT data but would need help to better understand the POM data. Willard said that she and Four Peaks Environmental Science and Data Solutions (Four Peaks) developed a POM process diagram, which she can provide for consideration regarding the steelhead overshoots discussion. A. Murdoch said that he can also help field questions about the POM data.

HCP Coordinating Committees representatives will identify questions that need to be resolved or data they have questions about to include in a steelhead overshoots summary table and will provide this input to Anchor QEA who will coordinate with WDFW regarding POM questions for further discussion during the HCP Coordinating Committees meeting on October 24, 2023.

V. Joint HCP Coordinating Committees and Priest Rapids Coordinating Committee

A. Wild Smolt Survival (Andrew Murdoch)

The memorandum "Wild Spring Chinook Smolt Survival" (Attachment B) was distributed to the HCP Coordinating Committees by Kristi Geris on August 11, 2023.

Andrew Murdoch said that, since the beginning of survival studies, it has become clear that the survival of wild fish is very low. It is unclear whether something is happening at the dam that is different for wild fish than hatchery fish, or that this phenomenon is more a function of behavioral differences between the two groups, or some other factor. The idea behind this memorandum was to look at data already generated from other studies to see whether these data could shed light on the differential survival rates and the mechanisms of mortality. This was a proposed data-mining exercise and was intended to be a conversation starter. In this memorandum, he used Cormack–Jolly–Seber (CJS) models to compare wild fish tagged at smolt traps to paired hatchery release groups. This exercise found that wild fish, generally, survive at lesser rates to whichever downstream detection point was chosen. This was relatively consistent over time but differed between pairings depending on stocks and the comparison. Mean wild fish survival from release to Rocky Reach was lower than hatchery fish. Mean wild fish survival remained lower for the same groups of fish in the Rocky Reach to McNary (MCN) reach. He believes wild fish survival needs to be maximized, because if there is an issue with wild fish survival, he doubts wild adult returns will be what fisheries managers would like.

Andrew Gingerich said that it is important to note that Rich Brown's work cited in this memorandum was not looking at fish size as it relates to turbine mortality. Rather, it was cautioning using tags in smaller fish because the data showed that this creates more gas in the swim bladder, which makes smaller fish more susceptible to mortal injury. That is, this work was not saying that smaller fish are more susceptible to turbine mortality, it was saying that small fish with a tag may not survive as well.
A. Murdoch said that his point was that Brown's work tagged fish as large as 200 millimeters (mm) and as small as 95 mm. Although this size range is beyond the average range for wild fish, these data are already out there, and is there something in these data that might suggest a relationship between wild fish and a mechanism of injury or mortality? There are already many Upper Columbia test fish to look at and even more with federal studies.

Lance Keller said that this memorandum mentions linear regressions, but Chelan PUD has projects that are drastically different from others. At Rock Island Dam, 70% of fish passage occurs through bulb turbines. How can this be compared to Brown's results that focus on Kaplan turbines?
A. Murdoch said that he is in conceptual mode. There would need to be experts to help work on this. This would be Committee-driven process. He acknowledged that turbine design is a factor.

John Ferguson asked A. Murdoch whether he has coordinated with federal projects, and he said he has started these conversations. Ferguson asked if the interest is survival of Upper Columbia River stocks to MCN, what would federal data add to the analysis? A. Murdoch questioned whether there are ways to pool data across the basin, or are all dams truly different? He suggested perhaps identifying which dams are similar. There may also be advantages in bringing in these different data to analyze the differences. He is trying to figure out whether this is an issue associated with uncertainties or whether it is purely behavioral. The migration timing of wild fish is different, and maybe wild fish use dams differently. Instead of buying tags to investigate this, he was thinking of starting by analyzing existing data.

Gingerich said that, historically, PIT detection has been used at Wells Dam to meet survival study objectives in the HCP, which does not have route-specific resolution, much less the resolution needed to identify mechanisms of mortality.

The Committees reviewed and discussed Table 1 of the memorandum. Tom Kahler noted that this CJS estimate of survival to the hydro system includes tributary loss, which is huge. He suggested using a virtual release to exclude this tributary loss. A. Murdoch said that others, such as Mark Sorel, have analyzed these data and are getting similar results. Ferguson asked whether A. Murdoch can share the Sorel paper, which he provided as distributed to the HCP Coordinating Committees by Geris following the meeting on September 26, 2023. Keller noted that this dataset is 2006 to 2022, and he asked whether A. Murdoch has contemplated how spill has changed throughout this time period and might impact the detection probability at MCN. A. Murdoch said that detection probability has decreased (since spill was increased), and NMFS is already discussing how to increase detection probability at MCN and below Bonneville Dam. Catherine Willard noted that from 2004 to 2020, Chelan PUD's annual hatchery reports include survival to MCN in the Wenatchee. A. Murdoch asked whether those data are consistent with Table 1. Willard said that she would need to review the reports, but in the last 5 years, hatchery survival has been higher.

Keely Murdoch thanked A. Murdoch for teeing up this discussion. The HCP Coordinating Committees have talked about this in the past, notably about how the HCPs do not specify origin. She thinks that what A. Murdoch is describing is a good first step. She recently reviewed the Final Environmental Impact Statement for the Wells, Rocky Reach, and Rock Island Hydroelectric Projects, and Chapter 5 on Cumulative Effects is based on the Quantitative Analysis Report (QAR), which was written by many, but led by Tom Cooney (NMFS), and is basically what led to the signing of the HCPs. The QAR analysis was an evaluation of whether the HCPs were adequate to protect recovery of wild fish, which NMFS identified as 93% survival. Even though the HCPs do not specifically say wild fish, all Parties expected wild fish to have a 93% survival rate.

Bryan Nordlund said that, in this memorandum, there are different fish from different releases. He asked whether A. Murdoch considered the different conditions and variability of these fish in the

dataset. For example, for survival studies, the PUDs are particular about handling of fish and how this compares to fish caught in screw traps. A. Murdoch said that there is certainly a lot of variability in smolt quality in hatchery releases, whereas he has never seen a sick wild fish. Further, if an injured fish is observed at a smolt trap, this is a reason the fish is not tagged. For fish tagged, fish are generally held for 24 hours prior to release to monitor for tag loss. In summary, there is an opportunity for hatchery fish to be compromised, and sometimes wild fish are skinny but are generally in good shape. Nordlund asked about the Wenatchee River PIT-tag barge, which is located close to a well-known predation ground. If fish are released there without adequate recovery time, it seems those wild fish would be more susceptible to predation at the mouth of the Wenatchee River. A. Murdoch said that no tagging occurs at the PIT-tag barge. Further, when fish are tagged at smolt traps, these fish are released at night and along stream margin areas of the stream where fish can enter the river on their own volition. This approach is used to try and minimize potential predation.

VI. HCP Administration

A. Subyearling Chinook Salmon Workshop (John Ferguson)

John Ferguson recalled that last month, the HCP Coordinating Committees agreed to discuss a possible Subyearling Chinook Salmon Workshop to occur in the near future, and Kristi Geris redistributed materials from the 2009 and 2016 Subyearling Chinook Salmon Workshops after the HCP Coordinating Committees meeting on August 22, 2023.

Lance Keller said that Chelan PUD is expecting the results from the subyearling behavioral investigation sometime in Q1 2024, so if the HCP Coordinating Committees are interested in reviewing these results during the workshop, the workshop will need to wait until Q2 2024.

Keely Murdoch said that she is interested in reviewing the 3-year subyearling behavioral investigation during the workshop, as well as a review of the latest tag technology, and what other projects are doing to measure subyearling survival.

Ferguson said that it would be good to review the latest statistical models, too. K. Murdoch agreed.

Tom Kahler said that he would be interested in hearing a presentation from Billy Connor (USFWS), or from his successor.

Ferguson suggested selecting a date before the summer field season. K. Murdoch suggested that the workshop involve all three PUDs.

The JFP will ask the PRCC about holding a Subyearling Chinook Salmon Workshop on June 11, 2024. This will be a recurring agenda item to discuss potential workshop topics. *(Note: the PRCC confirmed the proposed subyearling workshop date.)*

B. Next Meetings (John Ferguson)

The HCP Coordinating Committees meeting on October 24, 2023, is from 9:00 a.m. to no later than 12:00 p.m. or 1:00 p.m. (TBD) and is to be held in person at the Wanapum Dam Hydro Office Building, Room 107, in Beverly, Washington. The JFP will ask the PRCC about a later start time for the PRCC meeting on October 24, 2023 (TBD). *(Note: the PRCC confirmed a 2:00 p.m. start time for the October 24, 2023, PRCC meeting.)*

The HCP Coordinating Committees meeting on November 28, 2023, is from 9:00 a.m. to no later than 12:00 p.m. and will be held by conference call.

The HCP Coordinating Committees meeting in December 2023, is from 9:00 a.m. to no later than 12:00 p.m. and will be held by conference call. The JFP will ask the PRCC about rescheduling the December 26, 2023, meeting to December 19, 2023. *(Note: the PRCC confirmed the proposed December 19, 2023, meeting date.)*

List of Attachments

Attachment A List of Attendees
Attachment B Wild Spring Chinook Smolt Survival

Attachment A
List of Meeting Attendees

Name	Organization
John Ferguson	Anchor QEA, LLC
Kristi Geris	Anchor QEA, LLC
Tracy Hillman††	BioAnalysts
Bryan Nordlund∞	Fish Passage Engineering, PLLC
Larissa Rohrbach∞	Anchor QEA, LLC
Lance Keller*	Chelan PUD
Bill Towey*	Chelan PUD
Catherine Willard	Chelan PUD
Tom Kahler*	Douglas PUD
Andrew Gingerich*	Douglas PUD
John Rohrback	Douglas PUD
Curt Dotson∞	Grant PUD
Rod O'Connor∞	Grant PUD
Tim Taylor∞	Grant PUD
Scott Carlon*†	National Marine Fisheries Service
Chad Jackson*	Washington Department of Fish and Wildlife
Andrew Murdoch*	Washington Department of Fish and Wildlife
Keely Murdoch*†	Yakama Nation
Kirk Truscott*†	Confederated Tribes of the Colville Reservation

Notes:

* Denotes HCP Coordinating Committees member or alternate

†† Joined by phone for the HCP Hatchery and Tributary Committees update

† Joined by phone

∞ Joined by phone for the joint HCP Coordinating Committees and PRCC presentation