

Memorandum

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

Date: June 28, 2023

From: John Ferguson, HCP Coordinating Committees Chairman

cc: Kristi Geris, HCP Coordinating Committees Support

Re: Final Minutes of the May 23, 2023, HCP Coordinating Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plan (HCP) Coordinating Committees met in person at Douglas PUD Headquarters in East Wenatchee, Washington, on Tuesday, May 23, 2023, from 12:00 p.m. to 2:30 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. Chelan PUD will revise the *Rock Island Dam Smolt Monitoring and Gas Bubble Trauma Evaluation Plan 2023* (2023 Rock Island Bypass Monitoring Plan) and *2023 Rocky Reach Juvenile Fish Bypass System Operations Plan* (2023 RRJSF Protocol) to clarify the origin of adipose fin (ad)-present fish examined before distributing the final approved plans (Item I-C).
3. 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).
4. Chelan PUD will amend the *2023 Fish Spill Plan, Rock Island and Rocky Reach Dams Public Utility District No. 1 of Chelan County* (2023 Rock Island and Rocky Reach Fish Spill Plan) to reflect a modification to the Rock Island Dam spill gate sequence for 2023 to address needed spillway repairs, for redistribution to the HCP Coordinating Committees (Item I-C).
5. 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).
6. Washington Department of Fish and Wildlife (WDFW) will revise the presentation *Steelhead Overshoots (Part 3)* to show the number of fish (sample sizes) in each bar in the histogram charts presented (Item I-C).
7. Chelan PUD will distribute the Rock Island Subyearling Behavior Study Update presented by Erika Rubenson (Four Peaks Environmental Science and Data Solutions [Four Peaks]) during today's HCP Coordinating Committees meeting (Item III-A). (Note: Lance Keller provided this presentation on May 26, 2023, which Kristi Geris distributed to the HCP Coordinating Committees that same day.)

8. The next scheduled HCP Coordinating Committees meeting is on Tuesday, June 27, 2023, from 12:00 p.m. to no later than 4:00 p.m. and is to be held in person at the Douglas PUD Auditorium in East Wenatchee, Washington (Item VII-C).

Decision Summary

1. Rock Island HCP Coordinating Committee representatives present approved the statement of agreement (SOA), *Closure of Rock Island Right Bank Adult Fishway TRE Entrance During High Flows and Tailwater Elevation*. Chad Jackson provided WDFW approval via email on May 19, 2023 (Item III-B).
2. The *Annual Report Calendar Year 2022 of Activities Under the Anadromous Fish Agreement and Habitat Conservation Plan* (2022 Wells HCP Annual Report) was approved by the Wells HCP Coordinating Committee on May 22, 2023, after edits and comments received from the Parties were fully vetted and revisions were approved by the commentors (Item VII-A).
3. The *Annual Report Calendar Year 2022 of Activities Under the Anadromous Fish Agreement and Habitat Conservation Plan* (2022 Rock Island HCP Annual Report) and *Annual Report Calendar Year 2022 of Activities Under the Anadromous Fish Agreement and Habitat Conservation Plan* (2022 Rocky Reach HCP Annual Report) were approved by the Rock Island and Rocky Reach HCP Coordinating Committees on May 22, 2023, after edits and comments received from the Parties were fully vetted and revisions were approved by the commentors (Item VII-A).

Agreements

1. There were no HCP Agreements discussed during today's meeting.

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. Chelan PUD is currently addressing comments.
2. Douglas PUD's draft *2022 Public Utility District No. 1 Of Douglas County, Northern Pikeminnow Removal and Research Program* (2022 Northern Pikeminnow Removal Program Report) was distributed to the Wells HCP Coordinating Committee by Kristi Geris on May 31, 2023, and is available for a 60-day review with edits and comments due to Tom Kahler by July 31, 2023 (Item IV-A).

3. Wells Project Land-Use Permit Application for LUP 57.0E-01 was distributed to the Wells HCP Coordinating Committee by Kristi Geris on June 6, 2023, and is available for a 30-day review with edits and comments due to Tom Kahler by July 6, 2023.

Finalized Documents

1. The final 2022 Wells HCP Annual Report was filed with the Federal Energy Regulatory Commission (FERC) on May 30, 2023, and was distributed to the Wells HCP Coordinating Committee by Kristi Geris that same day (Item VII-A).
2. The final 2022 Rock Island HCP Annual Report and final 2022 Rocky Reach HCP Annual Report were filed with FERC on May 30, 2023, and were distributed to the Rock Island and Rocky Reach HCP Coordinating Committees by Kristi Geris that same day (Item VII-A).

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. The following revisions were requested:

- Lance Keller said that under *Item III-C. 2023 Rocky Reach Confirmation Survival Study – Update and Adult Conversion Methodology*, he will provide an update but will postpone the methodology discussion to next month.
- Tom Kahler added *Item IV-B. Wells Dam Bypass Barriers, Turbine Unit Outages, and Crane Hook Recovery*.
- Ferguson noted that the 10-year Comprehensive Hatchery Program Review Summary Report (formerly Douglas PUD's Item IV-B) will be covered under Tracy Hillman's HCP Hatchery Committees Update.

B. Meeting Minutes Approval (John Ferguson)

The HCP Coordinating Committees reviewed the revised draft April 25, 2023, meeting minutes. Kristi Geris said that there are a few outstanding comments requesting clarification or confirmation of edits. These were reviewed and clarifying edits were made, as needed. HCP Coordinating Committees representatives present approved the April 25, 2023, meeting minutes, as revised. Chad Jackson provided WDFW approval of the minutes via email on May 15, 2023.

C. Last Meeting Action Items (John Ferguson)

Action items from the HCP Coordinating Committees meeting on April 25, 2023, and follow-up discussions were as follows (*Note: Italicized text corresponds to agenda items from the meeting on April 25, 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. *Chelan PUD will revise the 2023 Rock Island Bypass Monitoring Plan and 2023 RRJSF Protocol to clarify the origin of ad-present fish examined before distributing the final approved plans (Item I-C).*
This action item will be carried forward.
3. *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.
4. *U.S. Fish and Wildlife Service (USFWS), NMFS, and the Confederated Tribes of the Colville Reservation (CTCR) will submit edits and comments on the draft Rock Island and Rocky Reach Anadromous Fish Agreements and Habitat Conservation Plans 2023 Comprehensive Progress Report to Lance Keller by May 12, 2023 (Item III-A).*
Jim Craig and Kirk Truscott submitted USFWS and CTCR comments, respectively, on May 8, 2023.
5. *Chelan PUD will provide a 2023 Rocky Reach Confirmation Survival Study (CSS) update each Friday throughout the study period, which summarizes activities and progress to date (Item III-C).*
Lance Keller has been providing these updates each Friday since April 28, 2023. Keller said he will provide the final update this Friday, May 26, 2023.
6. *Chelan PUD will amend the 2023 Rock Island and Rocky Reach Fish Spill Plan, to reflect a modification to the Rock Island Dam spill gate sequence for 2023 to address needed spillway repairs, for redistribution to the HCP Coordinating Committees (Item III-D).*
This action item will be carried forward.
7. *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 III-G).*
This action item will be carried forward.
8. *WDFW will revise the presentation Steelhead Overshoots (Part 3) to show the number of fish (sample sizes) in each bar in the histogram charts presented (Item V-A).*
This action item will be carried forward.

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 May 11, 2023:

- *Goodwin Side Channel Discussion:* Last month, Cascade Fisheries asked the HCP Tributary Committees to review three different design alternatives for the *Goodwin Side Channel Project*, which is located on the Wenatchee River near Cashmere, Washington. The goals of the project are as follows: 1) improve rearing habitat for salmonids; 2) enhance floodplain and side channel connectivity; 3) promote native vegetation with plantings; 4) increase large wood cover; and 5) increase floodplain inundation. Last month, the Committees were unable to select a preferred alternative and, therefore, asked the sponsor (Cascade Fisheries) to attend the HCP Tributary Committees meeting on May 11, 2023, to provide more information on the design alternatives. The sponsor and their consultant joined this month's meeting and provided more information on the design alternatives and answered questions. Following the discussion, the HCP Tributary Committees agreed that Alternative 3, the most extensive and intensive restoration action, is the preferred alternative.
- *Draft General Salmon Habitat Program Applications:* The HCP Tributary Committees received 10 General Salmon Habitat Program draft proposals. These were cost share proposals with the Salmon Recovery Funding Board. The Committees identified three projects that did not warrant a full proposal because these did not have strong technical or biological merit or were not cost effective (low benefits per cost). The Committees solicited final proposals for seven projects. Final applications are due on May 16, 2023. The proposed projects are located in the Wenatchee and Methow river basins.
- *Next Meeting:* The next meeting of the HCP Tributary Committees will be on June 8, 2023, when the Committees will be evaluating the General Salmon Habitat Program final applications.

Hillman updated the HCP Coordinating Committees on the following actions and discussions that occurred during the HCP Hatchery Committees meeting on May 17, 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 "Rock Island/Rocky Reach"*):

- *Twisp Pond Fish Loss (joint):* Douglas PUD reported that spring Chinook Salmon and Coho Salmon were released from the Twisp Pond on April 26, 2023, after discovering that sand, silt, and debris were overwhelming the air-burst system used for cleaning the intake screen. After the routine forced-release process, which included multiple flushes and netting out stragglers, over 3,000 fish somehow reascended the release pipe and jumped back into

the pond overnight. Because an overnight spike in discharge completely inundated the intake screen, cutting off flow to the pond, most of the fish that returned to the pond died. The loss consisted of 21 spring Chinook Salmon and 3,013 Coho Salmon. Thus, after subtracting the dead fish, a total of 89,525 Coho Salmon were released into the Twisp River.

- *10-Year Comprehensive Hatchery Program Review Summary Report (joint)*: The HCP Hatchery Committees are developing the Summary Report based on results in the 10-Year Comprehensive Hatchery Program Review. They have developed an outline for the Summary Report, and each member will identify the main points within the 10-Year Comprehensive Hatchery Program Review that should be included in the Summary Report. The Summary Report will also include potential changes to the Monitoring and Evaluation Plan (Plan) for the PUDs' hatchery programs. John Ferguson asked whether HCP Coordinating Committees representatives have questions or comments on this topic. Tom Kahler said this topic was initially a Douglas PUD agenda item, per a past action item. Kahler said Hillman explained the path forward. The HCP Hatchery Committees started this process during the last meeting by discussing Plan Objectives 1 and 2, which should help address Plan Objectives 3 to 8. Andrew Murdoch asked whether this Summary Report is based only on information provided in the 10-Year Comprehensive Hatchery Program Review. Kahler said yes, the HCP Hatchery Committees have not discussed anything different. Keely Murdoch said this is a good question, because the intent of the 10-Year Comprehensive Hatchery Program Review (a PUD report) was to bring in literature and research from outside of the basin to help inform the interpretation of what is happening within basin. Then, the HCP Hatchery Committees would write the Summary Report based on the PUD report. If the intent was to bring in outside information, she does not see why this would only be limited to the PUD report. She believes HCP Hatchery Committees representatives should be able to consider additional information that was not brought forward in the PUD report. Ferguson asked whether it was correct that the 10-Year Comprehensive Hatchery Program Review is a suite of complete reports. Kahler said yes, the analyses are complete, but how the results are characterized is per consensus of the HCP Hatchery Committees. The Committees are discussing what worked and what did not work, what could be modified in the future, and other things of this nature. A. Murdoch said the concern is that the analytical framework needs to be changed based on the results of the analyses. Kahler explained that what was revealed based on the PUD report is that answering the questions is challenging. This could be due, for example, to the lack of contrast in values, such as the proportion of hatchery-origin spawners. The question now is, are several more years of data needed, or are we asking the wrong questions? It is not that we did not get the results we wanted—it is more about how to answer the questions. A. Murdoch said that one issue is not being able to detect a positive or negative. He wonders why that is—is something missing in the framework? Kahler said, right, should the Committees expect the analyses so far to provide these answers, or are we asking the wrong questions? A. Murdoch asked

whether the Committees might develop an alternate analysis if the data do not fit the current analytical framework. Kahler said that everything is on the table at this point. A. Murdoch said that there are 20 years of data now, so the Committees can have these discussions. Kahler agreed and noted that the Committees changed production numbers halfway through the dataset, and he asked how this may have impacted the results. For various reasons, it is not anticipated that such dramatic changes in production numbers will result from future recalculation events, so the future dataset should not be confounded by production changes. He said the Committees need to set themselves up to answer these questions. Kirk Truscott said the Committees are discussing several things, including how and what data are collected, how the data are being analyzed, utilization of data, whether 20 years of data are needed for statistical rigor, what are the chances metrics diverge within a population over a 20-year timeframe, and whether that is relevant. For example, the reference populations for spring Chinook Salmon do not suffer the same rate of pinniped predation as the Upper Columbia population. If the analyses are not accounting for this predation on the Upper Columbia population, do they undersell the hatchery program in adult returns? Ferguson asked what the reference populations are. Kahler said that these are nearly all in the Snake River. A. Murdoch asked whether there was any analysis directed at the reference populations before or after to suggest something else is happening. Kahler deferred to Hillman on this. Kahler said that he knows the Committees looked closely at this. The reference populations had to track the Upper Columbia River pretty well to qualify. There were a lot of criteria. A. Murdoch said that there could be a lot happening in the reference populations because these populations are not behaving as they once were. Hillman said that the issue with this is that the models being used need more years of data to increase statistical power but adding more years of data provides opportunities for other factors to differentially affect the reference populations. Ferguson asked about the schedule to complete the Summary Report. Hillman said that the Committees are targeting a completion date of December 31, 2023, if not sooner. The Committees are taking on Objectives 1 and 2 first, which are the biggest. They hope to be done with this part within a couple of months.

- *Next Meeting:* The next meeting of the HCP Hatchery Committees will be on June 21, 2023.

III. Chelan PUD

A. PRESENTATION: Rock Island Subyearling Behavioral Investigation Update – 2022 Results and 2023 Effort (Lance Keller and Erika Rubenson)

Lance Keller said that Erika Rubenson (Four Peaks) has been leading this Rock Island Subyearling Behavioral Investigation, which started in April 2021, using telemetry gear deployed for the Rock Island CSS. Keller said Rubenson will review results from 2021 and 2022—which were research

and development efforts, as opposed to a structured paired release design—with a goal of assessing subyearling Chinook Salmon behavior in the Rock Island Reservoir and forebay.

Slides 1 to 3

Rubenson shared on WebEx the presentation *Subyearling Chinook Salmon Data Gaps*, (Attachment B), which was distributed to the HCP Coordinating Committees by Kristi Geris on May 26, 2023.

Rubenson said she will be talking about the subyearling data gaps identified over the last couple of years. She recalled that the first study in 2021 was an opportunistic study because acoustic telemetry gear was already deployed for the Rock Island CSS. This study looked at key uncertainties about subyearlings, as bulleted on Slide 2. Rubenson reviewed the key study objectives, as bulleted on Slide 3.

Slide 4

Rubenson said most of this presentation compares and contrasts the 2 study years (2021 and 2022), which sets up what is planned for 2023 and is also a reminder of what was presented before. Rubenson compared and contrasted the 2021 and 2022 studies in terms of water year conditions and the number and locations of fish released, as bulleted on Slide 4.

Slide 5

Rubenson reviewed the overall study design, noting the common release sites between the 2 study years. Additionally, in 2021, there was a Rock Island Dam forebay release, and in 2022, there was a Rock Island Dam tailrace release.

Slide 6

Rubenson reviewed the fish selection criteria, as bulleted on Slide 6. She noted that each study fish received an ATS SS400 acoustic tag with a single suture.

Slides 7 to 9

The 2021 study started on June 30, after the Rock Island CSS releases were completed. On average, run-of-river (ROR) fish were smaller (117 millimeters [mm]) than the study fish (124 mm). There were larger fish were observed earlier in the study and smaller fish observed later in the study. The 2021 study did not differentiate between ad-present and ad-clipped fish and started on June 30. The 2022 study started earlier, on June 15. The ROR fish and study fish were almost identical in size. Fish were predominantly ad-clipped earlier in the study and were mostly ad-present in Weeks 7 and 8 of the study. No fish were released in Week 3 of the study due to dangerous conditions caused by high river flow.

Slides 10 to 11

These are uncorrected survival estimates, and passage was assumed based on last detections. In both years, under different river flow conditions, there was nearly 100% survival for the Rocky Reach Dam

tailrace and Rock Island Dam releases. Survival for the downstream releases were higher in 2022 compared to 2021, which is something that will be investigated in 2023.

Slides 12 to 14

One possible factor is temperature. The vertical dashed lines on Slides 12 and 13 represent when fish were released, and then there are 20°C and 18°C reference lines. In 2021, water temperature in the Rock Island Dam forebay exceeded 18°C by Week 3 and exceeded 20°C later in August. By contrast, in 2022, water temperature was much colder and did not exceed 18°C until Week 6 and never exceeded 20°C. All top models included an effect for temperature.

Slides 15 to 16

In both 2021 and 2022, there was a decrease in survival over time, and trends were consistent for all routes. In 2021, the smallest fish were observed in Weeks 3 to 6; however, in 2022, the smallest fish were observed in Weeks 1 to 2. Therefore, it seems that covariates beyond just fish length are influencing survival.

Slides 17 to 18

Interestingly, there was a 5% increase in route-specific survival in 2022 compared to 2021 for Powerhouse 1 and Powerhouse 2, although very few fish used Powerhouse 1. The difference between the 2 years was significant for Powerhouse 2. There is still the question of what may have caused the difference in 2022. In 2021, there was a lot of variation in Powerhouse 2 operations compared to 2022, notably during the first 2 weeks of the study. In 2022, there was a lot of water through the spillways during the first weeks of the study compared to 2021. The question is, why did this operational pattern result in better survival? For 2021 and 2022, there was no array set up to monitor turbine passage. This will be implemented in 2023 to get better resolution on fish passage through the different turbine routes.

Slides 19 to 20

In both years, the median reservoir transit time was 7 hours, which is very rapid. In 2021, there were two peak modes in travel times (a 7- to 11-hour time and a 24- to 32-hour time). In 2022, there was only one mode. Slide 20 contains violin plots for 2022 transit times. There was one outlier that completed the transit about 1 day later, but most fish moved through the reservoir very quickly.

Slide 21

At Rock Island Dam, subyearlings tend to arrive at night.

Slide 22

Rubenson reviewed the summary, as bulleted on this slide.

Slides 23 to 24

Rubenson said what was observed in 2021 and 2022 is the basis for the hypotheses to test in 2023, as bulleted on Slide 24. Specifically, there is interest in investigating what these hypotheses mean for Powerhouse 2.

Slide 25

The 2023 study will dive into a modeling effort. There will be an increased sample size, and an improved acoustic array will be set up on Powerhouse 2, coupled with sensor fish being released through Powerhouse 2, among other things, as bulleted on this slide.

Slide 26

Little is known about the experience of fish passing through bulb turbines (Powerhouse 2). There will be 60 deployments of sensor fish across low, medium, and high turbine settings, which should help inform this data gap.

Discussion

Keller said it is interesting that 2 years with two drastically different flow years had some of the same indications that rise to the top, such as river temperature. Additionally, these sensor fish are the new modern-day balloon tags. The sensors function like a radio tag, and retrieval is safer than with balloon-tagged fish. Chelan PUD is very interested in seeing how these sensor fish play out.

Kirk Truscott asked, regarding reservoir transit time, whether there a difference between clipped and unclipped fish in 2022. Rubenson said there was no difference. Nearly every fish took 4 to 8 hours from release through the project. Truscott asked about the start and end dates. Rubenson said that in 2022, the study started on June 15 and ended in the first week in August. The 2021 study was similar in duration but started later. Truscott asked whether the 2023 study will be the same duration. The reason he asked is because the 50% mid-season passage date at McNary Dam for fish passive integrated transponder (PIT)-tagged at the confluence of the Okanogan River is August 3. He suggested considering study design alternatives to better capture the run at large in terms of timing, collection location, and tagging proportions.

John Ferguson recalled there being two modes in 2021, and he asked whether Rubenson has a sense for what proportion displayed the fast, 7-hour transit times versus what proportion took longer. Rubenson said that she can review these data, but it seemed to be evenly distributed. There were a group of fish from every release that traveled fast or traveled slow. Keller said that this is what he recalls, as well.

Andrew Murdoch asked whether study fish are collected at Rocky Reach Dam. Keller said yes. Truscott said that, based on a dataset from 2010 to 2022, the mid-season passage dates at

Rocky Reach Dam for wild, PIT-tagged subyearlings include July 25 (50% passage), August 4 (75% passage), and August 15 (90% passage). Ferguson said that it seems the study dates capture most of the run. Truscott suggested reviewing proportions of fish to try and mimic the median passage characteristics at Rocky Reach Dam. Keller asked whether Truscott is suggesting shifting the start date to later. Truscott said that he thinks Chelan PUD should look into this to see whether it is warranted. Keller said that the concern with shifting the study to later is getting enough fish. Andrew Gingerich said that it seems the distribution of fish into August has a long tail, and Truscott is suggesting that Chelan PUD mark fish sample sizes associated with this distribution. That is, mark the bulk of the fish earlier but also mark a few in August. Truscott agreed that this is what he was getting at. Keller said, then this gets into the statistical analyses and whether the power of the test will be strong enough to detect any differences. Chelan PUD prefers using 150-fish releases for statistical rigor.

Truscott suggested running a correction factor for timing at Rock Island Dam based on data collected at Rocky Reach Dam and using this as a surrogate for Rock Island Dam. Keller said that in both years at Rock Island Dam, 90% passage was observed on July 28, 2021, and August 2, 2022. Truscott said that this seems to be considerably different than the data he mentioned and suggested looking further into this as the PUD proceeds down the road of looking at subyearlings. Keller noted that if the interest is looking at passage data at Rock Island Dam, there are bypass trap data there. Truscott said that, however, Rock Island Dam does not sample a high proportion of fish. Keller said yes, that is correct, but the sample rate is consistent year-to-year. Truscott suggested collecting study fish at Rock Island Dam. Keller said that this is an interesting thought. This may compromise statistical rigor (due to small sample size). Truscott said that this location may also be more inclusive of all fish passing Rock Island Dam, and the study design would need to contemplate how not to compromise the health of fish.

A. Murdoch asked whether 95 mm is still the minimum fish length for tagging. Keller said yes.

A. Murdoch asked whether Chelan PUD or Four Peaks has a sense for how well the study fish represented the run at large in terms of fish size. Keller said that Rubenson shared these data on Slides 8 to 9. To note, in 2022, fish sizes were almost identical.

Chelan PUD will distribute the Rock Island Subyearling Behavior Study Update presented by Rubenson during today's HCP Coordinating Committees meeting. *(Note: Keller provided this presentation on May 26, 2023, which Geris distributed to the HCP Coordinating Committees that same day.)*

Ferguson and Truscott both thanked Rubenson and Chelan PUD for this analysis and being proactive about studying subyearlings.

B. DECISION: Rock Island Dam Right Bank Adult Fishway TRE Closure SOA (Lance Keller)

Lance Keller said that the draft SOA, *Closure of Rock Island Right Bank Adult Fishway TRE Entrance During High Flows and Tailwater Elevation*, was distributed to the Rock Island HCP Coordinating Committee by Kristi Geris on April 17, 2023. Geris shared on WebEx the presentation *Rock Island Right Ladder Tailrace Entrance Closure* (Attachment C), which was distributed to the HCP Coordinating Committees by Geris following the meeting on May 23, 2023.

Slide 2

Keller said that the Rock Island Dam Right Bank Adult Fishway has four separate entrances: the left powerhouse entrance (LPE), two right powerhouse entrances (RPEs), and the tailrace entrance (TRE). These entrances are vertical slots; 3.5 feet wide; and fully open, top to bottom. When the tailwater elevation exceeds 574.5 feet above mean sea level (MSL), typically during spring runoff, it is difficult to provide enough attraction flow to meet the 1.0-foot head differential criteria for the entrance without exceeding maximum target velocities of 4.0 feet per second (fps) in the fishway transportation channels. This is something that has been documented in Fish Passage Center inspections. Historical solutions included closing the RPE from 2007 to 2012. In 2013, Chelan PUD tried leaving stop logs in the RPE. However, there were safety concerns with removing the stop logs with the ladder in operation. In 2014, no closure was needed, due to the Wanapum incident. At that point, closure of the TRE was recommended by the Fish Passage Center as the best approach to address this issue and was the solution from 2015 to 2021. In 2022, Chelan PUD brought this topic to the Rock Island HCP Coordinating Committee. Those discussions resulted in a 1-year SOA. In 2022, the closure was longer than normal (May 26 to August 31, 2022) due to it being a high-flow year that arrived later than recent years. This closure encompassed the entire Sockeye Salmon and summer Chinook Salmon migrations. The Committee discussed adult conversion rates. The issue with trying to calculate those rates is that it is difficult to isolate passage data to just the right fish ladder because the left and middle fish ladders were also open. If a fish did not convert over the dam, it is difficult to directly link this to a TRE closure.

Slide 3

Keller explained the locations of the LPE, RPEs, and TRE. He said that all entrances have wing gates, which were originally used to meet head differentials. These are tucked into the wall and when fully open, the slot is 3.5 feet wide. These wing gates no longer operate and are fixed fully open.

Slide 4

Keller said that this is a photo of the TRE from inside the fish ladder. He noted that the slot is fully open from top to bottom. If the entrance were operational, all of these gates would be removed. He noted that the wing gate is welded in the open position.

Slide 5

Keller said that he compiled individual ladder counts for Chinook Salmon, steelhead, Sockeye Salmon, and Coho Salmon on the right fish ladder and compared these to the overall numbers counted at the Rock Island Project for those species on the same days to try and detect any changes associated with the TRE closure from May 26 to August 31, 2022. The diamond markers on these graphs depict closure of the TRE. For Chinook Salmon, the lines track pretty close to each other with no drastic deviations. Approximately 70% to 90% of fish ascend Rock Island Dam via the right fish ladder.

Kirk Truscott said that, post-closure, these data do not appear to represent 70% to 90% of fish passing Rock Island Dam. It looks like something less. Keller said the assumption is that the bulk of passage occurs on the right ladder for the majority of species. Truscott said that the lines track fairly well pre- and post-closure, but the amplitude of difference seems greater when the closure occurred. Keller noted that this is not a perfect analysis because there are other available passage routes. Andrew Murdoch asked whether there are graphs comparing the entrances. Keller said no, but he can develop these if needed. Ferguson asked about the current tailwater elevation. Keller said that it is close to needing an entrance closure, which is why this discussion is important right now. Regarding passage routes, in June 2022, approximately 4,300 fish passed via the right ladder, nearly 800 fish passed via the middle ladder, and approximately 4,700 fish passed via the left ladder. So, it looks like the left ladder was strong for adult Chinook Salmon passage during June 2022. He recalled that in 2013, there was an issue with the right bank fishway auxiliary water system picket-barrier resulting in a ladder outage to address the issue, and passage numbers increased via the middle and left ladders. That is, fish found the other passage routes.

Keller said that it is Chelan PUD's preference for an additional year closure of the TRE. Later in this presentation, he has a slide on the other options that were discussed, but these did not get beyond the scoping phase because of the Wanapum incident. Maintenance staff do not like opening and closing the TRE. This requires a lot of work.

Truscott said that he is not saying fish were not passing because the TRE was closed. These fish need to find another route, and he is curious about the associated delays in passage. In July and August, every day is important. Keller agreed, and said that if the TRE is closed, fish continue to move upstream and find the two open slots in the RPE, located adjacent to the ladder opening on the right bank, which has better attraction water. Chelan PUD hopes that there is no closure in July and August this year. Last year was an outlier.

Slide 6

Keller said that this graph shows steelhead counts. Once again, the diamond markers depict closure of the TRE. These lines are in sync with one another. Again, it was a longer closure of the TRE in 2022 than normal. Typically, the closure is from April to early July.

Slide 7

This graph shows Sockeye Salmon counts. The TRE closure encompassed the entire run. This peak in counts was observed in the right ladder only.

Slide 8

This graph shows Coho Salmon counts. Keller believes that there were four Coho Salmon that passed during the TRE closure. The majority of the run passed post-closure.

Slide 9

Keller said that Chelan PUD discussed other ideas besides closing the TRE. Increasing the pumped attraction water further increased the velocities in the fishway transportation channel, so this one was an easy no-go. Increasing gravity attraction water increased velocities across the traveling screen portion of the juvenile passage system, which is undesirable. A fishway attendant was interested in restoring operation of the wing gates. Chelan PUD is investigating how effective this might be and whether this would require going beyond the angle specified in the HCP. Lastly, Chelan PUD considered creating a submerged weir with headgates. This requires engineering input and essentially involves cutting the vertical slot opening in half.

Slide 10

Chelan PUD is most interested in further investigating the last two options. For now, Chelan PUD is hoping to obtain approval for another TRE closure, as has been done since 2015.

Discussion

Keely Murdoch said she likes the idea of continuing to evaluate alternative options, which was the discussion last year and the reasoning behind a 1-year SOA. Geris shared on WebEx the draft SOA, *Closure of Rock Island Right Bank Adult Fishway TRE Entrance During High Flows and Tailwater Elevation*. Ferguson asked whether there are any changes to this SOA compared to the last approved SOA. Keller said nothing was changed except the date. He also noted that there is a system set up at Rock Island Dam that facilitates continuous feedback between the fishway attendants, managers, and operation of the TRE. Ferguson noted that Chad Jackson provided WDFW approval of the draft SOA via email on May 19, 2023, pending Rock Island HCP Coordinating Committee approval.

Rock Island HCP Coordinating Committee representatives present approved the SOA *Closure of Rock Island Right Bank Adult Fishway TRE Entrance During High Flows and Tailwater Elevation*. Jackson provided WDFW approval via email on May 19, 2023.

C. 2023 Rocky Reach CSS – Update and Adult Conversion Methodology (Lance Keller)

Lance Keller said that study fish releases for the 2023 Rocky Reach CSS are nearly complete. Chelan PUD has been providing weekly updates on these releases. The final collection for Rocky Reach replicates

occurred this morning, fish will be tagged tomorrow, and the last release will occur in the Rocky Reach Dam tailrace on May 25, 2023. The final release below Wells Dam occurred yesterday. For the most part, the study has gone as planned and without issues. Last Sunday (May 21, 2023), a severe windstorm knocked out power at the tagging site. A backup water supply was in place, so there were no losses of fish. At the back end of the run, there were fewer fish passing through the bypass. Crews were collecting study fish outside of the index hours while navigating the Sockeye Salmon run. Crews still managed to meet target sample sizes across all releases. Lastly, there is a lot of water moving through the system now. There has been spill at Rocky Reach Dam, and Blue Leaf Environmental is checking on the deployed equipment weekly. Keller will provide one more update at the end of this week.

D. 2021/2022 Northern Pikeminnow Removal Program Reports (Lance Keller)

Lance Keller said that these reports have been drafted, but Chelan PUD held off on distributing the reports for review considering the large amount of review items that were recently sent out. Chelan PUD is doing one final check on the drafts and will distribute the draft reports for a 60-day review in the next couple of days. Both reports are consistent with past reports.

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

Lance Keller said that work continues on Turbine Unit B3. The estimated return-to-service date of Q1 2024 is still holding.

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

Lance Keller said that work continues on Turbine Unit C11. Voith Hydro is taking parts back to Virginia. The estimated return-to-service date of January 2024 is still holding.

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

IV. Douglas PUD

A. 2022 Northern Pikeminnow Removal Program Report (Tom Kahler)

Tom Kahler said, similar to Chelan PUD, that this report has been drafted, but Douglas PUD wanted to postpone review until after annual reports and other materials last quarter were reviewed. Kahler said that John Rohrback (Douglas PUD) is addressing a few last comments, and the draft report will be distributed for a 60-day review later this week. Kahler recalled that Chad Jackson had submitted comments on the 2021 report to incorporate in future reports. The 2022 report was already drafted, so a few comments were addressed, but some comments will wait to be addressed in the 2023 report. Kahler said that Jackson was okay with this.

Douglas PUD's draft 2022 Northern Pikeminnow Removal Program Report was distributed to the Wells HCP Coordinating Committee by Kristi Geris on May 31, 2023, and is available for a 60-day review with edits and comments due to Kahler by July 31, 2023.

B. Wells Dam Bypass Barriers, Turbine Unit Outages, and Crane Hook Recovery (Tom Kahler)

Tom Kahler said that this update was distributed to the HCP Coordinating Committees by Kristi Geris last night, on May 22, 2023. Kahler said that a dive contractor was trying to install stop logs in Turbine Unit 6. Even with the associated spillway and adjacent spillways shut down for diver safety, the man basket kept drifting due to high river flow, and after 1 hour of attempts, work was stopped due to unsafe conditions. Another attempt was made to install stop logs without diver support, which is not unprecedented. One of two hooks came loose and the stop log got stuck in a spillway slot with the other hook attached. Operators continued to spill through Spillway 6 but eventually shut this down, as well as the associated turbines, due to safety concerns. All actions followed the approved Bypass Operating Plan. This all occurred last week. Today, divers were scheduled, again, and everything was completed as planned. All spillways and available turbines are open and operating.

Kirk Truscott asked whether this was a gantry crane hook. Kahler said yes.

John Ferguson asked whether there were any deviations. Kahler said that bypass barriers were pulled from Spillway 4 instead of Spillway 8 to try and minimize currents the diver was exposed to.

Andrew Gingerich clarified that bypass barriers were pulled consistent with the flow threshold identified in the Wells HCP Coordinating Committee approved Bypass Operating Plan. Ferguson asked about total dissolved gas issues. Gingerich said that there were none. He noted that side flows from the Okanogan and Methow rivers added 30,000 cubic fps (30 thousand cubic feet per second [kcfs]) to the total discharge coming from Chief Joseph Dam and total discharge was greater than 200 kcfs. The forecast flow for the next 3 days is modestly lower than late last week. Truscott said that in mid to late June, he thinks flows from Grand Coulee Dam will drop significantly. Gingerich asked how close Grand Coulee Dam is to full pool. Truscott said that it will be to full pool (1,290 MSL) by July 4. Kahler said that it is at 1,270 MSL right now.

V. Washington Department of Fish and Wildlife

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

John Ferguson said that Chad Jackson indicated that WDFW has no additional updates at this time and is anticipating presentations of data from the PUDs.

Lance Keller said Chelan PUD has no updates at this time but will continue working on this topic in the coming months. Andrew Gingerich said Douglas PUD hopes to have something to share in June 2023.

VI. Chelan PUD / Douglas PUD

A. Subyearling Chinook Salmon Studies – Quarterly Check-In (Lance Keller and Tom Kahler)

John Ferguson asked whether there is anything further to report on subyearlings this month.

Keely Murdoch suggested, once data are available from the Rock Island Subyearling Behavioral Investigation, assimilating all available information and holding a substantial discussion.

Kirk Truscott agreed. He said that subyearlings are complicated, and tag technology is ever-changing. He suggested reviewing the suite of survival study model assumptions to see whether there is anything else that needs to be studied, including, for example, active migrants. These fish are migrating through the Rock Island Reservoir in 7 hours. He thinks this is an active migrant. K. Murdoch noted that these fish were collected at Rocky Reach Dam, so this might be self-selecting for active migrants. Andrew Gingerich said that, additionally, tagging these fish might be different than buttoned-up fry. Truscott agreed that it is important to be as representative as possible.

K. Murdoch said that it will be interesting to see if there are any statistical models that address nonactive migrants. Truscott said that this might not matter, depending on the selection of test and control groups. If sample selection is truly random, and there are enough recaptures to support the statistical power needed, there would be the same proportion of nonactive migrants in both groups. Gingerich said that this is assuming the treatment and control locations are similar. For example, the Okanogan delta and Wells Pool are vastly different in terms of feeding and foraging opportunity. Tom Kahler asked how to get the treatment and control groups to match in time with a paired release design. Truscott said that the study would need to hold one group longer than the other if study fish are collected at the same time. Lance Keller noted that this means handling and treating one group differently.

Ferguson asked about timing. Keller said that Rubenson will likely present the final results from the Rock Island Dam study this year in Q1 2024. Andrew Murdoch suggested convening another summit, like in past years. Ferguson summarized that after results are available from the 3-year Rock Island Subyearling Behavioral Investigation (tentatively Q1 2024), the HCP Coordinating Committees will consider reconvening another Subyearling Chinook Salmon Regional Workshop to discuss the latest data, survival study model assumptions, tag technology, and next steps towards future subyearling Chinook Salmon studies.

VII. HCP Administration

A. HCP Annual Reports (John Ferguson)

John Ferguson said that the 2022 Wells HCP Annual Report, 2022 Rock Island HCP Annual Report, and 2022 Rocky Reach HCP Annual Report were approved by the HCP Coordinating Committees on May 22, 2023, after edits and comments received from the Parties were fully vetted and revisions were approved by the commentors. Comments were received from the Yakama Nation and the CTCR, and responses were coordinated with Tracy Hillman and Larissa Rohrbach (HCP Tributary and Hatchery Committees), the PUDs, Keely Murdoch, and Kirk Truscott. Ferguson said that Anchor QEA, LLC, is working towards finalizing these reports now for distribution to the PUDs and the HCP Coordinating Committees and then submittal to FERC.

Note: The final 2022 Wells HCP Annual Report, 2022 Rock Island HCP Annual Report, and 2022 Rocky Reach HCP Annual Report were filed with FERC on May 30, 2023, and were distributed to the HCP Coordinating Committees by Kristi Geris that same day.

B. HCP Policy Committee Meeting on June 20, 2023 (John Ferguson)

John Ferguson said that the annual HCP Policy Committees meeting is scheduled for June 20, 2023. To date, no agenda items have been received. Ferguson said Kristi Geris will resend a request for agenda items this Friday, May 26, 2023. If no topics are received, the meeting may be canceled. Ferguson asked that HCP Coordinating Committees representatives coordinate with their respective HCP Policy Committees representatives on potential topics.

C. Next Meetings (John Ferguson)

The HCP Coordinating Committees meeting on June 27, 2023, is from 12:00 p.m. to no later than 4:00 p.m. and will be held in person at the Douglas PUD Auditorium in East Wenatchee, Washington.

The HCP Coordinating Committees meetings on July 25 and August 22, 2023, are from 9:00 a.m. to no later than 12:00 p.m. and will be held in person at the Wanapum Dam Hydro Building, Room 103, in Beverly, Washington.

List of Attachments

Attachment A List of Attendees

Attachment B *Subyearling Chinook Salmon Data Gaps*

Attachment C *Rock Island Right Ladder Tailrace Entrance Closure*

Attachment A
List of Meeting Attendees

Name	Organization
John Ferguson	Anchor QEA, LLC
Kristi Geris	Anchor QEA, LLC
Tracy Hillman ⁺⁺	BioAnalysts
Lance Keller [*]	Chelan PUD
Bill Towey [*]	Chelan PUD
Erika Rubenson [†]	Four Peaks Environmental Science and Data Solutions
Tom Kahler [*]	Douglas PUD
Andrew Gingerich [*]	Douglas PUD
Scott Carlon [*]	National Marine Fisheries Service
Jim Craig [*]	U.S. Fish and Wildlife Service
Andrew Murdoch [*]	Washington Department of Fish and Wildlife
Kirk Truscott [*]	Confederated Tribes of the Colville Reservation
Keely Murdoch [*]	Yakama Nation

Notes:

- * Denotes HCP Coordinating Committees member or alternate
- ++ Joined by phone for the HCP Hatchery and Tributary Committees update
- † Joined by phone for Item III-A