

Memorandum

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

Date: September 24, 2019

From: John Ferguson, HCP Coordinating Committees Chairman

cc: Kristi Geris

Re: Final Minutes of the August 27, 2019 HCP Coordinating Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plan (HCP) Coordinating Committees met at the Grant PUD office in Wenatchee, Washington, on Tuesday, August 27, 2019, from 10:00 a.m. to 12:45 p.m. Attendees are listed in Attachment A to these meeting minutes.

Action Item Summary

- Lance Keller will provide updates about the repair of Rocky Reach Dam Turbine Unit C1 and Turbine Unit C3 to the HCP Coordinating Committees as soon as additional information becomes available (Item I-C).
- Douglas PUD will review available passive integrated transponder (PIT)-tag detection data from April 9 to April 30, 2019, covering the span of Wells Dam bypass non-compliance events for Turbine Units 1 to 4 and Bypass Bays 2 and 4, to identify possible impacts to fish passage and survival through the Wells Project (Item I-C).
- Kirk Truscott will submit Colville Confederated Tribes (CCT) comments on the *Wells Project Subyearling Chinook Life-History Study 2011-2013 Draft Final Report* to Tom Kahler (Item I-C).
- Lance Keller will update Keely Murdoch on subyearling discussions to date, including Chelan PUD's plan to request approval of a renewed Statement of Agreement (SOA) during the HCP Coordinating Committees meeting on September 24, 2019, that maintains subyearling Chinook salmon in Phase III (Additional Juvenile Studies) for the Rock Island and Rocky Reach projects for up to 3 years (Item III-B). *(Note: Keller discussed this topic with Murdoch, as described in an email distributed to the HCP Coordinating Committees by Kristi Geris on September 3, 2019.)*
- Lance Keller will distribute to the HCP Coordinating Committees a draft SOA, maintaining subyearling Chinook salmon in the Rock Island and Rocky Reach projects in Phase III (Additional Juvenile Studies) for up to 3 years, for vote during the HCP Coordinating Committees meeting on September 24, 2019 (Item III-B). *(Note: Keller provided a draft SOA to Kristi Geris on September 19, 2019, which Geris distributed to the HCP Coordinating Committees that same day.)*
- Lance Keller will distribute to the HCP Coordinating Committees results from the Rocky Reach Dam Turbine Unit C3 Chesterton seal tests once they become available (Item IV-A). *(Note:*

Keller provided an update on the Chesterton seal tests to Kristi Geris on September 19, 2019, which Geris distributed to the HCP Coordinating Committees that same day.)

- Lance Keller will explain to Keely Murdoch Chelan PUD's request to begin the 2019/2020 annual ladder maintenance work period at Rocky Reach Dam on December 16, 2019, which is 2.5 weeks earlier than usual, to allow more time to complete required work, and request that Murdoch provide the Yakama Nation's (YN's) approval of the request to the Rocky Reach HCP Coordinating Committee via email (Item IV-D). *(Note: Keller discussed this topic with Murdoch and the YN agreed to Chelan PUD's request, as described in an email distributed to the HCP Coordinating Committees by Kristi Geris on September 3, 2019.)*
- The HCP Coordinating Committees meeting on September 24, 2019, will be held **in-person** at the Grant PUD Wenatchee office in Wenatchee, Washington (Item VI-A).

Decision Summary

- There were no HCP Decision Items approved during today's meeting.

Agreements

- Rocky Reach HCP Coordinating Committee representatives present agreed to Chelan PUD's request to begin the 2019/2020 ladder maintenance outage at Rocky Reach Dam 2.5 weeks earlier than usual to allow more time to complete required work, contingent on approval by the YN. Rather than beginning work during the first week in January (per usual), maintenance work will begin on December 16, 2019 (Item IV-D). *(Note: Keely Murdoch provided the YN's agreement to Chelan PUD's request via email on September 3, 2019, as distributed to the HCP Coordinating Committees by Kristi Geris that same day.)*

Review Items

- The *Wells Project Subyearling Chinook Life-History Study 2011-2013 Draft Final Report* was distributed to the HCP Coordinating Committees by Kristi Geris on May 24, 2019.
- The *Northern Pikeminnow Predator Control Program, Rocky Reach and Rock Island Hydroelectric Projects, Draft Summary Report, 2018* was distributed to the HCP Coordinating Committees by Kristi Geris on September 10, 2019 and is available for a 30-day review with edits and comments due to Lance Keller by October 10, 2019.
- A draft SOA titled *Maintain Rock Island and Rocky Reach Subyearling Chinook in Phase III (Additional Juvenile Studies) for up to three years* was distributed to the HCP Coordinating Committees by Kristi Geris on September 19, 2019 (Item III-B).

Finalized Documents

- There are no documents that have been recently finalized.

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 from HCP Coordinating Committees members. Ferguson added an update on the HCP Policy Committees draft July 9, 2019 meeting minutes.

B. Meeting Minutes Approval (John Ferguson)

The HCP Coordinating Committees reviewed the revised draft July 23, 2019 meeting minutes. Kristi Geris said all comments and revisions received from members of the Committees were incorporated into the revised minutes. Geris said Dr. Rebecca Buchanan (University of Washington [UW], Columbia Basin Research) also reviewed and commented on the draft minutes. Lance Keller requested one additional edit under the subyearling presentation discussion, slide 16, where he commented that from a predator saturation perspective, a lot of run-of-the-river fish are present “in the middle of a juvenile outmigration compared to the beginning and the end.” This edit was incorporated, and HCP Coordinating Committees members present approved the July 23, 2019 meeting minutes, as revised.

C. Last Meeting Action Items (John Ferguson)

Action items from the HCP Coordinating Committees meeting on July 23, 2019, and follow-up discussions, were as follows. (*Note: Italicized text corresponds to agenda items from the meeting on July 23, 2019*):

- *HCP Coordinating Committees representatives will prepare technical questions and considerations concerning the feasibility of conducting subyearling Chinook salmon studies with the current information and technology available to date, for discussion with Drs. Rebecca Buchanan and John Skalski (UW, Columbia Basin Research) during the HCP Coordinating Committees meeting on August 27, 2019 (Item I-A).*
This will be discussed during today's meeting.
- *Lance Keller will provide updates about the repair of Rocky Reach Dam Turbine Unit C1 and Turbine Unit C3 to the HCP Coordinating Committees as soon as additional information becomes available (Item II-C).*
This will be discussed during today's meeting and will be carried forward.

- *Douglas PUD will review available PIT-tag detection data from April 9 to April 30, 2019, covering the span of Wells Dam bypass non-compliance events for Turbine Units 1 to 4 and Bypass Bays 2 and 4, to identify possible impacts to fish passage and survival through the Wells Project (Item II-C).*

Tom Kahler said these data are still under internal review. This action item will be carried forward.

- *Kirk Truscott will submit CCT comments on the Wells Project Subyearling Chinook Life-History Study 2011-2013 Draft Final Report to Tom Kahler by Friday, July 26, 2019 (Item V-B).*

Truscott said this effort is still ongoing and Kahler said it is not critical to finalize this report right away. 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 August 8, 2019:

- *Cottonwood Flats Connection Project Presentation:* Chelan County Natural Resources Department provided an update on the status of the Cottonwood Flats Connection project on the Entiat River. The County described three design alternatives for the project. The Rocky Reach HCP Tributary Committee, which funded a portion of this project, supported a 240-cubic feet per second (cfs) connection to the floodplain (i.e., the floodplain will be activated when flows in the Entiat River are at 240 cfs or greater). The Rocky Reach HCP Tributary Committee also recommended the construction of a short “feeder” channel that will direct flows onto the floodplain. The sponsor, engineers, and the landowner are currently evaluating the Committee’s recommendation. Hillman said more information is expected in September when there will hopefully be resolution on a design.
- *Okanagan River Restoration Monitoring Presentation:* The Okanagan Nation Alliance (ONA) presented results from monitoring enhancement actions implemented on the Okanagan River in Canada, some of which were funded by the HCP Tributary Committees. ONA documented increased abundance and distribution of Chinook salmon and rainbow/steelhead; increases in large wood; positive responses in channel morphology, fish habitat, riparian vegetation and wildlife; increases in macroinvertebrate diversity and richness; and a reduction in coverage of macrophytes (especially Eurasian milfoil). In addition, spawning habitat has increased along with egg-to-fry survival rates. Hillman said these positive results suggest the enhancement efforts are working. John Ferguson asked if these results are provided in a report, and Hillman said they are in annual reports.

- *Next Meeting:* The next meeting of the HCP Tributary Committees will be on September 12, 2019.

Hillman updated the HCP Coordinating Committees on the following actions and discussions that occurred during the HCP Hatchery Committees meeting on August 21, 2019 (*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"*):

- *Relative Reproductive Success Timeline (joint):* Washington Department of Fish and Wildlife (WDFW) provided the HCP Hatchery Committees with a memorandum clarifying the extension of the Wenatchee spring Chinook salmon relative reproductive study. The last year of sampling DNA from natural-origin adult Chinook salmon at Tumwater Dam will be 2023.
- *Egg Treatment Study (joint):* Douglas PUD provided a study plan that will evaluate the effects of salt, hydrogen peroxide, and elemental copper in controlling saprolegnia infection of summer Chinook salmon eggs during incubation at Wells Fish Hatchery. The pilot study will begin this fall.
- *Update Genetics Section of the Hatchery Monitoring and Evaluation (M&E) Plan (joint):* The HCP Hatchery Committees reviewed edits made to the genetics section of the Hatchery M&E Plan. Revisions were made based on recommendations provided by the Genetics Monitoring Panel. Members will finalize and approve the edits during the HCP Hatchery Committees meeting on September 18, 2019.
- *Broodstock Collection Protocols (joint):* The HCP Hatchery Committees are beginning the process of updating the Broodstock Collection Protocols. Over the next few months, the HCP Hatchery Committees will identify any significant changes that need to be made to the protocols and will identify members who will lead the writeup of certain sections of the protocols.
- *National Marine Fisheries Service (NMFS) Consultation (joint):* NMFS is in the process of signing the Steelhead and Summer Chinook Salmon permits. The permits will then go to the permittees for signature.
- *Expanded Wells Summer Chinook Production for the Southern Resident Killer Whale Population (Wells):* WDFW prepared a proposal that will allow extra production of subyearling summer Chinook salmon at Wells Fish Hatchery. The extra production is intended to benefit the Southern Resident Killer Whale population. The Wells HCP Hatchery Committee is currently evaluating the proposal to determine whether the extra production will affect HCP production. Ferguson asked how much extra production is being discussed, and Kirk Truscott said a half-million fish. Tom Kahler said the extra production will be reared in the large dirt ponds and the question is whether there is adequate incubation space. Ferguson asked about

funding, and Chad Jackson said this effort is being conducted under a contract between WDFW and Douglas PUD, which is passing through funds from the Washington legislature. Ferguson asked if there are any other logistical issues. Jackson said WDFW is currently navigating through various Endangered Species Act permits alongside several other hatcheries that are also planning extra production for orcas. Truscott noted that there are contingency plans in place in case permits get hung up, so these fish will go somewhere other than into the ground. Jackson said Douglas PUD's contingency plan is Banks Lake. Kahler also noted if other hatcheries are battling columnaris issues, there may be a need for extra fish from Wells Fish Hatchery.

- *Draft 2020 Rock Island and Rocky Reach M&E Implementation Plan (Rock Island/Rocky Reach):* Chelan PUD provided the draft 2020 Rock Island and Rocky Reach M&E Implementation Plan for review. The Rock Island and Rocky Reach HCP Hatchery Committees are currently reviewing the draft implementation plan and will discuss and vote on the plan during the HCP Hatchery Committees meeting on September 18, 2019.
- *Next Meeting:* The next meeting of the HCP Hatchery Committees will be on September 18, 2019.

III. Subyearling Studies

A. Brainstorming Session (All)

John Ferguson recalled the HCP Coordinating Committees convening a subyearling workshop in 2016, and then the subsequent Chelan PUD subyearling phase designation SOA, which is now about to expire, and the subyearling presentation provided by Dr. Rebecca Buchanan during the HCP Coordinating Committees meeting on July 23, 2019. Ferguson said based on Buchanan's presentation, in terms of survival models, project survival is still not separately estimable which is the same situation as 3 years ago. He said the question remains, where to go from here, and the HCP Coordinating Committees agreed further discussion was needed this month.

Ferguson said Keely Murdoch provided an email summarizing the Yakama Nation's (YN's) stance on subyearling studies, which was distributed to the HCP Coordinating Committees by Kristi Geris on August 12, 2019. Ferguson said the email is consistent with what Murdoch expressed verbally during the HCP Coordinating Committees meeting on July 23, 2019, i.e., the YN is interested in conducting at-dam passage survival studies similar to what the U.S. Army Corp of Engineers (USACE) has been doing. Ferguson noted, however, that at-dam passage survival studies are not stipulated in the HCPs as a means for achieving Phase III (Standard Achieved), and if this is a path the HCP Coordinating Committees choose to go down this will not be a simple discussion because it is a departure from the Passage Survival Plans in the HCPs. He said this may even require HCP Policy Committees input because at-dam passage survival studies are only an interim measure in the HCPs for getting out of

Phase II (Additional Tools), and the HCPs do not include the flexibility to study just for the sake of studying. He said the HCP Coordinating Committees would need to carefully consider this approach.

Jim Craig questioned whether studying survival at the dam is a significant enough departure from the HCPs to be in conflict with the HCPs. Lance Keller pointed out that achieving the 95% dam passage survival standard does not lead to a change in phase designation from Phase III (Additional Juvenile Studies) to Phase III (Standard Achieved). Keller said the HCPs are designed to carry out actions to define a phase designation on a project scale that is subsequently used to identify mitigation targets.

Kirk Truscott said currently under the HCPs, there is a negotiated level of mitigation for all Plan Species. He said the question is, is this enough mitigation for species for which survival has not been measured? He said if the PUDs conduct at-dam survival studies and the results are less than the negotiated value, does mitigation need to increase? He said conversely, if the results are better (higher survival), does this mean the negotiated mitigation is too much or does it not apply because this is only at-dam survival. He said, while everyone wants to know if Plan Species are being under-mitigated, this is not a two-way street. He said the risk is entirely on the PUD side and he is unsure whether this is fair. He said further, only fish of taggable size are being mitigated for, based on the studies, which is not the entire population.

Keller said after the last HCP Coordinating Committees meeting on July 23, 2019, he went back internally and discussed what has been learned about spring species, how this effects operational changes (especially at Rock Island Dam), and what is known about passage routes. He said, for example, what if Chelan PUD conducts an at-dam survival study and results are higher than 95% survival for 20% spring spill. He asked, does this mean Chelan PUD could conduct a spill reduction similar to the additional studies conducted in 2007 to reduce fish spill at Rock Island Dam from 20% to 10% for spring Plan Species after Phase III (Standards Achieved) was designated in 2006.

Truscott said he is interested in a tagging option to incorporate all fish lengths, but there are none. He said fish are marked with Bismarck brown dye at screw traps, but this would not remain visible for the duration needed for a survival study. He said it may work for an at-dam survival study or at least in proximity to a project. He said another sample location would also be needed, like a bypass. Tom Kahler said it would be difficult to recapture enough fish to have statistically significant results. Truscott suggested conducting a mass marking effort to boost sample size. He said, for example, marking 50,000 to 75,000 fish of all sizes at the confluence of the Okanogan River. He caveated that the current sampling scheme at the Rocky Reach Juvenile Fish Bypass is not sufficient to recover an adequate sample size; therefore, operational changes would be needed at the bypass. Keller agreed there would be logistical issues to recover the fish. Ferguson asked if there is an option for in-reservoir collection? Truscott said this would be nearly impossible. He said a fixed location would be

needed to operate all day. Keller said even then, there would be detectability issues. He said at Rocky Reach Dam, Chelan PUD has staffed the bypass continuously for 40-some days, 24 hours per day, with samples conducted at the top of each hour. He said there needs to be high detection probability to calculate a survival estimate and he questioned whether a study design could reasonably handle that many fish. He said even with a PIT-tag study, there needs to be additional downstream handling sites to improve detection probability. He also noted that detection probability at the Rock Island Dam Juvenile Bypass System is low.

Truscott said there are obvious difficulties in attempting to conduct an at-dam or project-level, population-at-large, study, and he has no suggestions on how to arrive at something more tangible. Jim Craig said additionally, there are unknowns about life histories, such as fish residing versus moving slowly. Truscott said it might be useful to discuss what constitutes an active migrant and suggested considering migrating birds as a reference point. Kahler said, however, there is a difference between migrating birds and migrating fish. He explained that migrating birds move volitionally through an air mass, versus a fish not swimming will still be passively transported through their native water. He said fish do not have a choice to avoid migrating unless the fish actively resists it. He said Tiffan et al (2018)¹, also referenced in Douglas PUD's *Wells Project Subyearling Chinook Life-History Study 2011-2013 Draft Final Report*, distinguished what is an active versus passive migrant for the purposes of their study. Kahler said their method considers the ratio of the velocity of the fish relative to the velocity of the current. He said a fish moving slower than the current is considered a passive migrant versus a fish moving faster than the current is identified as an active migrant. He said perhaps the HCP Coordinating Committees can develop something similar to this.

Kahler said he does not recall whether Tiffan et al (2018)¹ mentioned water particle transport time nor is he certain this transit time is the same timing non-swimming creatures experience, but when Chief Joseph Dam increases discharge, it takes only a few hours for a wave of water to reach Wells Dam; however, the actual water-particle transit-time is calculated differently and is between 1 and 2 days. He said he is unsure how this is calculated but this water transit time is recognized by the Washington State Department of Ecology. Keller said according to the operators, water transit time from Rocky Reach Dam to Rock Island Dam is 45 minutes. Truscott said considering this timing yearlings would be passive. Kahler said in the Douglas PUD survival study, release times at Pateros were intended to match with release times in the Wells Dam tailrace, and those releases linked up pretty well. Keller said in the Chelan PUD survival study, the test and control groups were released 24 hours apart and travel time was species dependent. He said, for example, sockeye salmon migrated through the Rocky Reach Reservoir faster than yearling Chinook salmon or steelhead.

¹ Tiffan K. F., T. J. Kock, W. P. Connor, M. C. Richmond, and W. A. Perkins. 2018. Migratory behavior and physiological development as potential determinants of life history diversity in fall Chinook salmon in the Clearwater River. *Transactions of the American Fisheries Society* 147:400-413.

Truscott also noted that even though fish might be tailing (or moving tail-first), this does not necessarily mean the fish is not an active migrant.

Keller said additionally, the term “residualization” has been used a lot while discussing subyearling survival studies. He said this term is used a lot in the hatchery world to refer to a fish that chooses to not migrate and exhibits a life-history without an ocean component; however, when used in the context of natural-origin fish and survival studies it refers to a fish that will eventually out-migrate. Truscott agreed and added that, to residualize in the hatchery world refers to a reservoir-rearing life history. He said historically, there have been years with a fairly large amount of hatchery adult returns demonstrating this life history, but it has somewhat gone away over the past 6 to 8 years. Kahler agreed this life history has diminished.

Ferguson clarified that the term “active migrant” is not in the HCPs; rather, the HCPs only indicate “migrant.” Truscott said active migrant is used in Douglas PUD’s subyearling report and Keller said this term is also used in Buchanan’s subyearling presentation. Chad Jackson said a survival study needs study fish that want to migrate. Kahler said for an acoustic tag study, according to Buchanan’s subyearling presentation, any fish that does not migrate before the tag life expires is a residual fish.

Keller recalled in 2011, a similar situation of not being able to evaluate subyearlings, so Chelan PUD provided a presentation on what was known about subyearlings, including a review of metrics such as carrying capacity, productivity, and limiting factors. He said this provided confidence to the HCP Coordinating Committees that even though subyearling survival could not be studied, these data indicated the species was doing quite well. He suggested perhaps in lieu of a survival study, something similar can be done now, i.e., review these same metrics to determine if the species is in the same situation and doing okay. He recalled Tracy Hillman presented a productivity model for summer Chinook salmon in the Wenatchee and Methow river basins. He said ambient air temperature, relative snowpack, and pacific decadal oscillation were found to be the largest determining factors related to abundance. Truscott also recalled that the data indicated from an abundance and hatchery smolt-to-adult ratio standpoint, the population seemed to be on par or doing better than yearlings.

Truscott said he does not believe conducting an at-dam study will give the direction needed for a change in phase designation. Jackson agreed the technology is not quite there yet to conduct a project-level survival study, and he asked if more can be learned about the study species. He said maybe too much focus is on trying to fit a “square subyearling peg” into a “round (John) Skalski study” hole. Jackson recalled Murdoch mentioning otolith chemistry or perhaps other studies conducted on a good faith effort in order to get more information. Jackson suggested maybe convening a subgroup to brainstorm potential studies tailored just for subyearlings. He asked if hatchery surrogates could be used for a study. Ferguson said he would argue against a subgroup

because each HCP Coordinating Committees representative needs to be a part of this discussion. Jackson agreed with this reasoning. Kahler said when developing a hatchery surrogate, the intent is to match the wild fish population; however, with subyearlings, it is unknown what time frame or location to match.

Truscott asked how did the USACE study immigration or survival studies on the Snake River with fall Chinook salmon? He recalled the studies were at-dam survival. Kahler said USACE acoustically tagged run-of-the-river fish collected at the projects. He said these fish were of sufficient size, at 95 millimeters tagging size, and only 1% of the fish captured were too small to tag. Truscott asked about fish size at Rocky Reach Dam, and Keller said there is definitely a fry component there (less than 40 millimeters). Keller said the average fish size changes on a daily basis. He said throughout a season, there is a first pulse of larger hatchery fish followed by an "unknown" component where the average fish length grows over time. Ferguson said Billy Connor (U.S. Fish and Wildlife Service) conducted a study on non-hatchery natural subyearling migrant reservoir-rearing life history, which was published in Transactions of the American Fisheries Society in 2005. Ferguson said NMFS also conducted early fish transportation studies which compared the study fish to in-river controls. Ferguson said the study fish fared really well because the fish were big, but the number of fish used in the study was small. He said these fish with a reservoir life history adapted to all environmental conditions. Kahler said Tiffan has also conducted a lot of work on this.

Truscott asked if there is any information the HCP Coordinating Committees have not yet reviewed toward another study design. He asked, what other studies can be conducted?

Keller recalled Chelan PUD's initial project survival study conducted on yearlings, which resulted in survival in the 80th percentile and subsequently remained in Phase I (Testing). He said Chelan PUD continued sockeye salmon studies under a Phase II (Additional Tools) designation and learned year-to-year how to boost survival. Truscott said eventually survival targets for these species were met for representative conditions. Keller agreed, but said there was a way to evaluate project survival for these species. He recalled that yearlings remained in Phase I (Testing) but studying sockeye salmon under Phase II (Additional Tools) showed that no spill and loading of the powerhouse improved survival. He said once it was determined improvements in sockeye salmon survival would also translate to and benefit yearling Chinook salmon, Chelan PUD reinitiated phase designation studies for yearling Chinook salmon under the new operations. He said for subyearlings, however, as Buchanan outlined, there is no way to define true survival.

Truscott asked if there is value in determining whether fish are really gone or just offshore somewhere in the reservoir? Kahler said Douglas PUD has observed subyearlings offshore in the Wells Reservoir. Keller said there is a lot of variability in the Rocky Reach Reservoir. He noted in 2011 and 2012, however, unknown subyearling components were detected at Rock Island Dam above the

tagging size threshold but were gone about a week later. Kahler said historical fyke net data indicate those fish are migrating out of the reservoir through mid-August and peaking in early August, which is long after these fish can be captured by beach seine. Truscott suggested using a small purse seine, but then asked, what does this information do to improve our knowledge towards conducting a survival study? He said he is not certain this is what was intended by the phase designation "Additional Juvenile Studies." Ferguson said it seems "Additional Juvenile Studies" is generic language. Truscott said he does not want to keep postponing an actual study.

Keller said that although the current Chelan PUD subyearling SOA expires on September 29, 2019, Chelan PUD does not feel it is necessary to rush into another SOA. He said further, another SOA does not preclude continuing these discussions. He said Chelan PUD intends to revisit subyearling survival studies at least once per quarter, as an ongoing agenda item. Truscott said he would be supportive of renewing an SOA and understands the administrative reasoning for doing so.

Truscott asked if the PUDs would be interested in considering other studies of subyearlings, even if there is no clear link to informing a future survival study. He suggested, for example, studying what happens to these larger fish offshore in the reservoir in late-August and September. He added that learning something additional might end up helping design a future survival study. Jackson agreed and said building a knowledge base until technology becomes available might reveal another survival study design other than Skalski's design.

Ferguson said with true project survival off the table, the options seem to include behavioral studies, scale collection, otolith microchemistry, and acoustic tracking. He asked if there are other tools? Truscott said he is partial to active tag studies and monitoring scales from adults to obtain information on what is successful. He said he wants to know what these fish are doing in the reservoir. Ferguson noted the really good water quality in the reservoir. Kahler agreed and said the temperatures are ideal for growth. He added that temperatures do not get too warm until late-August, which might be an impetus for fish to move out.

Ferguson asked about Dual-Frequency Identification Sonar (DIDSON) studies within the reservoir. He suggested establishing a sampling grid throughout the reservoir, similar to stock assessment surveys, to get at what is present and when. Kahler said this gets into the issue of how to distinguish targets. He said there are clouds of stickleback, chub, and peamouth, among other species. Keller agreed and said at the juvenile fish size it is difficult to distinguish species. Kahler said this is why Douglas PUD used fyke netting during the development and testing of the bypass system; it was needed to identify the species of fish observed in the hydroacoustic beams in the turbine and spillway intakes. He said until about mid-August, almost all objects identified as fish in the hydroacoustic sampling are salmonids, but in mid-August the young-of-year resident fish reach the same size as the salmonids. Keller said mobile surveys are also not as effective as a fully deployed array. He said

Chelan PUD conducts mobile surveys for white sturgeon and there are times when fish are present, but the gear cannot pick up a signal.

Truscott asked if the acoustic arrays deployed in the Wells and Rocky Reach reservoirs for white sturgeon are adequate for monitoring distribution of subyearlings? Keller said the white sturgeon arrays in the Rocky Reach Reservoir are setup to operate at a different frequency compared to a juvenile system. Kahler said the same is true for the Wells Reservoir, that the system would need to be rewired for juveniles. Keller said Chelan PUD would need to deploy entirely different equipment in the Rocky Reach Reservoir.

Truscott said it may turn out that behavioral data might contribute to a survival study, but he understands this may be a hard sell. Keller said, notably when a study moves from passive to active technology the base cost increases significantly. Ferguson asked about radio tags. Keller noted the external component (long antenna) and the need to install different detection equipment.

Keller said Chelan PUD appreciates the HCP Coordinating Committees thoughts and discussion on this topic. He said the Chelan PUD Natural Resources Department is tracking this closely and has full support of Chelan PUD General Manager, Steve Wright, who is very connected to the natural resources world.

Ferguson asked the HCP Coordinating Committees if there are questions for Buchanan and Skalski. No questions were expressed, and Kristi Geris notified Buchanan and Skalski that there were no further questions for them.

B. Questions and Answers with Drs. Rebecca Buchanan and John Skalski (All)

John Ferguson said the HCP Coordinating Committees had no further questions for Drs. Rebecca Buchanan and John Skalski.

Lance Keller said he will share today's discussions internally with Chelan PUD. Ferguson asked the Rock Island and Rocky Reach HCP Coordinating Committees representatives if everyone is ready to vote on a reboot of Chelan PUD's 3-year subyearling SOA during the next HCP Coordinating Committees meeting on September 24, 2019, and representatives present agreed on moving forward with a vote next month. Keller said the SOA will essentially be the same as the last SOA with a new date and quarterly check-ins on subyearlings.

Ferguson also suggested conducting additional research, for example, review of scale data. Keller said a review of scale data is already available. Tom Kahler agreed and said in 2016, Andrew Murdoch (WDFW) provided a stock assessment presentation, which looked at proportional contributions of the subyearling, reservoir-reared, and yearling life-history tactics, as evidenced in scales from natural-

origin summer/fall Chinook salmon broodstock and carcasses. Keller read from the HCP Coordinating Committees June 22, 2016 meeting minutes, as follows:

He (Jeff Korth, WDFW retired) said despite these issues, subyearlings seem to have been able to adapt. He asked what happened in 2002, such that summer and fall Chinook salmon counts in the Mid-Columbia Basin have been on the rise. Kahler said it was harvest. He added that in 2002, there was a significant reduction in the Canadian harvest allocation. Truscott noted that the exploitation rate is still high.

Keller said he will update Keely Murdoch on subyearling discussions to date, including Chelan PUD's plan to request approval of a renewed SOA during the HCP Coordinating Committees meeting on September 24, 2019, that maintains subyearling Chinook salmon in Phase III (Additional Juvenile Studies) for the Rock Island and Rocky Reach projects for up to 3 years. (Note: Keller discussed this topic with Murdoch, as described in an email distributed to the HCP Coordinating Committees by Kristi Geris on September 3, 2019.)

Keller said he will also distribute to the HCP Coordinating Committees a draft SOA, maintaining subyearling Chinook salmon in the Rock Island and Rocky Reach projects in Phase III (Additional Juvenile Studies) for up to 3 years, for vote during the HCP Coordinating Committees meeting on September 24, 2019. (Note: Keller provided a draft SOA to Geris on September 19, 2019, which Geris distributed to the HCP Coordinating Committees that same day.)

IV. Chelan PUD

A. Rocky Reach Dam Turbine Unit C1 and C3 Update (Lance Keller)

Lance Keller said Turbine Unit C1 continues to be plagued by delayed delivery of necessary components for repair from the vendors. He said currently, Rocky Reach Dam mechanics are waiting on the wicket gate servo control. He said repairs are still progressing in some areas but are delayed in others waiting on delivery of this key component. He said the return-to-service date has now slipped slightly to January 2020. He recalled the conflict in scheduling for the recommissioning of Turbine Units C9 and C1. He said crews have never conducted concurrent unit commissioning and do not plan to do so; therefore, Turbine Unit C1 must be operational no later than April 1, 2020. He said this return-to-service date also provides confidence for this unit to be online in time for the 2021 survival study.

Keller said Turbine Unit C3 is out-of-service today for a periodic evaluation of the new Chesterton seals. He said the last assessment occurred a few weeks ago and everything looked good. He said since the last assessment, crews have improved their ability to measure oil volumes when filling and draining the turbine hub. He said he will distribute results from the Rocky Reach Dam Turbine Unit

C3 Chesterton seal tests to the HCP Coordinating Committees once they become available. (Note: Keller provided an update on the Chesterton seal tests to Kristi Geris on September 19, 2019, which Geris distributed to the HCP Coordinating Committees that same day.)

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

Lance Keller said Turbine Unit B4 has also suffered a delay in delivery of the hydraulic power unit, which controls the oil pressure inside the unit. He said work is continuing on the unit and there is no delay in the repair schedule as of yet. He said crews are currently working on the discharge liner, which in some areas is ground down to a depth of 3 inches and then filled and ground smooth. He said crews are refilling these areas and prepping the surface to prevent re-cavitation. He said crews are learning a lot and gaining knowledge towards repairing Turbine Unit B1 after Turbine Unit B4 is complete.

Kirk Truscott asked, with these maintenance issues ongoing at both Rock Island and Rocky Reach dams, is there going to be a modified maintenance schedule so there are not these prolonged amounts of time of limited maintenance? He asked, is the plan to operate until it breaks or conduct more frequent maintenance to avoid complete breakdowns? John Ferguson said it seems this question assumes these issues are all maintenance-related; however, some of these issues are aging-related. Keller said some of the current issues are due to deferring maintenance to accommodate other needed work, and he does not believe this is the fashion in which Chelan PUD prefers to operate. He said other current issues, such as the design flaws discovered in Rocky Reach Dam Turbine Units C8 to C11, were not maintenance related.

C. 2019 Rock Island and Rocky Reach Fish Spill Update (Lance Keller)

Lance Keller said at Rocky Reach Dam, summer fish spill started on June 2, 2019, and ended on August 12, 2019. Keller said on August 12, 2019, the Columbia River Data Access in Real Time database (DART) estimated that 99.24% of the subyearling Chinook salmon outmigration had passed Rocky Reach Dam. He said as a double-check, Chelan PUD took the cumulative count divided by the number of days remaining in August and compared smolts-per-day to the bypass counts. He said when summer spill was shutdown, bypass counts were averaging 29 to 30 smolts per day. He said counts over the past 5 days averaged 7 smolts per day.

Keller said at Rock Island Dam, summer fish spill started on June 2, 2019, and ended on August 19, 2019. He said the criteria to end summer spill at Rock Island Dam were met early on; however, results of the double-check were very close to the daily bypass counts. He said Chelan PUD chose to take a conservative approach and waited to end spill until daily index counts dropped to an average of 15 smolts per day. He said immediately after shutting down spill daily counts dropped into single digits. He said since spill shutdown, average daily counts have been 5 smolts per day. He said DART

estimated that 99.47% of the subyearling Chinook salmon outmigration had passed Rock Island Dam on August 19, 2019.

Keller said next, Thad Mosey (Chelan PUD) will draft the 2019 Rock Island and Rocky Reach Fish Spill Report and will present the results to the HCP Coordinating Committees during the September 24 or October 22, 2019 meetings.

D. 2019/2020 Rocky Reach Dam Adult Fishway Maintenance (Lance Keller)

Lance Keller said typically, adult fishway maintenance at Rocky Reach Dam is completed during the months of January and February each year. He said this year, Rocky Reach Dam mechanics asked Chelan PUD to request approval for an earlier outage to complete necessary work. He said the initial ask was for the entire month of December 2019, but this has been negotiated down to 2 weeks, which has been requested and approved in the past. He said work driving this request includes the recommissioning of Turbine Units C1 and C9. He said the Turbine Unit C9 commissioning might happen as early as December 2019, which requires a full mechanical crew and will occur on the heels of the Turbine Unit C1 commissioning. He said the refurbished wicket gates for Turbine Unit C9 are coming from a vendor in Spokane, Washington, are being sent 3 to 4 at a time, but that 1 to 2 gates are being sent back each time because the gates are not meeting tolerances or have bearing issues.

Keller said concurrently, tied to public power benefits, there are plans to improve the fish viewing windows. Public Power Benefits look for ways to use surplus energy sales to enhance local experiences for rate payers, with previous examples being free parking passes for local parks and free electric vehicle charging stations. He said currently, the windows are 4 feet above the ground and the new windows will stretch nearly from the floor to the ceiling, allowing smaller children to get eye-to-eye with fish ascending the Rocky Reach Dam adult fish ladder. He said the plan is requires cutting into the fishway, removing the existing windows, and re-installing and pressure-testing the new windows. He said the contractor is planning to complete this construction from January 1 to February 29, 2020.

Keller said lastly, this leaves one crew to complete the preventative, routine checklist, while the other crews complete the other tasks. He said this is a lot of work for one crew, but the additional 2 weeks will provide breathing room to complete all these maintenance activities and meet the water-up date of March 1, 2020.

John Ferguson summarized that the request is for an outage from December 16, 2019 to February 29, 2020. Keller added that if the work is completed early, the system will be watered up early, as well. He also clarified that Chelan PUD is not requesting agreement right now unless Rocky Reach HCP Coordinating Committee representatives are comfortable with voting right now. He said,

however, Rocky Reach Dam mechanics would like to know if a schedule change is needed, sooner than later.

Kirk Truscott said there are not a lot of anadromous fish moving through the ladders during this time of year. He said he is unsure about Pacific lamprey. Keller said he is unsure whether Pacific lamprey would use the ladders for overwintering or for migration, but if encountered in the ladders during the fish rescues that accompany the dewatering of an adult fishway, these fish would be translocated upstream.

Rocky Reach HCP Coordinating Committee representatives present agreed to Chelan PUD's request to begin the 2019/2020 ladder maintenance outage at Rocky Reach Dam 2.5 weeks earlier than usual to allow more time to complete required work, contingent on approval by the YN. Rather than beginning work during the first week in January (per usual), maintenance work will begin on December 16, 2019. Keller said he will explain to Keely Murdoch Chelan PUD's request, and request that Murdoch provide the YN's approval of the request to the Rocky Reach HCP Coordinating Committee via email. *(Note: Keller discussed this topic with Murdoch and the YN agreed to Chelan PUD's request, as described in an email distributed to the HCP Coordinating Committees by Kristi Geris on September 3, 2019.)*

V. Douglas PUD

A. Wells Dam Bypass Update (Tom Kahler)

Tom Kahler said bypass operations at Wells Dam ended at midnight on August 19, 2019, per the operating plan and as distributed to the HCP Coordinating Committees by Kristi Geris that same day.

VI. HCP Administration

A. HCP Policy Committees July 9, 2019 meeting minutes (John Ferguson)

John Ferguson said edits and comments on the draft minutes are still being addressed by HCP Policy Committees representatives. He said once all edits are received, the revised minutes for approval will be distributed for a vote via email. He said he has not heard further discussion on this topic within the HCP Tributary Committees. He said there is an action item to convene the HCP Policy Committees in-person on an annual basis after completion of the HCP annual reports to touch base on activities and discussions over the past year.

B. Next Meetings (John Ferguson)

The next scheduled HCP Coordinating Committees meeting is on September 24, 2019, to be held **in-person** at the Grant PUD Wenatchee office in Wenatchee, Washington.

The October 22 and November 26, 2019 meetings will be held by conference call or in-person at the Grant PUD Wenatchee office in Wenatchee, Washington, as is yet to be determined.

VII. List of Attachments

Attachment A List of Attendees

Attachment A
List of Attendees

Name	Organization
John Ferguson	Anchor QEA, LLC
Kristi Geris	Anchor QEA, LLC
Tracy Hillmant	BioAnalysts
Lance Keller*	Chelan PUD
Tom Kahler*	Douglas PUD
Scott Carlon*	National Marine Fisheries Service
Jim Craig*	U.S. Fish and Wildlife Service
Chad Jackson*	Washington Department of Fish and Wildlife
Kirk Truscott*	Colville Confederated Tribes

Notes:

- * Denotes HCP Coordinating Committees member or alternate
- † Joined by phone for the HCP Tributary and Hatchery Committees Update