

## Memorandum

---

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

Date: September 22, 2017

From: Tracy Hillman, HCP Hatchery Committees Chairman

cc: Sarah Montgomery, Anchor QEA, LLC

**Re: Final Minutes of the August 16, 2017, HCP Hatchery Committees Meeting**

---

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plan (HCP) Hatchery Committees meeting was held at the Grant PUD office in Wenatchee, Washington, on Wednesday, August 16, 2017, from 9:00 a.m. to 12:00 p.m. Attendees are listed in Attachment A to these meeting minutes.

### Action Item Summary

- Andrew Murdoch (Washington Department of Fish and Wildlife [WDFW]) will write an overview of proposed expanded sampling at the off-ladder fish trap (OLAFT) at Priest Rapids Dam (Item I-A). *(Note: this item is ongoing.)*
- Sarah Montgomery will clarify the review period for the Chelan PUD Draft Statement of Agreement (SOA) Regarding the District's Coho Obligation and provide an update to the Hatchery Committees (Item II-A). *(Note: Montgomery clarified this in the action items from the August 16, 2017, meeting.)*
- Mike Tonseth will coordinate with Todd Seamons (WDFW) to produce an outline or recommended approach for genetic monitoring (Item III-E).
- Mike Tonseth will send the revised Table 3 of the Hatchery Monitoring and Evaluation (M&E) Plan to Tracy Hillman for inclusion in the 2017 Update (Item III-G). *(Note: Tonseth provided the table to Hillman on August 17, 2017.)*
- Sarah Montgomery will send SOAs regarding Non-target Taxa of Concern (NTTOC) study results to Tracy Hillman (Item III-G). *(Note: Montgomery did this on September 20, 2017.)*
- Tracy Hillman and Todd Pearsons will revise NTTOC and adaptive management language in the Draft 2017 Update to the M&E Plan for PUD Hatchery Programs and provide a revised version for Hatchery Committees review (Item III-G). *(Note: Hillman revised the plan and Montgomery distributed a revised version for review on September 2, 2017.)*

### Decision Summary

- The Rocky Reach and Rock Island Hatchery Committees representatives approved Chelan PUD's Draft 2018 Hatchery M&E Implementation Plan as follows: Chelan PUD, WDFW,

U.S. Fish and Wildlife Service (USFWS), Yakama Nation (YN), and National Marine Fisheries Service (NMFS) approved during the meeting on August 16, 2017, and Colville Confederated Tribes (CCT) approved on August 18, 2017 (Item II-B).

## Agreements

- There were no agreements discussed during today's meeting besides the decision above.

## Review Items

- Sarah Montgomery sent an email to the Rocky Reach and Rock Island Hatchery Committees on August 15, 2017, notifying them that the Chelan PUD Draft SOA Regarding District's Coho Obligation is available for a 30-day review, with comments due to Catherine Willard by September 14, 2017. Chelan PUD indicated they will request approval of the SOA at the Hatchery Committees September 20, 2017, meeting.
- Sarah Montgomery sent an email to the Hatchery Committees on September 1, 2017, notifying them that the Draft 2016 Douglas PUD and Grant PUD M&E Annual Report is available for a 60-day review, with edits and comments due to Greg Mackey by October 31, 2017. (Note: Douglas PUD requested comments in 30 days if possible, which would be October 2, 2017.)

## Finalized Documents

- Sarah Montgomery sent an email to the Hatchery Committees on September 15, 2017, notifying them the Chelan PUD and Grant PUD 2016 Final M&E Annual Report and Appendices is now available for download from the Hatchery Committees Extranet site.

## I. Welcome

### A. Review Agenda, Review Last Meeting Action Items, and Approve the July 19, 2017, Meeting Minutes (Tracy Hillman)

Tracy Hillman welcomed the Hatchery Committees and asked for any additions or changes to the agenda. Catherine Willard added the Chelan Falls Trap to the agenda. *(Note: Sarah Montgomery combined the two items regarding spring Chinook salmon in the Methow basin because discussions were interrelated.)*

The Hatchery Committees reviewed the revised draft July 19, 2017, meeting minutes.

Sarah Montgomery said there are no outstanding comments to be discussed. Hatchery Committees

representatives present approved the draft July 19, 2017, meeting minutes, as revised. Kirk Truscott provided his approval of the meeting minutes prior to the meeting.

Action items from the Hatchery Committees meeting on July 19, 2017, and follow-up discussions were addressed (*note: italicized text below corresponds to agenda items from the meeting on July 19, 2017*):

- *Andrew Murdoch (Washington Department of Fish and Wildlife [WDFW]) will write an overview of proposed expanded sampling at the off-ladder fish trap (OLAFT) at Priest Rapids Dam (Item I-A).*  
This item is ongoing. Keely Murdoch requested that Cory Kamphaus (YN) be involved in this discussion.
- *Hatchery Committees representatives will review McLain Johnson's Genetic Monitoring Update (Item I-A).*  
This item will be discussed today.
- *Sarah Montgomery will clarify the review period for the Chelan PUD Draft 2018 Hatchery Monitoring and Evaluation (M&E) Implementation Plan and provide an update to the Hatchery Committees (Item II-A).*  
This item is complete.
- *Tracy Hillman will revise Appendix 4 of the Draft 2017 Update to the Monitoring and Evaluation Plan for PUD Hatchery Programs to include release number targets, and provide it for Hatchery Committees review (Item III-C).*  
This item is complete and available for review.
- *Tracy Hillman will revise the Draft 2017 Update to the M&E Plan for PUD Hatchery Programs and provide it for Hatchery Committees review (Item III-C).*  
This item is complete and will be discussed today.

## II. Chelan PUD

### A. Draft Coho Salmon Mitigation SOA (Catherine Willard)

Catherine Willard shared the document titled *Draft Statement of Agreement Regarding District's Coho Obligation*, which Sarah Montgomery distributed to the Hatchery Committees on August 15, 2017 (Attachment B). Willard said the 7 percent coho salmon hatchery compensation rate was agreed to by the Rocky Reach and Rock Island Coordinating Committees. She said the SOA is an agreement about the methodology used to calculate hatchery compensation levels (the same methodology as used in recalculation) and is also an agreement that Chelan PUD will meet its obligation through funding and/or facility use to support a coho salmon reintroduction project. She said she also distributed a revised presentation (originally presented at the May 17, 2017, Hatchery Committees

meeting), *Approach Used to Determine Chelan PUD's Coho Hatchery Mitigation*, which Montgomery distributed to the Hatchery Committees on August 15, 2017. She said the presentation includes more detail about how the smolt numbers were calculated.

Montgomery said the SOA is available for a 30-day review, with comments due to Willard on September 14, 2017, and said she would remind the Hatchery Committees of this review timeline. Willard said Chelan PUD will request approval of this SOA at the September 20, 2017, Hatchery Committees meeting and asked for any immediate questions.

Mike Tonseth asked why calculations for Rocky Reach coho salmon mitigation are based on mortality at both Rocky Reach and Rock Island dams. Keely Murdoch said coho salmon from the Methow basin migrate past both dams. Willard said Rocky Reach Dam has mitigation related to the Methow basin, whereas Rock Island Dam has mitigation associated with the Wenatchee and Methow basins. Willard said she would clarify this language in the final version of the SOA.

### **B. Draft 2018 Hatchery M&E Implementation Plan (Catherine Willard)**

Catherine Willard said the Chelan PUD Draft 2018 Hatchery M&E Implementation Plan (Attachment C) is currently available for a 30-day review. Tracy Hillman said the changes between the 2017 and 2018 plans are minor and include only date and authorship changes. Willard said Chelan PUD requests that the Rocky Reach and Rock Island Hatchery Committees approve this plan, which they did as follows: Chelan PUD, USFWS, WDFW, YN, and NMFS approved during the meeting on August 16, 2017. CCT did not have representation at the meeting, and Hillman received approval from Kirk Truscott via phone on August 18, 2017.

## **III. Joint HCP-HC/PRCC HSC**

### **A. USFWS Bull Trout Consultation Update (Bill Gale)**

Bill Gale said he received a consultation update from Karl Halpuka (USFWS), which he shared with the Hatchery Committees as follows:

- The USFWS is working on the Methow steelhead consultation, and Halpuka plans to write a coverage memorandum similar to the one completed for spring Chinook salmon.
- The USFWS is working on finalizing the Biological Opinion for the batch of Wenatchee subbasin programs.

Emi Kondo (NMFS) added that NMFS and USFWS have not yet received feedback from the U.S. Army Corps of Engineers regarding consulting for the Ringold program, so consultation for the batch of unlisted upper Columbia River (UCR) summer Chinook salmon programs is on hold. Mike Tonseth

said he has been discussing the UCR unlisted programs' consultations with the USFWS and National Oceanic and Atmospheric Administration. He understands that in order for the consultation to move forward, the Ringold program's Hatchery and Genetic Management Plan needs a proposed action, the proposed action for the consultation needs to be finalized, and cover letters that identify consultation pathways need to be submitted.

## **B. NMFS Consultation Update (Brett Farman/Emi Kondo)**

Emi Kondo said she is providing an update on consultation for the unlisted programs in the UCR. She said the Ringold program involves consultation with the U.S. Army Corps of Engineers, and that consultation has not yet been initiated. She said she is working on finalizing the proposed action, which is necessary to initiate consultation with USFWS. Kondo said she will soon send an updated version of the proposed action for applicants and others to review, then everyone can meet to discuss changes. She asked for interested parties outside of the applicant pool to please let her know so she can include them in the meeting.

She said applicants have made progress deciding which Endangered Species Act (ESA) pathway to pursue for these consultations. She said Douglas PUD representatives indicated they intend to use Section 10 coverage and Chelan PUD representatives indicated they intend to use Section 4(d) coverage. She said discussions with Grant PUD representatives regarding coverage for their programs are ongoing. She said one topic of discussion is Chelan PUD's trap on the Chelan River. She said it is operated when water temperatures are over 21 degrees, which could be an issue if ESA-listed species are being trapped. She said this discussion is ongoing with Chelan PUD and WDFW.

Kondo said the next steps for this consultation are finalizing the proposed action, determining the ESA pathways, initiating consultation with a request letter, and NMFS replying with a letter of sufficiency. She said effects to bull trout can be analyzed by USFWS after those steps are complete.

Tracy Hillman asked which listed species have the potential to be collected in the Chelan Falls Trap. Mike Tonseth said steelhead and spring Chinook salmon could be collected at the Chelan Falls Trap and the trap would operate starting on July 1. Bill Gale said, while unlikely, bull trout are also a listed species that could be collected in the trap. Catherine Willard said monthly snorkel surveys have shown no bull trout present in past years during July and August, the period the trap would be in operation. Tonseth said spring Chinook salmon are difficult to differentiate from unlisted summer/fall Chinook salmon, particularly in the early part of the trapping season. Willard said the start date will be later than July 1, and said the trap cannot be operated until July 15, which could reduce the potential to trap ESA-listed species.

### C. Wenatchee Spring Chinook Salmon Update (Mike Tonseth)

Mike Tonseth said he has provisional data regarding the status of Wenatchee spring Chinook salmon in 2017. He said WDFW switched to video analysis in the middle of July, but continued sampling. At that point, he said approximately 1,300 spring Chinook salmon had passed Tumwater Dam. Tonseth said WDFW surplused 302 male Chinook, which were mostly jacks. Two fish were not jacks, and an additional 30 fish appear to originate from Leavenworth National Fish Hatchery (NFH) because they are adipose-clipped and coded wire tag-absent; however, these fish are difficult to characterize. Keely Murdoch emphasized that these fish should not be labeled as fish of a certain program unless their origin is definitively known. Tonseth agreed and said WDFW are calling these fish "maybe Leavenworth NFH-origin" fish. Tracy Hillman asked if 300 of the total spring Chinook salmon observed at Tumwater Dam is a particularly high proportion of jacks. Tonseth said yes, and this could be due to a poor migration year in 2015 and ocean conditions.

Tonseth said the Wenatchee spring Chinook salmon program has collected sufficient spring Chinook salmon to meet its production obligations. However, he said the natural-origin target for the Chiwawa program has not been met due to three factors: 1) adult natural-origin fish are limited and hard to acquire, 2) the collection weir was not operational as early in the season as intended because of high flows, and 3) towards the end of the collection season, mechanical issues took the weir out of operation for 1 week at a critical point. He said towards the end of the collection season, the weir was lowered to avoid impinging fish.

Bill Gale asked what the forecasted proportion of natural origin broodstock (pNOB) is using these provisional data. Willard replied the forecasted pNOB for the Wenatchee spring Chinook salmon program is 0.73. Tonseth said WDFW is still sampling at Tumwater Dam as part of broodstock collection, and video data were being used to differentiate spring and summer Chinook salmon. The WDFW genetics lab will help finalize assignments using scale analysis.

Alene Underwood asked how many females the program is short. Tonseth replied the program is approximately four females short of its natural-origin target.

Todd Pearsons asked about spring Chinook salmon collection for the Nason Creek Program. Tonseth said WDFW has collected the full conservation and safety-net program broodstock targets. Hillman asked if any White River-origin fish were collected. Tonseth said WDFW over collects for the Nason Creek Program by approximately 10 percent to account for White River origin fish. He said some fish are also of Chiwawa River origin, so those fish are collected and retained for the Chiwawa River program. Pearsons asked how many fish are genetically typed. Tonseth said any fish genetically sampled as part of broodstock collection are checked against the genetic baselines for those rivers. The baseline includes genetic signatures for Nason Creek, Chiwawa River, and the White River.

Pearsons asked if 10 percent of the broodstock collected are genetically typed. Tonseth said yes, and since the broodstock target is 70 fish, they collected 77 fish. He said 6 of the collected fish were not retained for the program.

#### **D. Chelan Falls Trap (Catherine Willard)**

Catherine Willard said the Chelan Falls Trap has been operating and the Chelan Falls summer Chinook salmon program is currently about 30 females short of its broodstock collection target. She said trapping will continue through this week, but will not occur next week because of habitat improvement projects in the Habitat Channel of the Chelan River. She said the first week of September will be the last week the trap is operational and there is a chance the program will fall short of its broodstock collection target by the end of the trapping period. She said the Brood Year 2017 Salmon Broodstock Collection Protocols state the Hatchery Committees will discuss the potential shortage and whether broodstock collection may default to surplus summer Chinook from the Entiat National Fish Hatchery (NFH), which would be a transfer of 30 or less female summer Chinook salmon. Mike Tonseth said he understands that many summer Chinook salmon have returned to the area around Eastbank Fish Hatchery (FH) and that could be an additional or alternate source of collection. Willard said Chelan PUD prefers using fish that are surplus from Entiat NFH due to safety concerns with collecting broodstock at the Eastbank FH outfall. Tracy Hillman noted that the Hatchery Committees previously discussed alternate broodstock sources for this program in case it fell short of its target. Tonseth said the Hatchery Committees discussed Entiat NFH as the back-up source of broodstock, but would still need to discuss it with USFWS to see if Entiat NFH can support the request. Bill Gale asked when Chelan PUD would know if the program is short. Willard said September 1 is the last day for trapping. Gale said that timing would likely not be a problem, so he and Chelan PUD will begin coordinating the logistics of this potential transfer. Genetic Monitoring Update (Mike Tonseth)

Tracy Hillman said the genetic monitoring update is related to the update to the Hatchery M&E Plan (Item III-G). Mike Tonseth said McLain Johnson (WDFW) sent an update regarding genetic monitoring including a memo, *Update - Hatchery M&E Genetic Monitoring Objectives* (Attachment D), and a spreadsheet, *Genetic Tables* (Attachment E), which Sarah Montgomery distributed to the Hatchery Committees on April 6, 2017. Tonseth said there are two key decisions the Hatchery Committees need to make. He said the Hatchery Committees had previously requested that Todd Seamons conduct a power analysis to determine how frequently genetic analyses should be performed in order to determine whether hatchery programs are having an effect on natural populations. He said he discussed this with Seamons and the power analysis is a complex task that WDFW is not comfortable undertaking without a contract. He said the power analysis will be

important to making decisions about analysis frequency, and he thinks Chelan, Douglas, and Grant PUDs should make the decision whether or not to fund the analysis.

He said the second key decision the Hatchery Committees need to make is about genetic panels. He said any new analysis will use a single nucleotide polymorphism (SNP) panel; however, baseline data were analyzed using a microsatellite panel. A decision about rerunning past samples with the SNP panel could be made soon in order to complete those re-analyses by the time the new analysis frequency is determined. He said a related decision is where the genetic baseline starts for each program. Tonseth said the baseline is currently in the 1980s or 1990s for most programs and tissue is still available to rerun the analyses using the newer SNP methodology. Catherine Willard asked if the new genetic samples could be run using the older microsatellite methods so that they are comparable to past results, yet still answer the genetic objectives in the M&E Plan. Tonseth said the analyses could probably be performed, but using SNPs is the preferred method because it is more accurate and provides better resolution. Tonseth said one additional decision would be whether to increase the number of markers analyzed for certain programs. Bill Gale said one benefit of using SNP panels is that it provides higher resolution and has more available markers.

Gale suggested asking Seamons to outline these questions and the costs and benefits associated with each. Keely Murdoch agreed and said it would be helpful to have something documented that she can discuss internally. Todd Pearsons said there are many genetic tests being performed to meet the M&E objectives and perhaps fewer tests could be run in a way that would still meet the objectives.

Tonseth said it's possible that the two objectives in the M&E Plan are not the "right" questions to be asking to determine if hatchery programs are having genetic effects on natural populations. He said from a recovery perspective, maintaining or building diversity is important and it is also important to make sure hatchery programs do not pose a genetic risk to recovery. He said asking Seamons to consider the objectives could change the outlook of genetic monitoring in this basin and create more delays, but it is important to consider the purpose of the genetics monitoring and objectives.

Hillman summarized that members present would like Seamons to produce a small paper including appropriate questions, tasks, and necessary analyses, and asked if the WDFW Genetics Lab would need funding to complete the paper. Tonseth said he would check. Pearsons said determining if the M&E Plan objectives are asking the "right" questions is a good first step and asked if gathering geneticists from multiple agencies would be helpful to identify key questions and long-term monitoring objectives. Tonseth said he thinks he should talk to Seamons first and see if he (Seamons) has a recommended approach or outline, then it could be circulated amongst other geneticists. Hillman suggested that Seamons start by looking at the current Hatchery M&E Plan. Pearsons said

the Hatchery M&E Plan objectives were established in 2005, so it might be time to update the objectives. Tonseth said the M&E Plan is a good starting point and getting geneticists to agree on the right monitoring questions would give future discussions and analyses more direction.

### **E. Spring Chinook Salmon in the Methow Basin: Status of Adult Management and Translocation to the Chewuch River (Mike Tonseth)**

Mike Tonseth said Greg Mackey asked him for an update on adult management of spring Chinook salmon in the Methow basin and the status of the Chewuch River translocation study planned for 2017.

Tonseth said Charles Frady (WDFW) provided provisional estimates of spring Chinook salmon to Wells FH, which were 529 wild fish and 4,471 hatchery-origin fish. He estimated that 2,356 hatchery fish are likely bound for the Methow basin and the rest would go to the Okanogan basin. Tonseth said Winthrop NFH's broodstock collection target for spring Chinook salmon is 551 fish and he believes this target has been met in 2017, but not all the fish originate from the conservation program. Bill Gale said of the roughly 2,400 hatchery spring Chinook salmon estimated to enter the Methow basin, approximately 1,500 fish originate from Winthrop NFH and 900 originate from Methow FH.

Tonseth said the Methow spring Chinook program was not able to meet the full natural-origin return component in 2017 through trapping at Wells Dam despite trapping 5 days per week. A total of 74 of the 122 required wild fish were collected. As a result, the balance of the program will be backfilled with returning conservation hatchery fish to fulfill the production obligation. In addition, conservation hatchery fish returns to Methow and Winthrop hatcheries are insufficient to meet the Winthrop NFH safety-net production target and will therefore backfill the production shortage with adults from the safety-net program. Michael Humling (USFWS) said Winthrop NFH to date has surplussed 1,108 hatchery fish.

Additionally, Tonseth said the collection shortage means that the translocation study in the Chewuch River planned for 2017 will not occur this year. Gale said that it seems outplanting is not needed in this case because trapping efficiency in the Methow basin is lower than desired, so there are enough hatchery fish out in the system that outplanting hatchery fish would not be desirable. Keely Murdoch said the purpose of the outplanting study is not to make sure there are enough conservation fish on spawning grounds, but to get these conservation fish spawning in harder-to-reach places. She said if there were enough conservation fish for the program, but they were all spawning in one area, translocation would still be appropriate. Tonseth agreed and said the study is intended to evaluate the efficacy of adult translocation as a surrogate to early-term imprinting, in order to address homing fidelity issues in Methow spring Chinook salmon. Tonseth said he thinks there are years that

the study would not be necessary or appropriate because there are sufficient hatchery fish on spawning grounds. Gale asked how many of the adipose-present, conservation fish were trapped out of the approximately 900 entering the Methow basin. Tonseth said Methow FH retained 71 of these fish and any more of these fish would have been transported to Winthrop NFH. Gale said Winthrop NFH has been successful in removing Winthrop hatchery-origin fish returning to the basin and, of the 1,100 fish surplused and with broodstock collected, approximately 80 to 90 percent of the Winthrop hatchery-origin run has been removed between Methow FH and Winthrop NFH; however, the Methow FH trap does not appear to be removing enough fish to meet targets.

Tonseth said current operations need to be evaluated to determine whether percent natural influence (PNI) and proportion of hatchery origin spawners objectives can be reasonably met in the basin. Gale said he hopes under current operations that 80 percent of the run can be removed. Tom Kahler suggested discussing this with Charlie Snow (WDFW). Snow said the Methow FH trap is open and is checked at least every weekday and he is not certain about weekend trapping operations, but he thinks fish are trapped and held. Humling said he believes that in previous years the trap was not operated on weekends, but this year it is.

Gale asked if there is a way to know whether fish enter the Methow Fish Hatchery outfall then turn around (trap avoidance). Murdoch said a PIT tag array was used last year during the beginning of the trapping season. Kahler said Douglas PUD does not own the property where the PIT tag array would go, so it is challenging to install and maintain, and in the past, the YN have done so. Tonseth said using the 3-population PNI model, and if the preliminary numbers discussed today are accurate, PNI would be roughly 0.6 or 0.7. Gale said once final numbers of fish are available and the 3-population PNI is being calculated, the Hatchery Committees should discuss how to improve trapping for future years.

## **F. M&E Plan for PUD Hatchery Programs 2017 Update (All)**

Tracy Hillman said he revised the M&E Plan for PUD Hatchery Programs to reflect changes discussed during the July 19, 2017, Hatchery Committees meeting and also incorporated comments from reviewers. Sarah Montgomery distributed a revised version of the plan for review on July 26, 2017 (Attachment F).

Hillman reviewed the edits in the document, and questions and comments were discussed as summarized in the following paragraphs.

Hillman asked if Table 3 should be updated for the 2017 version. Mike Tonseth said he has an updated version of Table 3 and will send it to Hillman for incorporation.

In Section 4, Natural Environment Monitoring Indicators, Hillman said fecundity at size is not currently included in the M&E annual report, so the Hatchery Committees might consider adding this section to the report. Tonseth said fecundity at size is used during the season to assess broodstock needs due to differences in age-at-return. He said it is used to adaptively manage broodstock targets. Hillman said in the annual report, mean fecundity for brood year is reported, but not fecundity at size. He said because it will be analyzed in the comprehensive (10-year) and statistical (5-year) reports, maybe it should be included in the annual report as well. Todd Pearsons said the annual report for the Priest Rapids programs includes fecundity by age.

In Section 6, Harvest Monitoring Indicators, Hillman said McLain Johnson pointed out that adult management is mentioned, but it is not mentioned elsewhere in the document. Hillman asked if language about adult management should be added to other sections. Tonseth said adult management is alluded to in other sections because it is necessary to meet objectives.

In Section 7, Regional Objectives, Hillman asked if NTTOC objectives have been completed. Bill Gale said it is complete for all species except Pacific lamprey. Tom Kahler said the Hatchery Committees originally determined not to include Pacific lamprey, so they would have to make a new determination to include lamprey in this section. Mike Tonseth said one reason lamprey were not included was because there were coding issues with the NTTOC model. Keely Murdoch added that sufficient data for lamprey were not available. Gale said as additional information becomes available, NTTOC species could be an issue, so programs still have the responsibility to manage to minimal impacts towards NTTOC species. Kahler said the Hatchery Committees approved an SOA in 2014 regarding this topic and suggested summary language from that SOA be added here. Montgomery said she would find the SOA and send it to Hillman.

In Section 8, Adaptive Management, Hillman said Pearsons included a comment with multiple items to discuss. Pearsons said one question he has is which data to include during the next 5-year or 10-year review and how to evaluate hypotheses. He said programs change through time and they could be analyzed as one program that is adaptively managed through time (treatment is one program with changes), or the programs could be blocked into major periods and analyzed as different treatments. He said one concern for blocking the programs into different treatments is not having sufficient sample size to assess important variables. Hillman said, for example, in a time series of natural-origin returns, the entire series could be evaluated as one treatment, or it could be broken into a few important treatment periods. Breaking the series into several treatment units results in lost statistical power. Thus, it is important to identify important treatment breaks in the time series. He said a program that has changed significantly over time should not be analyzed as one treatment. Pearsons suggested performing an analysis on each hatchery program and parsing out periods of the program to see if improvements that can be explained by program changes have been made

over time. Gale said each hatchery program might have individual breakpoints for program changes, but hatchery programs influence each other and it would be difficult to blend peripheral program changes or basin changes in this type of analysis. He gave the example of the Nason Creek program, when the Chiwawa program underwent recalculation, potentially affecting natural-origin recruits in Nason Creek. Peter Graf said he began looking at the hatchery programs and levels of scale and suggested starting each analysis by looking at each species in each basin at a time and determining issues and changes for that species and basin first. Tonseth said this topic clearly requires more discussion and suggested adding language to the M&E Plan stating that discussion about adaptive management is ongoing.

Hillman emphasized that as discussions move forward, it will be important to consult with staff who know the program history. Tonseth said determining a chronology of major events for each program would be helpful and the Hatchery Committees could start by looking at the latest version of the Hatchery Report written by the Upper Columbia Salmon Recovery Board, which included a timeline of programs and changes.

Pearsons said his second question pertaining to Section 8 is about the number of NORs between treatment and control streams decreasing after supplementation. He said in comparing the NOR numbers between treatment and control streams before and after supplementation, reference populations decreased, and supplemented programs also decreased. He asked if this is a result of supplementation or an in-basin or out-of-basin effect. He said since there are no "clean" in-basin reference streams, it is difficult to determine the cause of this decline. He said in-basin reference streams are important to understanding hatchery effects, but the patterns in this basin are unclear. Gale asked what the "before" period represents, and Pearsons said before 1989, and the "after" period is the entire supplementation period. Gale suggested blocking the analysis into 5-year periods to determine variability over time. Gale said blocking the analysis in this way would result in a more detailed graph and dataset and more programs could be added for comparison. Hillman said that would include looking at more breakpoints in the data and time series. Graf said he has anecdotally noticed natural breakpoints in the data, which may or may not be associated with program changes. Hillman said he would work with Pearsons to draft revised language for Section 8.

In Appendix 5, Hillman said he added release numbers to the table. Gale requested adding a footnote that Chief Joseph 10j spring Chinook salmon come from Winthrop NFH (as Methow Composite fish).

Hillman said he will make all the requested edits and provide a revised version for Hatchery Committees review.

## **IV. HCP Administration**

### **A. Next Meetings**

The next Hatchery Committees meetings are on September 20, 2017 (Grant PUD), October 18, 2017 (Grant PUD), and November 15, 2017 (Grant PUD).

## **V. List of Attachments**

Attachment A List of Attendees

Attachment B Draft Statement of Agreement Regarding District's Coho Obligation

Attachment C Chelan PUD Draft 2018 Hatchery M&E Implementation Plan

Attachment D Update - Hatchery M&E Genetic Monitoring Objectives

Attachment E Genetic Tables

Attachment F Draft 2017 Update - M&E Plan for PUD Hatchery Programs

**Attachment A**  
**List of Attendees**

---

Name	Organization
Tracy Hillman	BioAnalysts, Inc.
Sarah Montgomery	Anchor QEA, LLC
Catherine Willard*	Chelan PUD
Alene Underwood <sup>0</sup>	Chelan PUD
Tom Kahler*	Douglas PUD
Todd Pearsons‡	Grant PUD
Peter Graf‡	Grant PUD
Deanne Pavlik-Kunkel‡	Grant PUD
Mike Tonseth*	Washington Department of Fish and Wildlife
Charlie Snow†	Washington Department of Fish and Wildlife
Bill Gale*	U.S. Fish and Wildlife Service
Michael Humling†	U.S. Fish and Wildlife Service
Brett Farman*†	National Marine Fisheries Service
Emi Kondo†	National Marine Fisheries Service
Keely Murdoch*	Yakama Nation

Notes:

\* Denotes Hatchery Committees member or alternate

† Joined by phone

‡ Joined for the joint HCP-HC/PRCC HSC discussion

<sup>0</sup> Joined for the Chelan PUD items