

Memorandum

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

Date: March 13, 2017

From: Tracy Hillman, HCP Hatchery Committees Chairman

cc: Sarah Montgomery, Anchor QEA, LLC

Re: Final Minutes of the February 15, 2017, HCP Hatchery Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Hatchery Committees meeting was held at the Grant PUD office in Wenatchee, Washington, on Wednesday, February 15, 2017, from 9:00 a.m. to 12:30 p.m. Attendees are listed in Attachment A to these meeting minutes.

Action Item Summary

- McLain Johnson (Washington State Department of Fish and Wildlife [WDFW]) will revise the timeline for conducting genetic analysis for HCP program species by incorporating suggestions provided during the Hatchery Committees January 18, 2017, meeting (Item I-A). *(Note: This item is ongoing.)*
- McLain Johnson and WDFW geneticists will perform a power analysis to inform genetic analysis intervals and intensity for HCP program species (Item I-A). *(Note: this item is ongoing.)*
- Sarah Montgomery and Tracy Hillman will renumber the Hatchery Monitoring and Evaluation (M&E) Plan appendices and append them to the Hatchery M&E Plan (Item I-A). *(Note: this item is ongoing.)*
- Sarah Montgomery will add a summary table to the draft summary of the 5-Year Hatchery M&E Review process (Item I-A). *(Note: this item is complete.)*
- Greg Mackey will distribute a link to Scott Blankenship's (Cramer Fish Sciences) blog (Item III-B). *(Note: Mackey sent a paper and tool by Blankenship on the Ryman-Laikre effect to Montgomery on March 3, 2017, which she distributed to the Hatchery Committees that same day.)*
- Brett Farman will check on the status of Methow spring Chinook salmon permits and the timeline for Methow steelhead consultation (Item IV-B).
- Catherine Willard will look into other potential release locations in the Chewuch River, particularly upstream, for the spring Chinook salmon outplanting study (Item IV-D).
- The Hatchery Committees will review the draft study plan, "Outplanting Surplus Methow Composite Spring Chinook Salmon Adults to Increase Natural Production in the Chewuch River," and provide comments to Catherine Willard by March 8, 2017. Sarah Montgomery

distributed the draft outplanting plan to the Hatchery Committees on February 14, 2017 (Item IV-D). *(Note: This item is complete.)*

- Greg Mackey will coordinate with Chelan and Grant PUDs to revise the proposed Hatchery M&E Reporting Timeline, which Sarah Montgomery distributed to the Hatchery Committees on February 13, 2017 (Item IV-E). *(Note: Mackey sent a revised M&E Reporting Timeline to Montgomery on March 2, 2017, which Montgomery distributed to the Hatchery Committees for review that same day.)*
- Tracy Hillman will discuss with WDFW and Yakama Nation (YN) the level of effort involved in adding statistical analyses to the annual M&E reports for PUD programs (Item IV-E).
- Andrew Murdoch (WDFW) will write an overview of proposed expanded sampling at the off-ladder fish trap (OLAFT) at Priest Rapids Dam (Item IV-F).

Decision Summary

- The Rock Island and Rocky Reach Hatchery Committees representatives present approved the hatchery portion of Chelan PUD's 2017 HCP Action Plan as follows: Chelan PUD, U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), WDFW, Colville Confederated Tribes (CCT), and YN approved on February 15, 2017 (Item II-A). *(Note: this is also a decision item at the HCP Coordinating Committees meeting on February 22, 2017.)*

Agreements

- The Hatchery Committees agreed to reschedule the March 15, 2017, meeting to March 13, 2017, starting at 1 p.m. (Item V-A).

Review Items

- Sarah Montgomery sent an email to the Hatchery Committees on February 23, 2017, notifying them that Douglas PUD's draft 2017 Wells HCP Action Plan is available for review, with approval requested at the March 13, 2017, Hatchery Committees meeting.
- Sarah Montgomery sent an email to the Hatchery Committees on March 3, 2017, notifying them that the draft 2017 Broodstock Collection Protocols are available for review and discussion at the March 13, 2017, Hatchery Committees meeting. Mike Tonseth requests comments by March 16, 2017.
- Sarah Montgomery sent an email to the Hatchery Committees on March 3, 2017, notifying them that Chelan PUD's draft 2017 Steelhead Release Plan is available for review and discussion at the March 13, 2017, Hatchery Committees meeting, with approval requested by March 16, 2017. *(Note: a revised version of the draft plan was distributed on March 6, 2017.)*

- Sarah Montgomery sent an email to the Hatchery Committees on March 3, 2017, notifying them that Douglas PUD's draft Wells HCP SOA, "Monitoring and Evaluation Reporting Schedule for the Douglas PUD, Grant PUD and Chelan PUD Hatchery Programs" is available for review and discussion at the March 13, 2017, Hatchery Committees meeting, with approval requested by March 17, 2017. *(Note: the SOA and the M&E Reporting Timeline are separate documents; the draft timeline was distributed by Montgomery on March 2, 2017.)*
- Sarah Montgomery sent an email to the Hatchery Committees on March 8, 2017, notifying them that Chelan PUD's draft Rocky Reach and Rock Island HCP SOA, "Monitoring and Evaluation Reporting Schedule for the Douglas PUD, Grant PUD, and Chelan PUD Hatchery Programs" is available for review and discussion at the March 13, 2017, Hatchery Committees meeting, with approval requested by March 21, 2017. *(Note: the SOA and the M&E Reporting Timeline are separate documents; the draft timeline was distributed by Montgomery on March 2, 2017. Also note the Rocky Reach and Rock Island HCP SOA is a separate SOA from the Wells HCP SOA, though the content is similar.)*

Finalized Documents

- No documents have been finalized recently.

I. Welcome

A. Review Agenda, Review Last Meeting Action Items, and Approve the January 18, 2017, Meeting Minutes (Tracy Hillman)

Tracy Hillman welcomed the Hatchery Committees and asked for any additions or changes to the agenda. The following revisions were requested:

- Sarah Montgomery added the draft Hatchery M&E Reporting Schedule and draft statement of agreement (SOA).
- Greg Mackey added an update on the Twisp River steelhead egg-to-fry survival study.
- Mackey also added a discussion on Twisp River steelhead broodstock.
- Casey Baldwin removed the Similkameen summer Chinook salmon stray rates discussion.

The Hatchery Committees reviewed the revised draft January 18, 2017, meeting minutes.

Sarah Montgomery said there are several outstanding comments to be discussed, which the Hatchery Committees reviewed and addressed. Hatchery Committees representatives present approved the draft January 18, 2017, meeting minutes, as revised.

Action items from the Hatchery Committees meeting on January 18, 2017, and follow-up discussions were addressed (*note: italicized text below corresponds to agenda items from the meeting on January 18, 2017*):

- *Sarah Montgomery and Tracy Hillman will renumber the Hatchery Monitoring and Evaluation (M&E) Plan appendices and append them to the Hatchery M&E Plan (Item I-A).*
This item is ongoing.
- *Sarah Montgomery will add a summary table to the draft summary of the 5-Year Hatchery M&E Review process (Item I-A).*
This item is ongoing.
- *Keely Murdoch will research who is leading the Columbia River Inter-Tribal Fish Commission's (CRITFC's) parentage-based tagging effort in order to coordinate with Mclain Johnson (Washington Department of Fish and Wildlife [WDFW]) about genetic sampling (Item IV-E).*
Murdoch said this item is complete.
- *Justin Yeager and Brett Farman will discuss internally the Douglas PUD Twisp gamete request and provide National Marine Fisheries Services' (NMFS) vote to the Hatchery Committees (Item II-A).*
Tracy Hillman said Farman provided NMFS approval on January 27, 2017.
- *Douglas PUD will review WDFW's white paper, "Twisp Steelhead Hatchery Broodstock Issues," which Sarah Montgomery distributed to the Hatchery Committees on January 18, 2017, and provide comments to Mike Tonseth (Item II-B).*
Greg Mackey said he provided comments to Tonseth.
- *Greg Mackey will coordinate with Chelan and Grant PUDs to develop a SOA describing the components in the proposed Hatchery M&E Reporting Timeline, which Sarah Montgomery distributed to the Hatchery Committees on January 13, 2017 (Item IV-C).*
The revised draft Hatchery M&E Reporting Timeline and SOA were distributed to the Hatchery Committees on February 13, 2017, and both will be discussed today.
- *Hatchery Committees members will review the Upper Columbia Salmon Recovery Board (UCSRB) Draft Hatchery Report and provide edits and comments to Greer Maier (UCSRB) by January 31, 2017, and invite Maier to discuss comments in person at an upcoming Hatchery Committees meeting (Item IV-D).*
Tracy Hillman said various members of the Hatchery Committees have provided comments to Maier and this item is complete.
- *Mclain Johnson will revise the timeline for conducting genetic analysis for HCP program species incorporating suggestions provided during the Hatchery Committees January 18, 2017, meeting (Item IV-E).*
This item is ongoing.

- *McLain Johnson and WDFW geneticists will perform a power analysis to inform genetic analysis intervals and intensity for HCP program species (Item IV-E).*

This item is ongoing.

- *Todd Pearsons (Grant PUD) will write a white paper about factors affecting the brood year stray rates of hatchery fish and considerations for revising stray rate targets (Item IV-F).*

Pearsons sent his paper, "Stray Rate Targets for Hatchery Programs," to Sarah Montgomery on February 6, 2017, which she distributed to the Hatchery Committees. This will be discussed today.

II. Chelan PUD

A. Decision: Chelan PUD 2017 HCP Action Plan (Catherine Willard)

Catherine Willard shared a spreadsheet titled, "Draft 2017 Rock Island and Rocky Reach HCP Action Plan," which Sarah Montgomery distributed to the Hatchery Committees on January 18, 2017 (Attachment E of January 18, 2017, meeting minutes). Willard asked if anyone had questions about the plan. She said it includes typical items such as the annual Hatchery M&E Report, annual Implementation Plan, broodstock collection, and hatchery releases, as well as pilot studies (Chelan Falls Broodstock Collection and Outplanting Adult MetComp in the Chewuch River), ongoing water quality monitoring at Dryden Acclimation Facility, working on coho salmon No Net Impact (NNI) mitigation, and permitting activities. Casey Baldwin asked if anyone raised concerns about the plan at the January 18, 2017, Hatchery Committees meeting. Tracy Hillman said there were none, and this is the same version as the one presented in January. He reminded everyone that the Hatchery Committees vote on the hatchery portion of their respective committee's draft HCP Action Plans, and the Coordinating Committees vote on approving the whole plan. The Rock Island and Rocky Reach Hatchery Committees representatives present approved the hatchery portion of Chelan PUD's 2017 HCP Action Plan as follows: Chelan PUD, USFWS, NMFS, WDFW, CCT, and YN approved on February 15, 2017.

Greg Mackey said Douglas PUD will distribute their draft 2017 HCP Action Plan for review soon.

III. Douglas PUD

A. Egg-to-Fry Survival Study in the Twisp River (Greg Mackey)

Greg Mackey said, after discussing the Twisp River Steelhead egg-to-fry survival study initially planned for 2017 with Phil Roni (Cramer Fish Sciences), Douglas PUD has decided to do an egg-to-fry survival study with spring Chinook salmon instead of steelhead. He said Douglas PUD will request approval for spring Chinook salmon gametes later in spring 2017. He said spring Chinook

salmon are more of a concern for conservation and Douglas PUD still intends to work with Chelan PUD to acquire the surplus steelhead gametes they need from the Twisp River for their study. Hillman said the document that supported a steelhead egg-to-fry survival study (which Sarah Montgomery distributed to the Hatchery Committees on January 6, 2017, and was reviewed last month) noted that egg-to-fry survival for spring Chinook salmon has been extensively studied, and he asked why Douglas PUD is choosing to switch to spring Chinook salmon. Mackey said Douglas PUD will develop a more in-depth study design to get better estimates of spring Chinook salmon egg-to-fry survival than previously attained. Mike Tonseth asked if Douglas PUD would consider expanding the egg-to-fry survival study into the Methow and Chewuch rivers. Mackey said Douglas PUD is interested in expanding the study to those rivers, but they have not reached that level of detail in discussions yet.

B. Twisp Steelhead Program Broodstock Issues (Greg Mackey)

Greg Mackey said Douglas PUD reviewed WDFW's memorandum, "Twisp Steelhead Broodstock Issues" (which Sarah Montgomery distributed to the Hatchery Committees on January 18, 2017), and provided comments to WDFW. Mackey said the memorandum states that continued operation of the Twisp program would likely result in severe reduction of effective population size (i.e., Ryman-Laikre effect), and he asked that WDFW and Todd Seamons (WDFW geneticist) write up the methods and results of the analysis. Mike Tonseth said WDFW is still addressing Douglas PUD's comments on the memorandum, and will bring a more detailed document and plan back to the Hatchery Committees. Mackey said programmatic shifts are not straightforward, so the Hatchery Committees should keep in mind that any changes to the PUD or USFWS programs would result in changes to agreements about broodstock collection and adult management. Tonseth said no decisions regarding programmatic changes have been made yet, so the 2016 Broodstock Collection Protocols are still being followed. He said the draft 2017 Broodstock Collection Protocols (not yet distributed) may change in early 2017, depending on agreements within the Hatchery Committees.

Mackey said the Ryman-Laikre effect is detectable in Twisp River steelhead because parentage analyses are being performed every year, so data are available for assessing effective population size (N_e) with a sensitivity that normally would not be possible. He said other programs are likely experiencing the same effect, but it is not detectable or being investigated as intensively, and this could result in a severe reduction in effective population size because the issues continue for a longer period without detection. Tonseth said relative reproductive success studies are designed to detect changes such as effective population size, and the results and discussion of this analysis might necessitate taking a closer look at other programs. He said, for now, issues with the Twisp steelhead program are a parallel conversation with developing the draft 2017 Broodstock Collection Protocols, but if the Hatchery Committees agree to Twisp steelhead program changes, the draft 2017

Broodstock Collection Protocols will change as well. Mackey added that Scott Blankenship wrote a blog post about how hatcheries have the potential to reduce effective population size, and said he will distribute a link to the blog.

IV. Joint HCP-HC/PRCC HSC

A. USFWS Bull Trout Consultation Update (Matt Cooper)

Matt Cooper said Karl Halupka (USFWS) sent him an update on USFWS consultations, which he summarized as follows:

- The USFWS letter of concurrence regarding the Tribal Resource Management Plan developed by the CCT was signed on January 31, 2017.
- Regarding the draft Biological Opinion (BiOp) covering hatchery programs in the Wenatchee basin, Halupka plans to distribute a schedule soon for finalizing the BiOp and requests input on the draft from parties (Chelan PUD and WDFW) who have not provided comments yet.

Greg Mackey asked if the memorandum describing Halupka's gap analysis and the strategy to rely on the 2012 Wells Relicensing Bull Trout BiOp for coverage for the Methow spring Chinook salmon program was sent to NMFS. Bill Gale confirmed the memorandum was distributed to NMFS.

B. NMFS Consultation Update (Brett Farman)

Regarding the Methow spring Chinook salmon consultation, Brett Farman said the permits are in queue for signature at NMFS. After that, the permits will be distributed to the applicants for their signature and will then be finalized and distributed by email. Mike Tonseth said the applicants were expecting the permits in January 2017 and asked for a more detailed update on the timeline for permits being signed. Farman said, if NMFS does not sign the permits by February 17, 2017, he will send an email to the applicants with an updated timeline.

Regarding the Okanogan steelhead Tribal Resources Management Plan (TRMP), Farman said NMFS received public comments and will be reviewing and addressing the comments. He said Charlene Hurst can answer questions about that consultation.

Greg Mackey asked if Farman had an update from Hurst or Craig Busack (NMFS) on the Methow steelhead consultation. Mackey said Douglas PUD's last discussion with NMFS on the Methow steelhead consultation was regarding gene flow. He said, because the Methow spring Chinook salmon consultation is almost complete, Douglas PUD is wondering about the timeline for the Methow steelhead consultation. Farman said he would check on the timeline.

C. Draft 2017 Broodstock Collection Protocols (Mike Tonseth)

Mike Tonseth said the draft 2017 Broodstock Collection Protocols will be distributed for review soon. WDFW is waiting on spring Chinook salmon forecasts and predictions on ocean conditions. He said the Hatchery Committees will have approximately 2 weeks to review the protocols so Tonseth can revise them prior to further discussion at the March 13, 2017, Hatchery Committees meeting. He suggested the Hatchery Committees review the appendix about marking, because passive integrated transponder (PIT)-tagging levels tend to vary between years. Todd Pearsons said the Hatchery Committees and Priest Rapids Coordinating Committee Hatchery Sub-Committee (PRCC HSC) recently discussed steelhead marking and tagging and asked if anything related to that discussion has been incorporated into the draft protocols. Tonseth said only agreed-to changes are incorporated into the protocols. Pearsons asked if changes proposed now (e.g., differential steelhead marking) would be incorporated into the 2017 protocols or if they would have to wait until 2018. Tonseth said anything proposed can be discussed and incorporated, because the protocols are a living document and can be added to or changed. Casey Baldwin mentioned that if the Okanogan steelhead TRMP is approved, CCT might seek changes to the protocols this year. Tonseth added that the spring Chinook salmon forecasts are uncertain and the thermal blob might also affect the size of the return in 2017. He said models are currently predicting low returns, which might also change the protocols. Baldwin said run forecasts for spring Chinook salmon from the Columbia River Technical Advisory Committee (TAC) are not too bad for 2017. Tonseth said WDFW considers the TAC forecasts for other species, but does not rely on them for spring Chinook salmon.

Tonseth reminded the Hatchery Committees that in 2016, they discussed trapping constraints at Wells Dam related to broodstock collection, and the Coordinating Committees agreed trap operators at Wells Dam have the flexibility to trap spring Chinook salmon outside the protocols used to date (16 hours per day, 3 days per week) in order to achieve broodstock collection targets as prescribed in the annual Broodstock Collection Protocols. He said the new spring Chinook salmon permits will not limit the trapping days available for spring Chinook salmon at Wells Dam. He said part of the discussion at the Coordinating Committees meetings (including an SOA that was never approved) regarded potentially evaluating the size of the conservation program in the Methow basin. He said appropriate program levels for safety-net and conservation programs were previously determined for the Wenatchee basin, but not for the Methow basin, and the conservation program may not currently be the appropriate size. He said WDFW proposes an increase in trapping at Wells Dam as part of the Broodstock Collection Protocols in 2017 in order to meet the current size of the program, but he asked the Hatchery Committees to commit to determining whether the conservation program in the Methow basin is the right size. Bill Gale said the distribution of the program between conservation and safety-net is better suited to discussion by the Joint Fisheries Parties (JFP) than the Hatchery Committees, because the JFP also discuss federal programs like the Winthrop National Fish

Hatchery (NFH). He suggested the JFP make a commitment to discussing this in 2017. Tonseth said he does expect the JFP to discuss this, but the outcome of the program size discussions affect PUD programs, so it will also need to be discussed by the Hatchery Committees. Gale agreed and said it should be clarified that the JFP will perform the program size analysis and the overall program obligation will not change, but it might be proportioned into conservation and safety-net differently. Greg Mackey said although the Hatchery Committees do not have jurisdiction over federal programs, the Hatchery Committees do need to make the determination of the PUD programs size and type.. Tonseth summarized that WDFW is okay with increased trapping efforts at Wells Dam in 2017, and the level of effort for trapping in the future will be based on the outcome of the JFP and Hatchery Committees discussions about the size of the Methow spring Chinook salmon program.

Mackey said an additional concern with permit conditions under the Wells Bull Trout BiOp and increased trapping effort is that the timing for spring Chinook salmon trapping at Wells Dam is also the time of year most bull trout pass Wells Dam, so increased trapping could result in increased bull trout encounters. Gale said new spring Chinook salmon permits for the Methow program do not have detailed stipulations about trapping constraints because permit conditions default to the 2012 Wells Relicensing Bull Trout BiOp. Mackey said the 2012 Bull Trout BiOp might not have detailed stipulations about trapping periods. Gale said trapping constraints likely depend on how bull trout take is calculated. Mackey said take is calculated for different activities at Wells Dam, so it is not very straightforward. Tonseth summarized that there is still a lot of uncertainty about how the 2017 spring Chinook salmon run will form for hatchery and natural-origin fish, and the draft 2017 Broodstock Collection Protocols include a change in proposed trap operations at Wells Dam due to a shortage in collection in 2016.

Tonseth said, for the 2017 steelhead return, WDFW expects a collapse of the 2-salt return, because there was a collapse of the 1-salt return in 2016. He said, as the run develops, WDFW will be able to determine how many steelhead may be collected for broodstock and this number may need to be adjusted based on the age structure of the return. Catherine Willard asked Tonseth if the Chelan Falls broodstock collection site is included in the draft protocols, and Tonseth replied yes.

Gale said, in 2016 and previous years, USFWS has raised concerns regarding Pacific lamprey passage at Tumwater Dam. He said USFWS approved the 2016 Broodstock Collection Protocols contingent on further discussions and studies of Pacific lamprey. Willard said Chelan PUD plans to provide an update on Pacific lamprey and Tumwater Dam at the Rocky Reach Fish Forum (RRFF) March 2017 meeting. Gale asked that an update also be provided to the Hatchery Committees. Tracy Hillman asked if questions about Pacific lamprey pertain to the Hatchery Committees and said the RRFF typically addresses Pacific lamprey discussions. Gale said, from the USFWS' perspective, they are being asked to approve activities in the protocols that potentially affect Pacific lamprey passage. He

said it is unclear whether the dam itself or the activities at the dam are affecting Pacific lamprey passage. Hillman said it is still not clear to him how Pacific lamprey relate to Hatchery Committees discussions, because they are not an HCP plan species. Gale said bull trout are not an HCP plan species, but they pertain to Hatchery Committees discussions. Tonseth said bull trout are unique in that they are a listed species. Gale said bull trout and Pacific lamprey are similar in that they are not plan species, and he said there is an issue with Pacific lamprey passage at Tumwater Dam and he wants to continue discussing it and working on it.

D. Spring Chinook Salmon Outplanting in the Chewuch River (Catherine Willard/All)

Catherine Willard said a subgroup of Hatchery Committees members met on January 9, 2017, and made progress on a plan for outplanting surplus adult spring Chinook salmon (MetComp) in the Chewuch River. She said several data gaps were identified and participants are working on follow-up tasks. She shared the draft plan titled, "Out-planting Surplus Methow Composite Spring Chinook Salmon Adults to Increase Natural Production in the Chewuch River – Draft," which Sarah Montgomery distributed to the Hatchery Committees on February 14, 2017 (Attachment B). She said the goal of the draft plan is to determine if outplanted surplus Chinook salmon in the Chewuch River stay in the Chewuch River and, if they do, determine their spawner success. She said Cameron Sharpe (Oregon Department of Fish and Wildlife [ODFW]) provided some advice based on ODFW outplanting in the Willamette River, namely to place fish as close to the peak spawning time as possible and put fish as high in the watershed as possible. Willard said the draft plan includes PIT tagging fish and releasing them at two locations: 1) above the upper Chewuch River PIT array, where there is easy access through the campground and good spawning habitat; and 2) at Memorial Bridge, between the PIT arrays in the Chewuch River, so travel outside of the PIT-array zone can be determined. The study will also document any outplanted fish returning to the Methow Fish Hatchery and PIT-tag detections at the Chewuch River arrays. Willard said they do not intend to place fish on occupied spawning grounds and would release them upstream or downstream in that case. She said the plan will be a decision item at the March Hatchery Committees meeting.

Greg Mackey said skewed sex ratios tend to reduce effective population size and asked why the female to male ratio is 80:20. Todd Pearsons said he recommended the 80 female to 20 male ratio as a way to maximize the number of eggs put into spawning gravel, knowing that males may mate with multiple females. He said the proposed ratio was a compromise and noted that the ratio can be adjusted depending on the sex ratio of the run-at-large. Mike Tonseth said sampling at Wells Dam will inform the expected sex ratio of the run, and if it is 75 females to 25 males or greater, the ratio can be managed. Pearsons added that literature on salmon reproduction suggests males are less successful than females in producing surviving progeny, so for a first-year investigation the risk in an 80:20 sex ratio is relatively low.

Willard asked Tonseth what the permitting approval process would be for this study. Tonseth said permits limit the number of adults and juveniles that can be released and permits determine the pHOS and proportionate natural influence (PNI) levels for programs. He said current permits acknowledge that pHOS and PNI targets in the Methow basin are difficult to meet. He said, in 2017, anticipating an overall low abundance of spring Chinook salmon in the Methow basin means that WDFW will likely be more concerned with meeting escapement objectives than PNI and pHOS objectives. Keely Murdoch said 2017 might turn out to be a good year to try this outplanting study because overall abundance is predicted to be low.

Bill Gale said the priority of actions for surplus hatchery fish returning to the Methow basin should be discussed. He said he sees the priorities as: 1) escapement; 2) broodstock for the Methow program; and 3) broodstock for the Winthrop program. Tonseth said he sees the priorities as: 1) broodstock for the conservation program; 2) WNFH safety-net production; and 3) outplanting in the Chewuch River. Pearsons challenged those priorities and said the fish targeted for use in this study are conservation program fish; therefore, this study, which contributes to natural production, should be prioritized over the safety-net program. Tonseth said the Hatchery Committees will need to consider the permits and structure of the programs before deciding how to assign surplus fish in 2017. He said counts at Wells Dam will inform the number of wild fish returning to the Methow basin. From that, they can calculate escapement, pHOS, and PNI. Mackey said there can also be a balance of priorities, with some fish used for this outplanting study and others used for broodstock for WNFH. Pearsons said the safety-net program can still be met without using surplus fish as would be used in this study. Gale said not including these fish in the safety-net program would affect the 3-population PNI value. Casey Baldwin asked where the Okanogan spring Chinook salmon program is on the priority list for surplus fish and if those fish come from Winthrop NFH. Gale said the Okanogan program uses safety-net fish that return to Winthrop NFH, so the Okanogan program would not be affected.

Baldwin said it would be helpful for Figure 1 in the proposed outplanting study to show relative spawner abundance and habitat quality in reaches of the Chewuch River and it might make sense to move the upstream release site even farther upstream because there might be even more unpopulated habitat above the most upstream release site. Willard said she will look into other potential release locations in the Chewuch River, particularly upstream, for the spring Chinook salmon outplanting study. Pearsons said ease of release is a major consideration for this study; truck access is very important at release locations so fish can go straight from the truck into the river using a tube. Baldwin said the CCT have a Whoosh system to aid with truck releases, which might be useful for this study. Willard summarized that the subgroup will revise the study and provide it to the Hatchery Committees for review prior to the March Hatchery Committees meeting.

E. M&E Report Scheduling (Greg Mackey/Catherine Willard)

Greg Mackey shared two documents, the draft "Wells HCP Hatchery Committees SOA: Monitoring and Evaluation Reporting Schedule for the Douglas PUD, Grant PUD, and Chelan PUD Hatchery Programs" (Attachment C), and the draft "Monitoring and Evaluation Reporting Schedule for the Douglas PUD, Grant PUD and Chelan PUD Hatchery Programs" (Attachment D; Sarah Montgomery distributed both documents to the Hatchery Committees on February 13, 2017). Mackey said the SOA provides background and purpose for the schedule, and the schedule itself is a separate document that describes the reporting timeline and content and function of each report. Mackey said M&E report types are summarized in Table 1. The content for the annual data report will be a cumulative presentation of data and concise description of field methods, plus any deviations in methods (though the methods themselves are in the M&E Plan). ESA permit reporting requirements will also be covered in this report. The 5-year statistical report will present statistical analyses for each M&E plan objective, descriptions of statistical methods, and explanation of violations of assumptions of statistical procedures. The 10-year Program Review will be a bigger, in-depth report written in scientific manuscript format, which integrates and interprets information, including integration of findings from other populations, programs, and studies. It will fulfill the HCP's "Program Review" requirements. Mackey said Table 2 describes the major elements of HCP processes and their time intervals. He said, among the PUDs, survival studies have the most variation in time intervals. He said Table 3 is a proposed schedule through 2024. Mackey said the purpose of the SOA is to accept this document and state that altering the timeline would require Hatchery Committees approval, and a similar SOA could be used for Grant PUD and the PRCC HSC [note: each PUD plans to present their own SOA that is specific to their agreement(s)].

Casey Baldwin noted that the statistical report is scheduled to be completed 2 years before the 10-year Program Review and asked if data from the 2 years between the reports would be analyzed in the 10-year Program Review. Tracy Hillman said, in order to complete a Program Review, the statistical analyses would have to be completed again, including those 2 years of data. Baldwin asked why the statistical report and Program Review are offset, because it seems redundant to do statistical analyses again 2 years after the statistical report. Mackey said one option would be to skip every other 5-year report and instead include the statistical analyses in the Program Review. When the schedule was developed all the reporting requirements were trying to be met explicitly, hence the redundant reporting of the 5-year and Program Review. Hillman suggested that most of the statistical analyses could actually be done in the annual report, but the productivity and abundance comparisons to reference or control populations take more time and should probably only be included in the statistical report or Program Review. Peter Graf said recalculation begins next in 2023 and the document authors tried to fit the timeline around doing a Program Review in 2020 just before recalculation. Graf suggested the statistical report and Program Review could be collapsed

into one report, because they are currently only 18 months apart in the timeline. Mike Tonseth agreed and said duplication of effort is unnecessary. Hillman said he will coordinate with WDFW and YN, as M&E operators, to determine if most of the statistical analyses can be completed in each annual report. He said it might be beneficial to present the statistical analyses each year so the Hatchery Committees can make informed decisions, and every 5 years include statistical analyses on reference populations, population dynamics, and productivity. Hillman said the timeline could be set up so the 5-year statistical report falls on years when the 10-year Program Review is done. Todd Pearsons said the purpose of the 5-year report is to inform the M&E Plan review and update. Tonseth replied having statistical analyses in the annual report provides sufficient information to review and update the M&E Plan, so the timeline and purpose of the 5-year report could be shifted to align with Program Review. Todd Pearsons suggested that the PUDs discuss the timeline further and distribute a revised version for review. Greg Mackey said he will coordinate with Chelan and Grant PUDs to revise the proposed Hatchery M&E Reporting Timeline.

F. Expanded Sampling at the Off-ladder Fish Trap (Mike Tonseth)

Mike Tonseth said the OLAFT at Priest Rapids Dam is currently operating from about July 1 to early or mid-November, primarily for steelhead viable salmon population (VSP) monitoring. He said this monitoring (8 hours a day, 3 days a week) plus supplemental PIT tagging provides adult return estimates of hatchery and wild steelhead with high precision. Tonseth said he thinks it would also be a good approach for monitoring spring Chinook salmon. He said monitoring for spring Chinook salmon under the same operation (8 hours a day, 3 days a week) beginning in mid-April would provide sufficient sample size and precision to assess populations of spring Chinook salmon. He said unbiased estimates for prespawn mortality are lacking for spring Chinook salmon and this sampling could inform those estimates, as well as providing data for managing pHOS and PNI objectives. He said operating the OLAFT from mid-April to mid-November would encompass many species' runs, though sockeye would not be included in sampling because their abundances are so high. He said the JFP met and discussed this, and thinks there is utility in pursuing this sampling scheme. He said, if it works, sampling at Wells and Tumwater dams for spring Chinook salmon could be decreased and the OLAFT approach could answer more detailed questions about entire distinct population segments or non-evolutionarily significant units. He said the state does not want to invest time and money into developing a plan and proposal for expanded OLAFT sampling unless the Hatchery Committees parties support pursuing it.

Greg Mackey said the population estimate for steelhead uses PIT-tag detection data and it would be helpful to fully understand the model and ensure it is a statistically rigorous approach to estimating populations before shifting M&E programs. He said expanded sampling at OLAFT is probably a better way to acquire data for estimating populations, practical limitations notwithstanding. Tonseth

said the expanded sampling may not change how broodstock is collected, but it would decrease ancillary handling and delay.

Tracy Hillman asked if the population estimates come from the mark-recapture model developed by Kevin See (Quantitative Consultants, Inc.). Tonseth replied yes; the model works well for steelhead and is being considered for other stocks and runs. Hillman said the model is described in Appendix D to the Chelan and Grant PUDs Annual Hatchery M&E Report. Pearsons said it would be helpful to understand how the model will be used, how run composite sampling would be performed, and what would change relative to existing M&E efforts. He asked, for example, would it increase or decrease the handling events of fish? And, what is proposed to change at every location compared to what is proposed to change at the OLAF? Tonseth said he will work with Andrew Murdoch (WDFW) to write an overview of proposed sampling and program changes to address these discussion items.

G. Stray Rate Targets (Todd Pearsons)

Todd Pearsons said the Hatchery Committees and PRCC HSC discussed stray rates in January 2017 and he was asked to expand his presentation in January into a paper, "Stray Rate Target for Hatchery Programs," which Sarah Montgomery distributed to the Hatchery Committees on February 2, 2017 (Attachment E). Pearsons summarized recent scientific literature that for natural-origin fish, stray rates vary between 0 and nearly 100%, and there are a variety of factors influencing stray rates. He said this implies that it is difficult to set a standardized stray rate target, and Keefer and Caudill (2014)¹ state the following:

There are certainly no universally 'appropriate' straying rates that can be used as management targets...Fisheries managers must balance the potential demographic and genetic risks of straying on both donor and recipient populations with the benefits of proposed management actions. This will require consideration of how strays are identified and enumerated, the size and spatial distribution of donor and recipient populations, and agreement

¹ Keefer, M. L., and C. C. Caudill. 2014. Homing and straying by anadromous salmonids: a review of mechanisms and rates. *Rev Fish Biol Fisheries* (2014) 24:333–368. DOI 10.1007/s11160-013-9334-6.

about what stray rates are desirable or “natural”. Costs, benefits, and target rates are likely to differ widely among study systems.”

Pearsons said his paper focuses on the first type of stray rate target from Hillman et al. 2013², brood-year stray rates, and the paper summarizes and includes quotes from existing literature so everyone can interpret the material for themselves. He asked for questions and said he would like to discuss the stray rate target itself, whether it should be eliminated, or if there is a scientifically supported target to which the Hatchery Committees and PRCC HSC can agree. He said the origin of the 5% brood-year stray rate target is also interesting, because it was unclear where it originated from and experts in straying mainly focus on targets related to the origin of the stray in regard to the recipient population, instead of brood-year stray rates. Hatchery Committees representatives’ questions and comments are summarized in the following paragraphs.

Purpose of the brood-year stray rate target

Bill Gale said question (Q)1 (regarding brood-year stray rates) of the M&E Plan is a measure of hatchery performance, whereas Q2 and Q3 are related to natural-origin populations and permit conditions. Mike Tonseth said Q1 is more of an indicator objective or management index than a target and exceeding Q1 means a higher likelihood of exceeding the Q2 and Q3 targets. Pearsons said the recipient population targets (Q2 and Q3) are more important targets because not meeting them requires program changes. He said he is uneasy about having management implications tied to a target where the target is not achievable and scientifically supported. Casey Baldwin said eliminating Q1 would decrease the ability to understand or take management actions for programs that do have a stray problem and the problem with relying on Q2 is that it is program-specific [note: does not account for the strays from other sources than the program that is evaluated]. Pearsons also questioned whether hatchery fish should be expected to have stray rate targets close to those of natural-origin fish?

Baldwin said it would be helpful to know what proportion of programs are not meeting the 5% brood-year stray rate target. Greg Mackey said fish transported to acclimation sites never meet the target and fish released directly from a fish hatchery usually do meet the target, but it varies a lot.

² Hillman, T., T. Kahler, G. Mackey, J. Murauskas, A. Murdoch, K. Murdoch, T. Pearsons, and M. Tonseth, 2013. *Monitoring and evaluation plan for PUD hatchery programs*. Chelan PUD, Wenatchee, Washington.

Keely Murdoch said the Chewuch and Twisp rivers have pronounced stray rates because fish have a strong connection to the Methow Fish Hatchery.

Gale said, from a program performance view, the stray rate should be as low as possible and 5% is just a benchmark. Not meeting that target does not mean the program is not meeting its permit conditions. Pearsons said management actions should be based on scientifically derived targets and, for things that are beyond the control of the hatchery, targets should not be set. Murdoch countered that if there was no target for brood-year stray rates, needed changes to programs might not occur. Pearsons said brood-year stray rates should be reported whether there is a target or not, and targets are not necessary to make program changes.

Hatchery versus wild stray rates

Tonseth said results from the Ford et al. 2015³ paper suggest that straying is largely habitat related. He said wild fish do not tend to stray, but hatchery-origin fish do. He said descendants from natural-origin fish spawning in one location return to that location, whereas progeny of hatchery-origin fish seek out higher quality habitat. He said imprinting, and the location of fish hatcheries are therefore important pieces to understanding hatchery-origin fish and straying.

Mackey said the rate of straying is not as important as the result of straying. He said, in the Methow basin, the population is homogenized (there is no genetic differentiation among the fish in the Twisp, Methow and Chewuch rivers), so it does not matter where hatchery fish go from a population genetic standpoint, but it does matter from an escapement goal and pHOS standpoint. He said the adult spring Chinook outplanting plan in the Chewuch River will also help inform stray rates in the Methow basin.

Potential changes to the target

Pearsons said that the approved M&E plan says that the committees will incorporate new information about natural stray rates when they become available so that hatchery programs are not held to unrealistic standards. He said that new information is now available and should be used to inform the broodyear stray target. He asked what the role of science was in the committees if we were not willing to use recent compelling science on a topic that was specifically identified in the

³ Ford, M. J., A. Murdoch, and M. Hughes, 2015. Using parentage analysis to estimate rates of straying and homing in Chinook salmon (*Oncorhynchus tshawytscha*). *Molecular Ecology* 24:1109–1121.

monitoring plan? He asked what level of science would be necessary to change the broodyear stray target?

Baldwin said information from the Wenatchee basin (high stray rates) suggests that a one-size-fits-all approach to stray rate targets may not be appropriate. He suggested adding subsections to Q1; 1a) would address within-basin brood-year stray rates and 1b) would address out-of-basin brood-year stray rates.

Tracy Hillman asked if the stray rates identified in Ford et al. (e.g., 1.3 to 17.5%) would be appropriate for spring Chinook salmon within the Wenatchee River basin. That is, Ford et al. indicates that the natural-origin stray rate for Chiwawa spring Chinook salmon is 4.1%. Should that be the target for this program? Pearsons said peer-reviewed scientific literature suggests there is not a single appropriate brood-year stray rate target to set. Baldwin summarized that the Hatchery Committees appear to be uncomfortable with eliminating Q1 altogether, but would rather come up with a revised stray rate target based on information in Ford et al. or other sources. Hillman said this discussion will continue at the March 13, 2017, Hatchery Committees meeting.

V. HCP Administration

A. Next Meetings

Mike Tonseth said he and Jeff Korth are unavailable from March 14 to 16, 2017, and asked the Hatchery Committees if they would like to reschedule the in-person March meeting to a time when WDFW is available to discuss the draft 2017 Broodstock Collection Protocols or if they would prefer to schedule a conference call in addition to the scheduled meeting to discuss the protocols and other items requiring WDFW input in March. Hillman summarized that the protocols and the Twisp Steelhead program are both items requiring WDFW input. Hatchery Committees representatives present discussed alternate dates and times, and agreed to meet on Monday, March 13, 2017, starting at 1 p.m. They plan to meet at the Grant PUD conference room.

The next Hatchery Committees meetings are on Monday, March 13, 2017, at 1 p.m. (Grant PUD), April 19, 2017, (Grant PUD), and May 17, 2017 (Grant PUD).

VI. List of Attachments

Attachment A List of Attendees

Attachment B Out-planting Surplus Methow Composite Spring Chinook Salmon Adults to Increase Natural Production in the Chewuch River – Draft

Attachment C Wells HCP Hatchery Committees SOA: Monitoring and Evaluation Reporting Schedule for the Douglas PUD, Grant PUD, and Chelan PUD Hatchery Programs – Draft

- Attachment D Monitoring and Evaluation Reporting Schedule for the Douglas PUD, Grant PUD and Chelan PUD Hatchery Programs – Draft
- Attachment E Stray Rate Target for Hatchery Programs

Attachment A
List of Attendees

Name	Organization
Tracy Hillman	BioAnalysts, Inc.
Sarah Montgomery	Anchor QEA, LLC
Catherine Willard*	Chelan PUD
Greg Mackey*	Douglas PUD
Todd Pearsons‡	Grant PUD
Peter Graf‡	Grant PUD
Deanne Pavlik-Kunkel‡	Grant PUD
Bill Gale*	U.S. Fish and Wildlife Service
Matt Cooper*	U.S. Fish and Wildlife Service
Brett Farman*†	National Marine Fisheries Service
Mike Tonseth*	Washington Department of Fish and Wildlife
Brian Lyons†	Washington Department of Fish and Wildlife
Jayson Wahls†	Washington Department of Fish and Wildlife
Keely Murdoch*	Yakama Nation
Casey Baldwin*	Colville Confederated Tribes

Notes:

* Denotes Hatchery Committees member or alternate

† Joined by phone

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