

Memorandum

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

Date: May 19, 2018

From: Tracy Hillman, HCP Hatchery Committees Chairman

cc: Sarah Montgomery, Anchor QEA, LLC

Re: Final Minutes of the April 18, 2018 HCP Hatchery Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plan (HCP) Hatchery Committees meeting was held at the Wells Hatchery at Wells Dam on Wednesday, April 18, 2018, from 9:00 to 12:15 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 adult fish trap (OLAFT) at Priest Rapids Dam and present this information at the Hatchery Committees May 16, 2018 meeting (Item I-A). *(Note: this item is ongoing.)*
- Mike Tonseth will coordinate with Todd Seamons (WDFW) to produce an outline or recommended approach for genetic monitoring (Item I-A). *(Note: this item is ongoing.)*
- Mike Tonseth will coordinate with Todd Seamons (WDFW) regarding reviewing the memorandum, "Alternatives for Methow Basin conservation steelhead programs" (Item I-A). *(Note: this item is ongoing.)*
- Sarah Montgomery will reconfigure the Extranet site to sort permits and Biological Opinions (BiOps) by species and date and upload the related documents (Item I-A). *(Note: this item is ongoing.)*
- Kirk Truscott will work with Casey Baldwin (Colville Confederated Tribes [CCT]) to summarize the CCT's current protocols for genetic sampling (Item I-A). *(Note: this item is ongoing.)*
- Tom Kahler and Greg Mackey will provide historical information to Tracy Hillman for incorporation in the Draft Hatchery Program Timelines (Item I-A). *(Note: this item is ongoing.)*
- Tracy Hillman will review aspects of the Independent Scientific Advisory Board's (ISAB's) *Review of Spring Chinook Salmon in the Upper Columbia River* under Hatchery Committees' purview (Item I-A). *(Note: this item is ongoing.)*
- Tracy Hillman will send Mary Conner et al.'s 2016 paper, "Evaluating impacts using a BACI design, ratios, and a Bayesian approach with a focus on restoration," to the Hatchery Committees (Item I-A). *(Note: Hillman distributed the paper following the meeting on April 18, 2018.)*

- Matt Cooper will invite Chris Tataru (National Oceanic and Atmospheric Administration [NOAA]) to the Hatchery Committees May or July 2018 meeting to discuss steelhead residualism (Item II-A). *(Note: Tataru plans to attend the July 18, 2018 Hatchery Committees meeting.)*
- Matt Cooper will ask Penny Swanson (NOAA) about how feeding patterns during a 2-month holding period might compromise studying early maturation in steelhead (Item II-A).
- Charlene Hurst will send a Word version of the final steelhead BiOp to Greg Mackey and Matt Cooper (Item III-A).
- Keely Murdoch will invite Melinda Davis and Mark Johnston (Yakama Nation [YN]) to the Hatchery Committees July meeting to discuss the YN summer Chinook salmon program (Item III-B).
- Sarah Montgomery will distribute the document, "Emerging Discussions from draft 2018 Broodstock Collection Protocols," to the Hatchery Committees (Item III-B). *(Note: Montgomery distributed this document on April 19, 2018.)*
- Greg Mackey will research the second item in the Emerging Discussions document, whether to include age-3 males in broodstock, prior to the Hatchery Committees May 16, 2018 meeting for further discussion (Item III-B).
- Betsy Bamberger (Douglas PUD) will coordinate with the Washington Animal Disease Diagnostic Lab (WADDL) to obtain optical density values to inform culling for bacterial kidney disease (BKD) (Item III-B).
- Betsy Bamberger will present information on optical density values and BKD to the Hatchery Committees during their May 2018 meeting (Item III-B).
- Keely Murdoch and Mike Tonseth will provide an update on their evaluation of the size of conservation programs in October 2018 (Item III-B).
- Keely Murdoch will provide coho salmon broodstock collection protocols to Mike Tonseth by late February or early March 2019 for inclusion in the 2019 Broodstock Collection Protocols (Item III-B).

Decisions

- The HCP Hatchery Committees approved the draft 2018 Broodstock Collection Protocols as follows: WDFW, Douglas PUD, Chelan PUD, U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), YN, and CCT approved on April 18, 2018 (Item III-B). *(Note: the Wells HCP Coordinating Committee approved the Wells portion of this document during their April 24, 2018, meeting.)*

Agreements

- The Rocky Reach and Rock Island HCP Hatchery Committees agreed to implement lethal, post-release, early maturation sampling for steelhead as described in the draft *Methodology for Establishing Baseline Conditions in the Wenatchee Steelhead Program* (Item II-A).

Review Items

- There are no items currently available for review.

Finalized Documents

- Sarah Montgomery sent an email to the HCP Hatchery Committees on April 19, 2018, notifying them that the Final 2018 Broodstock Collection Protocols are now available for download from the Hatchery Committees Extranet site (Item III-B). (*Note: the final version approved by the Wells HCP Coordinating Committee was provided to NOAA on April 24, 2018.*)

I. Welcome

A. Review Agenda, Review Last Meeting Action Items, and Approve the March 12, 2018 Meeting Minutes (Tracy Hillman)

Tracy Hillman welcomed the Hatchery Committees and asked for any additions or changes to the agenda. There were no changes.

The Hatchery Committees representatives reviewed the revised draft March 12, 2018 meeting minutes. Sarah Montgomery said there are some outstanding comments, which the Hatchery Committees reviewed and addressed. Hatchery Committees representatives present approved the draft March 12, 2018 meeting minutes as revised.

Action items from the Hatchery Committees meeting on March 12, 2018, and follow-up discussions were addressed (*note: italicized text below corresponds to agenda items from the meeting on March 12, 2018*):

- *Andrew Murdoch (Washington Department of Fish and Wildlife [WDFW]) will write an overview of proposed expanded sampling at the off-ladder adult fish trap (OLAFT) at Priest Rapids Dam (Item I-A).* Mike Tonseth said Andrew Murdoch will present this information at the Hatchery Committees May 16, 2018 meeting.
- *Mike Tonseth will coordinate with Todd Seamons (WDFW) to produce an outline or recommended approach for genetic monitoring (Item I-A).* Tonseth said this item is ongoing.

- *Mike Tonseth will coordinate with Todd Seamons (WDFW) regarding reviewing the memorandum, "Alternatives for Methow Basin conservation steelhead programs" (Item I-A).* Tonseth said he received an update on this from Seamons and will provide his review to the Hatchery Committees soon. He said Seamons identified no major issues from a genetic standpoint with the alternatives but preferred alternative 1 to alternative 3.
- *Brett Farman will coordinate with Craig Busack (National Marine Fisheries Service [NMFS]) regarding reviewing the memorandum, "Alternatives for Methow Basin conservation steelhead programs" (Item I-A).* Farman said he and Busack discussed this and Busack communicated no major issues.
- *Sarah Montgomery will reconfigure the Extranet site to sort permits and Biological Opinions (BiOps) by species and date and upload the related documents (Item I-A).* Montgomery said Julene McGregor (Douglas PUD) updated the website and this item is ongoing.
- *Kirk Truscott will work with Casey Baldwin (Colville Confederated Tribes [CCT]) to summarize the CCT's current protocols for genetic sampling (Item I-A).* Truscott said this item is ongoing.
- *Tom Kahler and Greg Mackey will provide historical information to Tracy Hillman for incorporation in the Draft Hatchery Program Timelines (Item I-A).* Hillman said this item is ongoing.
- *Tracy Hillman will review aspects of the Independent Scientific Advisory Board's (ISAB's) Review of Spring Chinook Salmon in the Upper Columbia River under Hatchery Committees' purview (Item I-A).* Hillman said this item is ongoing. He said he will begin editing the Monitoring and Evaluation Plan soon and plans to work with Carl Schwarz at Simon Fraser University regarding his feedback to the plan. Hillman said one consideration for revision includes Bayesian analyses for Before–After Control-Impact (BACI)-type designs (for which he will distribute an interesting recent paper, Conner et al. 2016¹). Another consideration is setting up null hypotheses as differences between treatment groups, which is the concept of bioequivalence (i.e., the hatchery programs are "guilty" until proven "innocent"). Currently, null hypotheses are set up as no differences between treatment groups (i.e., hatchery programs are "innocent" until proven "guilty"). For example, the Hatchery Committees could decide that a 4-centimeter (cm) or greater mean difference in size-at-return of hatchery versus wild fish would be a biologically significant effect, so any results within less than a 4 cm mean difference would maintain the null hypothesis (no significant effect). Hillman summarized that he will continue working with ISAB members on these topics and the ISAB was encouraged that the Hatchery Committees are considering their feedback.

¹ Conner, M.M., W.C. Saunders, N. Bouwes, and C. Jordan. 2016. Evaluating impacts using a BACI design, ratios, and a Bayesian approach with a focus on restoration. *Environmental Monitoring and Assessment* (2016) 188:555.

- Hatchery Committees representatives and alternates will review the draft *Methodology for Establishing Residualism Baseline Conditions of the Wenatchee River Summer Steelhead Hatchery Program* and consider options for discussion at the April 18, 2018 Hatchery Committees meeting (Item II-B). This item will be discussed today.
- Greg Mackey will revise the *Wells and Methow Hatchery 2018 Program Projected Releases* document (Item III-C). Mackey revised the document and Sarah Montgomery distributed it to the Hatchery Committees on March 13, 2018.
- Sarah Montgomery and Mike Tonseth will coordinate as needed to potentially schedule a conference call to discuss comments and questions on the draft *2018 Broodstock Collection Protocols* (Item V-B). A call was not scheduled.
- The Hatchery Committees will hold their April 18, 2018 meeting at Wells Fish Hatchery (Item VI-A). This item is complete.

II. Chelan PUD

A. Proposed Methodology for Establishing Baseline Conditions in the Wenatchee Steelhead Program (Catherine Willard)

Catherine Willard said the Hatchery Evaluation Technical Team convened to discuss the draft *Methodology for Establishing Baseline Conditions in the Wenatchee Steelhead Program* (Attachment B). Willard said the two components requiring Hatchery Committees discussion are a passive integrated transponder (PIT)-tag evaluation and lethal sampling. She said Chelan PUD plans to complete a PIT-tag evaluation, which is a requirement of the permit, and Chelan PUD requests approval from the Hatchery Committees for the Gonad Somatic Index and maturation sampling outlined in the plan. She said the plan entails sampling 600 steelhead (300 wild-by-wild and 300 hatchery-by-hatchery) held at Chiwawa Acclimation Facility.

Tom Kahler asked if the purpose of limiting residualism, from NMFS' permitting perspective, is to limit competition with wild fish and predation on wild fish. Willard said the first step that NMFS identifies is to determine an indication of residualism. If there appears to be a problem, measures to limit residualism should be implemented to minimize it.

Kirk Truscott said maturation sampling can be used to assess precocity. Greg Mackey suggested considering ATPase for gill filament activity. Tonseth said ATPase methods have been used previously in this system and the study found that ATPase levels have not spiked sufficiently at the time of sampling to determine whether juveniles are residualizing.

Matt Cooper said there is also work occurring at Winthrop National Fish Hatchery (NFH) to assess residualism. He said determining an early maturation residual is difficult for steelhead that are

holding (not emigrating volitionally). He said there are correlations between residuals and size—after multiple years of volitional releases, staff at Winthrop NFH found that the fish holding at the hatchery were smaller and there was a higher male-to-female ratio. He asked representatives present if he should invite Dr. Chris Tatara (NOAA) to discuss this with the Hatchery Committees. Representatives present agreed, and Cooper said he will invite Tatara.

Mike Tonseth noted that holding fish for 2 months would produce differences in feeding between held and released fish. During the warm-water months, steelhead will have greater appetites. He asked if continuing to feed the fish will affect maturation rates. Cooper said once maturation begins, it does not reverse. Tracy Hillman said the study assumes the fish released from the hatchery are also feeding under similar temperature regimes, so the effects of temperature and feeding on maturation should be similar. Betsy Bamberger said the differences in feeding and potential effects to maturation are based in physiology. Tonseth asked if the fish held for 2 months will be fed to satiation or just a maintenance diet. Pat Phillips (Douglas PUD) said it would depend on the water source. Truscott summarized that Tonseth's concern is that during the 2-month holding period, feeding and growth may elicit a maturation response that would not occur if the fish were released. He said he understands that precocious Chinook salmon start to become precocious the fall prior to their release, so conditions immediately leading up to their migration would have little effect on their precocity. He said this may or may not be true for steelhead. Cooper said he will ask Penny Swanson (NOAA) for more information about this.

Truscott observed that the program aims to make hatchery-origin steelhead as similar to wild steelhead as possible, except for precocity (a natural juvenile life history trait). Keely Murdoch agreed that the Hatchery Committees should limit precocity but remain aware of what natural populations do. Hillman asked if the document needs to be amended to direct hatchery managers to maintain maintenance rations only (i.e., not feed to satiation). No changes were made to the document.

The Rocky Reach and Rock Island HCP Hatchery Committees agreed to implement lethal, post-release, early maturation sampling for steelhead as described in the draft *Methodology for Establishing Baseline Conditions in the Wenatchee Steelhead Program* as follows: Chelan PUD, YN, CCT, WDFW, USFWS, and NOAA approved.

III. Joint HCP-HC/PRCC HSC

A. NMFS Consultation Update (Brett Farman)

Emi Kondo (NMFS) said she has an update on the National Environmental Protection Act (NEPA) process for the Methow steelhead consultation and the unlisted programs consultation (summer/fall Chinook salmon for Wells, Methow, Chelan Falls, Dryden, and Priest Rapids). She said completion of

the Environmental Assessment (EA) will depend on other pending consultation pieces, mainly the commenting period for Hatchery Genetic Management Plans (HGMPs) and permit drafting. She said Chuck Peven (Peven Consulting, Inc.) has drafted all chapters except Chapter 5, cumulative impacts. She said the next steps are internal review (approximately 45 days), applicant review, then a 30-day public comment period.

Charlene Hurst said she has an update on the permitting process for the Wells Complex and Winthrop NFH summer steelhead programs. She said she expects to review the permits and distribute them to applicants for review in early to mid-May. Hurst said the Wells Complex steelhead HGMP and the Winthrop NFH steelhead HGMP should go out for public comment at the same time as the Methow steelhead EA. She said the HGMPs likely do not need to be revised, although the proposed action identified in the BiOp should be appended to the HGMPs. Douglas PUD and USFWS should provide a letter to NMFS requesting the addendum to the HGMPs. She said one potential concern is that the Winthrop HGMP identifies many alternatives, so it may elicit public comments that slow down the permitting process. She said anything that can be done in advance to make the proposed action and HGMPs clear should be completed prior to public comment.

Kondo said she plans to use the same approach (appending the proposed action described in the BiOp to the HGMPs) for putting the HGMPs for the unlisted summer/fall programs out for public comment in tandem with the EA being available for public review. Greg Mackey asked if NMFS is drafting the proposed action sections to be appended to the HGMPs. Hurst said these sections are in the BiOps, so the applicants should extract the proposed action from the final BiOp and send it back to NMFS to be included with the HGMP. Hurst said she will send a Word version of the steelhead BiOp to the applicants to make this process easier. Kondo summarized the NEPA process for the Methow steelhead and unlisted summer/fall Chinook salmon programs is underway and permitting is progressing for the Wells Complex and Winthrop NFH steelhead programs.

B. 2018 Broodstock Collection Protocols (Mike Tonseth)

Mike Tonseth said the version 4 draft 2018 Broodstock Collection Protocols were distributed on April 17, 2018 by Sarah Montgomery (Attachment C). He said he received further edits from Keely Murdoch after the draft was distributed and those are included in the version for review today. He said the majority of comments were received during review of the first version and addressed in the second version. Most edits since the second draft version was distributed were editorial. Tonseth also provided a document for discussion during the meeting, Emerging Discussions from draft 2018 Broodstock Collection Protocols (Attachment D), which Montgomery distributed to the Hatchery Committees following the meeting on April 19, 2018. He said these topics will require discussion in 2018 before the 2019 protocols are drafted. He reviewed the discussion items and asked the Hatchery Committees to provide feedback on how and when each item should be addressed. A

summary of each item is included in the paragraphs below along with continued discussion on the draft protocols following the emerging discussion items.

Yakama Nation Summer Chinook Egg Requests at Wells Fish Hatchery

Tonseth suggested that Murdoch coordinate an update or presentation to the Hatchery Committees about the YN summer Chinook salmon program and future program direction. He said the program has been in place for 10 years and is still receiving eggs from Wells Fish Hatchery (FH). Murdoch agreed that an update is needed and said she will invite Melinda Davis and Mark Johnston (YN) to the Hatchery Committees July 2018 meeting to discuss this item.

Age-3 Males in the Broodstock, Include or Exclude?

Tonseth said Greg Mackey commented on including age-3 males in broodstock during review of the draft 2018 Broodstock Collection Protocols. Tonseth said this discussion and decision will not necessarily delay approval of the 2018 protocols, but a literature review should be performed and this item should be discussed further. Mackey said he will take the lead on researching this item. He said he brought this up in part because of discussions on Twisp River steelhead and a Ryman-Laikre effect. He said for a harvest program, the goal is often to maximize the size of fish; however, managers should be careful not to limit population diversity by size-selecting broodstock in conservation programs. Tonseth said data should be evaluated to determine whether excluding age-3 males (based on size selection) is limiting the diversity of the program. He said past hatchery programs have over-incorporated age-3 males, and those fish made up a large portion of the hatchery spawning population. He said from WDFW's perspective, fish incorporated into broodstock should resemble what is expected in the natural environment. Tonseth said the current version of the protocols is consistent with past years, but this should be discussed for the 2019 protocols. Matt Cooper asked if this discussion only pertains to hatchery returns used for broodstock. Tonseth said no, it also applies to natural-origin returning fish. He said age-3 fish are not purposefully included in broodstock.

Brett Farman asked how the proportion of age-3 fish in the population is estimated. Tonseth said age classes are based on the size of fish. He said during broodstock collection, age-3 determination is based on the size of both hatchery- and natural-origin fish, and age is confirmed via scale analysis after collection and spawning. Mackey said spawning-ground survey data could be used to estimate the proportion of natural age-3 fish in the population. Tonseth said the natural age-3 population estimate is determined by a run composition assessment. Catherine Willard asked if there is an estimate of age-3 fish incorporated into the brood based on size. Tonseth said this information is in the annual report.

Pat Phillips said protocols for including age-3 fish in broodstock have changed often over time. Tonseth said recent literature suggests younger age-at-maturity adults produce progeny with younger age-at-maturity juveniles. Mackey also suggested that in addition to environmental and genetic influences on age-at-maturity, there may be epigenetic influences to consider. Kirk Truscott said age-3 fish should not be eliminated entirely from broodstock, but due to concerns about over-representation, a discussion is warranted. Tonseth said the solution may be a size cutoff that still allows a certain percentage of age-3 fish in the broodstock to help maintain a natural age structure. Willard said in the Chiwawa program, the percentages of age-3 fish is 5.5% for wild fish and 11.3% for hatchery fish, and before 2011, percentages were higher. Tonseth said changes were made to the program in 2011 to limit age-3 males being included in the broodstock. Truscott said changes to water source were also made that were intended to minimize age-3 fish being included. Todd Pearsons suggested also examining literature on reproductive success of age-3 fish. He said one reason age-3 males were excluded from broodstock in the past is that they have not performed as well in the natural environment as older fish. Murdoch said even if age-3 fish are incorporated into the broodstock at the same rate as appears in the wild, age-3 fish pass on genes at a higher rate in hatcheries than the in the wild—another consideration to limit inclusion of age-3 males. Mackey said in the wild, age-3 males reproduce at a frequency-dependent rate. That is, if there are few age-3 fish, they tend to proportionally perform better; if there are many age-3 fish, they tend to proportionally perform worse.

Bacterial Kidney Disease Risk Assessment Criteria and Management/Data Series Implications

Tonseth said a question was raised about BKD risk assessment criteria and management implications. Betsy Bamberger said Douglas PUD is now using WADDL's diagnostic services and WADDL does not numerically report optical density values for *Renibacterium salmonarium* (or Rsa1, the causative agent of BKD) in the same manner as WDFW or USFWS laboratories. Because WADDL is a lab accredited by the American Association of Veterinary Laboratory Diagnosticians (AAVLD), their protocols and processes are reviewed to ensure they are in conformance with ISO-international standards and consequently every positive result needs to be confirmed by a secondary assay. She said WADDL requires that Rsa1 be detected in any given sample by both an enzyme-linked immunosorbent assay (ELISA) and a molecular based test (i.e., a polymerase chain reaction test) before it is reported as either a "positive" or "negative" result. She said the different assays target different macromolecules and do not necessarily produce the same test results but corroboration between the two methods provides greater assurance that Rsa1 is indeed present. She said management decisions and culling in the past have been based only on optical density values.

Tonseth said he is concerned that this new method prevents looking at trends in BKD over time. He said as program changes are made, it is important to compare to past data. And, consultations

completed for these hatchery programs included specific titer levels by which programs are managed. He said these new methods may be inconsistent with Section 10 permits. He said it also creates an issue regarding previous decisions and conversations about specific optical density levels by which programs will be managed. He added that wild fish (in conservation programs such as spring Chinook salmon) also have a higher standard of care than hatchery fish, and it took a long time to come to agreement on the culling protocols due to WDFW's policy on culling viable fish. He asked if changing the way results are presented (and interpreted) compromises the agreement? He said it is important to maintain confidence that these programs can be managed in the manner by which they have been managed in the past. Truscott said the 2006 SOA and culling protocol considers below-low, low, moderate, and high optical density values and management actions associated with each level. He said only having positive/negative results from WADDL changes how these fish are managed. Tonseth added that WDFW does not favor culling more fish and collecting additional broodstock as a solution.

Pearsons asked if WADDL produces an optical density value and if they could provide the results with the understanding that data are unverified. Bamberger said WADDL expressed willingness to develop tests that fit the program's needs with the understanding that the results reported would not be validated by a secondary assay. Bamberger warned that these data would have to be interpreted with caution. She also added that ELISA testing detects the antigen of the Rsal bacteriabut does not necessarily relate to risk of pathogen transference or a given fish's current infection status.. Tonseth said it would be helpful to have optical density values and positive/negative results to compare and consider side-by-side at least in the first year of this change. Truscott suggested that it might be preferable to even keep fish with high ELISA results but low transference. Tonseth said his concern is that fish are managed in a way that is consistent with terms of conditions of permits and SOAs. He said a new SOA may need to be developed that makes allowances for interpreting fish health results, with the help of NOAA to ensure the approach is consistent with the spirit and intent of permits. Pearsons suggested asking WADDL to provide optical density values and recommended the Hatchery Committees discuss this further throughout 2018 and 2019. Phillips added that historically, there is no correlation between culling to the agreed-to titer levels and outbreaks of BKD. Bamberger said ELISA data are just one piece of information that informs us about the health status of a population. Tonseth said lower rearing densities often produce healthier fish. Mackey also suggested that Bamberger present information on BKD and ELISA testing during an upcoming Hatchery Committees meeting. Representatives present agreed.

Differentiating Natural-Origin Okanogan Spring Chinook Salmon During Methow Program Broodstock Collection at Wells Dam

Tonseth said Truscott brought up the question of naturally spawning spring Chinook salmon in the Okanogan Basin and the potential for returning fish to be collected at Wells Dam instead of allowing to pass upstream to spawn as part of the Okanogan 10j reintroduction program. Truscott said as spawning fish are recovered in the Okanogan, genetic samples could be taken. Potential ideas to differentiate Okanogan spring Chinook salmon from Methow spring Chinook salmon were stated as follows:

- Genetic samples
- Parentage-based approach
- Elemental scale analysis
- Otoliths
- Fin rays
- Scale pattern analysis

Discussions about this item will continue.

Priest Rapids Hatchery Fall Chinook Salmon Integration – How to Achieve It Without Fish from Alternative Collection Sites/Methodology

This item does not pertain to the Hatchery Committees, therefore was not discussed.

Re-Evaluating the Size of Upper Columbia Spring Chinook Salmon Conservation Programs

Tonseth said an ongoing discussion will include the appropriate size of spring Chinook salmon conservation programs. He said WDFW and YN drafted the Wenatchee Basin spring Chinook Salmon management plan, which set the standard for conservation program size in the Wenatchee Basin. He said WDFW and YN will revisit the models used to develop this plan, update information in the models, and reassess assumptions that were made to determine if adjustments to conservation programs are warranted (in the Wenatchee Basin and other areas). He said he plans for this assessment to be completed in time to be incorporated into the 2019 Broodstock Collection Protocols. Truscott said reproductive success study results should be incorporated into this assessment. Tonseth said Andrew Murdoch has also been working to develop more accurate estimates of pre-spawn survival in the Wenatchee Basin (data that were lacking in the first management plan). Keely Murdoch said estimates of pre-spawn mortality were made at the time to determine the sliding proportion of natural influence (PNI) scale for Nason Creek. She said now that more years of data are available, pre-spawn mortality assumptions and estimates need to be updated. Results from safety-net program returns will also be incorporated. She said after the PNI sliding scale was made, a split was determined for the safety-net and conservation programs based on previous years' return rates. She summarized that the management plan is a living document and

adjustments should be considered, which she and Tonseth will take the lead on and report back to the Hatchery Committees around October 2018. Tonseth said additional modeling results are available for the Wenatchee Basin (but not yet for the Methow basin). Hillman asked if proposed adjustments would only affect the proportion of safety-net versus conservation program fish and not total hatchery production. Tonseth said that is correct. Truscott said changes to these program sizes could influence how readily PNI targets in the basins are achieved.

Pearsons said this topic was raised based on the number of fish predicted to return to hatchery programs in the Wenatchee Basin. He said in Nason Creek, the number of hatchery-origin fish predicted to return was much higher than the number of natural-origin fish. He asked if more natural-origin fish are being used to populate programs than are needed. Keely Murdoch said there is a lot of uncertainty in the 2018 run forecast. Peter Graf asked if programs could be sized along a sliding scale to account for varying run forecasts. Tonseth said the permits provide some flexibility in that the programs should not exceed more than 33% of the natural-origin component.

Tonseth said the updated analysis will incorporate, at a minimum, modeling, reproductive success data, estimates of capacity, stray rates, and adult management at Tumwater Dam. Pearsons suggested also considering how much of the conservation program is needed on the spawning grounds each year, with the safety-net program hardly being used. He said the safety-net programs can be evaluated to ensure they are not segregated programs (i.e., not allowed on spawning grounds). Farman said he does not have any immediate input on these discussion pieces from the NMFS perspective, but he sees value in re-evaluating the size of the programs and will provide input throughout the process.

Reviewing Edits and Comments in the Draft Broodstock Collection Protocols

Tonseth said he did not receive feedback from USFWS about the Tumwater Dam operations plan for lamprey passage. He said this plan includes at least an 8-hour open period for lamprey passage from 10 pm to 6 am, which is a compromise to meet other permit requirements. Willard said the open passage period is based on lamprey passage distribution at Rocky Reach Dam.

Tonseth said he also did not receive any feedback regarding modifications to the trapping schedule at the Chiwawa Weir.

In the draft document, Tonseth pointed out one unresolved comment from Douglas PUD regarding the number of PIT-tagged yearling summer Chinook salmon, which will depend on the outcome of an HCP Coordinating Committees discussion about a survival study. No further edits were needed in this section.

Tonseth noted that significant edits were made to the Wells steelhead section by Michael Humling (USFWS) and others. He asked if everyone saw those edits and if there are any questions. None were raised.

Mackey said there is a known shortage of summer Chinook salmon yearlings to be released in 2019 and proposed increasing the subyearling production for the 2019 release to make up the mitigation gap. He said Tonseth noted in response to this idea that it would result in an exceedance of the allowable release number for subyearlings. Mackey asked for feedback on this idea and said Douglas PUD is willing to produce extra subyearling fish to make up the gap but would not want to overproduce fish if it is not allowed by permits. Murdoch asked how much of an exceedance it would be for the subyearling release. Tonseth said the allowed subyearling release is 484,000 fish and overproducing to meet the mitigation gap would result in approximately 648,000 fish. Tonseth asked Farman to provide feedback, because production levels identified in permits are specific to production element (yearling versus subyearling), not just species. Tonseth said Craig Busack previously communicated concern about entities liberally interpreting release numbers. Farman agreed. Mackey said based on this feedback, Douglas PUD plans to produce as many yearling summer Chinook salmon as possible to meet release goals, but not overproduce subyearlings to make up the mitigation gap.

Mackey also suggested adding flexible language for in-season decisions based on fecundity, age-at-return, size-at-return, prespawn mortality, and other items. Mackey said even with this flexibility added, field staff would need to discuss and describe over- or under-collection with the Hatchery Committees, but was seeking scope to allow broodstock collection staff to make minor adjustments in real time. Phillips asked if hatchery fish are being removed for broodstock and for surplus, is there a difference between collecting for broodstock or surplus? Tonseth said there is a difference if the fish are listed because permits are specific to the number of broodstock that can be collected. He said incidental and direct impacts are associated with a certain activity for a specific fish. He said there are different take components for surplussing. Tonseth said if there is something happening at a facility or program that is outside the expected norm, it should be understood and discussed before more fish are collected. Phillips said one issue in 2017 was that prespawn mortality did not become an issue until it was too late to collect more fish. He said the mitigation program requires the program to produce a certain number of fish, while the permit limits broodstock collection, so it is odd that additional fish cannot be collected for broodstock as a buffer, and later converted to surplus if not needed. Tonseth said if the fish produced from those extra broodstock become fry, it becomes a WDFW responsibility. Phillips said 220 brood were lost in 2017 before spawning was completed, and he would like to prevent that from happening in the future. Tonseth said collecting extra broodstock may be within permit conditions for unlisted fish, and could be considered, but for listed programs or programs based on natural-origin fish, it is not allowable. Truscott said an

additional consideration to collecting extra broodstock is the impacts of the collection activity—collecting out of the Wells west ladder for a longer period of time has impacts, for example. Phillips clarified that he is advocating additional brood collection from the Wells volunteer channel for the Columbia River safety-net program. Truscott said for that discussion, NOAA should provide input. Tonseth said there should still be a Hatchery Committees' nexus to those decisions, and in the past, collecting extra fish was allowed but should not be allowed as a substitute for good fish-culture practices. Farman said ongoing discussions like these suggest the program may not have been fully described in the permits. Phillips said the hatchery programs in the region continue to see considerable impacts from Columnaris disease on summer Chinook salmon brood and lower fecundities. He said this is perhaps cyclical, but he would like to take a cautious approach to making sure the program meets its production goals.

Regarding changes to the Okanogan steelhead program, Pearsons said he thought backup collections for Okanogan steelhead were occurring in the spring instead of the fall. Tonseth said the protocols state any steelhead with a coded wire tag from the Okanogan program that is collected as part of the Columbia River program collection in the fall can be allocated to the Okanogan program. Tonseth said 60 adults are collected as backup for the Methow steelhead program in the fall, but no backup adults for the Okanogan program are intentionally collected (some are allocated based on coded wire tags). Tonseth made clarifying edits in the document. Phillips noted that the newly designed Omak Creek weir may result in changes to this section in the future.

Regarding spring Chinook salmon management in the Methow Basin, Pearsons said Michael Humling provided comments about trapping at Methow FH. Pearsons said to be consistent with permits, additional trapping requirements should not be placed on trapping at Methow FH. Pearsons asked if natural-origin fish are returning and attempting to spawn, should the trap be operating? Tonseth said the Methow FH and Winthrop NFH facilities need to operate in conjunction to meet PNI goals in the Methow Basin. So even if enough conservation program fish have been collected to meet production obligations, and Winthrop NFH-origin fish are still volunteering to the facility, they should continue to be removed. Tonseth suggested possibly implementing adult translocation for natural-origin fish that are collected in the facility under these conditions. Pearsons said he would prefer flexibility in closing the trap so that the conservation fish can spawn naturally without being handled. Pearsons said in order to prioritize the program, translocation is not currently being implemented and fish collected are brought into the safety-net program, but it is unknown what the fish would do if the trap were closed. Tonseth said relocating the fish would be beneficial in comparison to the fish spawning very near or in the hatchery channel. Pearsons agreed and said it is just an unknown. Willard asked if Pearsons wants to see the benefits of translocating fish (spawning naturally). Pearsons said yes and translocation is not currently being implemented for multiple reasons, one of them being it is unknown how well the fish would perform (so they are brought into

the safety-net program). Willard said she understood that the safety-net broodstock was prioritized because it is a higher priority than translocating fish to spawn naturally, not because spawning success is unknown. She said if there are enough fish to fill the safety-net program on site, additional returning fish should be translocated. Mackey said running the trap at Methow FH is not a lot of work due to partnership and collaboration with USFWS, where spring Chinook are transported as surplus to from Methow Hatchery to WNFH. Truscott said he thinks the USFWS will continue to operate the ladder at Winthrop NFH to collect Methow-origin fish, so it is a reciprocal activity. Cooper said the Methow FH and Winthrop NFH staff holistically manage the Methow population and collect fish for both facilities. Tonseth agreed and said the basin is expected to be managed to a basin-wide PNI level, regardless of which program is contributing. He said both hatcheries need to trap aggressively to meet this target.

Pearsons said his concern is about permit conditions. Mackey said Douglas PUD is amenable to continue trapping after broodstock and adult management targets are met. However, he said there is a concern that trapping and handling conservation fish may diminish their potential natural contribution. He also asked if they had not been trapped, would they have remained and spawned in the location they were collected, or would they have spawned elsewhere? Tonseth clarified that once safety-net and adult management targets are met, fish recruiting to the trap are available for translocation. Tonseth said there is a caveat in the translocation plan that PNI and proportion of hatchery-origin spawners could exceed permit conditions during the adjustment period. He suggested that a short-term study of translocation could fit into the adjustment period. Murdoch agreed and suggested prioritizing translocation over closing the trap. Graf clarified that the permit is not very restrictive to trapping operations and allows for closing the trap based on runs and conditions. Tonseth said the protocols are a living document and there is a placeholder in the current year for trap operations after safety-net and adult management goals are met. Mackey said in 2017, the trap was operated for a long time and then closed when fish ceased recruiting to it due to spawning and it is difficult to meet adult management targets in most years. Tonseth said based on the current forecast, there will be little to no adult management on the conservation program in 2018. Farman asked if there is a risk of collecting excess fish and not translocating them? And, are there good spawning areas for translocation where production would be better than below the trap? Willard said the translocation plan includes up to 200 fish with a sex ratio similar to the run at large. Pearsons said there is a chance that too many fish would be collected. Mackey said there is also a chance that the hatchery attracts a skewed sex ratio, and there would be excess males needing to be released back to the river. Tonseth said there will be a better understanding of the run and what to expect at the trap this year once fish start arriving at Wells Dam. Pearsons suggested using more flexible language to account for this adaptive management approach. Tonseth agreed and revised the document.

Murdoch said Tonseth has historically put a placeholder for coho salmon broodstock collection protocols in the Broodstock Collection Protocols document. Murdoch said the coho salmon protocols are due in mid-June each year and asked if it would be helpful to have those protocols included as part of this document in future years. Representatives present were generally in favor of adding the coho salmon protocols and Murdoch said she will coordinate internally and with Tonseth to incorporate the coho salmon protocols in 2019.

The HCP Hatchery Committees approved the draft 2018 Broodstock Collection Protocols as follows: WDFW, Douglas PUD, Chelan PUD, USFWS, NMFS, YN, and CCT approved on April 18, 2018. Tonseth noted that the section pertaining to Priest Rapids Hatchery may change during the PRCC HSC meeting and he will distribute a final version on April 19, 2018. (Note: the Wells HCP Coordinating Committee will vote on the Wells portion of this document during their April 24, 2018 meeting.)

Hillman noted that the protocols are a very large document with information that expands every year. He asked about the possibility for decreasing detail in some sections to facilitate earlier approval of the protocols and less arduous reviewing. Tonseth said adult management plans are often held up by receiving the spring Chinook salmon forecast, but the main body of the document could likely be streamlined and reviewed earlier, with adult management information being added for review later. Representatives present were generally in favor of reducing the size of the protocols document. Hillman noted that many of the details and back-up plans need to be discussed by the Hatchery Committees each year anyway, so those details may not need to be included in the document or could be attached as appendices.

IV. HCP Administration

A. Next Meetings

The next Hatchery Committees meetings are May 16, 2018 (Grant PUD), June 20, 2018 (Grant PUD), and July 18, 2018 (Grant PUD).

V. List of Attachments

Attachment A List of Attendees

Attachment B Draft Methodology for Establishing Baseline Conditions in the Wenatchee Steelhead Program

Attachment C Draft 2018 Broodstock Collection Protocols (v4)

Attachment D Emerging Discussions from draft 2018 Broodstock Collection Protocols

**Attachment A
List of Attendees**

Name	Organization
Tracy Hillman	BioAnalysts, Inc.
Sarah Montgomery	Anchor QEA, LLC
Catherine Willard*	Chelan PUD
Tom Kahler*	Douglas PUD
Greg Mackey*	Douglas PUD
Pat Phillips	Douglas PUD
Betsy Bamberger	Douglas PUD
Todd Pearsons‡	Grant PUD
Peter Graf‡	Grant PUD
Deanne Pavlik-Kunkel‡	Grant PUD
Mike Tonseth*	Washington Department of Fish and Wildlife
Alf Haukenest†	Washington Department of Fish and Wildlife
Chris Moran	Washington Department of Fish and Wildlife
Matt Cooper*	U.S. Fish and Wildlife Service
Brett Farman*†	National Marine Fisheries Service
Charlene Hurst*†‡	National Marine Fisheries Service
Emi Kondo†‡	National Marine Fisheries Service
Kirk Truscott*	Colville Confederated Tribes
Keely Murdoch*	Yakama Nation

Notes:

* Denotes Hatchery Committees member or alternate

† Joined by phone

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