

Memorandum

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

Date: July 24, 2019

From: John Ferguson, HCP Coordinating Committees Chairman

cc: Larissa Rohrbach and Kristi Geris

Re: Final Minutes of the June 25, 2019 HCP Coordinating Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plan (HCP) Coordinating Committees met at the Grant PUD office in Wenatchee, Washington, on Tuesday, June 25, 2019, from 10:00 a.m. to 11:45 a.m. Attendees are listed in Attachment A to these meeting minutes.

Action Item Summary

- Lance Keller will review subyearling Chinook salmon sampled at the Rocky Reach Juvenile Sampling Facility (RRJSF) during the summer spill season at Rocky Reach Dam, to determine the following: 1) whether the index samples collected represent overall passage trends based on passive integrated transponder (PIT)-tag detections in the bypass across the season, notably during high flow years such as that experienced in 2018; and 2) whether any adjustments are needed while also maintaining continuity with historical data in the Columbia River Data Access in Real Time database (DART; Item I-C). *(Note: Keller provided the review of subyearling sampled at RRJSF by email following the meeting on June 25, 2019, as distributed to the HCP Coordinating Committees by Larissa Rohrbach that same day.)*
- Kirk Truscott will contact Lance Keller to further discuss options to increase attraction flow through the cul-de-sac area in the Rocky Reach Dam forebay (near Turbine Units C1, C2, and C3) while Turbine Units C1 and C3 are offline for maintenance (Item I-C).
- Lance Keller will provide updates about the repair of Rocky Reach Dam Turbine Unit C1 and Turbine Unit C3 to the HCP Coordinating Committees as soon as additional information becomes available (Item I-C).
- Douglas PUD will review available PIT-tag detection data from April 9 to April 30, 2019, covering the span of Wells Dam bypass non-compliance events for Turbine Units 1 to 4 and Bypass Bays 2 and 4, to identify possible impacts to fish passage and survival through the Wells Project (Item I-C).
- The following action items pertain to the Decision Item whether to approve Douglas PUD's request not to tag with coded wire tags (CWTs) the component of brood year (BY) 2018 summer Chinook salmon raised at Wells Hatchery that will be used for the 2020 Survival Verification Study (2020 Survival Study) because they will be tagged with PIT-tags and

adipose clipped (Item II-A) (*Note: This Decision Item will be brought forward to the July 23, 2019 meeting agenda*):

- Tom Kahler will inform the HCP Coordinating Committees of the planned dates in July when CWT tagging will occur. (*Note: Kahler stated via email on June 26, 2019, that CWT tagging will occur in August, as distributed by Larissa Rohrbach the following day.*)
- Tom Kahler will respond to Keely Murdoch's initial questions about the effects of a decision not to tag with CWTs the 2020 Survival Study fish on the following:
 - Monitoring and evaluation studies
 - Estimates of smolt-to-adult ratios (SARs)
 - The collection of harvest information
- Chad Jackson will determine whether there are concerns associated with not coded wire tagging the study fish from an ocean harvest standpoint.
- Larissa Rohrbach will distribute draft meeting minutes from this agenda item to Kirk Truscott and Scott Carlon following the meeting for their immediate consideration. (*Note: Rohrbach emailed a draft of the relevant minutes on June 26, 2019, to Truscott and Carlon, Cc Tom Kahler, John Ferguson, and Kristi Geris.*)
- HCP Coordinating Committees representatives will email their own or their Hatchery Committees representative's comments and questions to Larissa Rohrbach for distribution by next Wednesday July 3, 2019. (*Note: Per Tom Kahler's email on June 26, 2019, a CWT tagging date in August allows the issue to be brought to the HCP Hatchery Committees in the regular monthly meeting on July 17, 2019.*)
- The HCP Coordinating Committees will vote on whether to approve Douglas PUD's request via email or at the next meeting depending on when a decision is needed for CWT tagging operations. (*Note: Tom Kahler stated via email on June 26, 2019, that CWT tagging will occur in August, as distributed by Larissa Rohrbach the following day.*)
- Lance Keller will provide an update by email on the performance of the new Rocky Reach Dam C3 Unit Chesterton seals by Friday, June 28, 2019 (Item III-A).
- Larissa Rohrbach will distribute by email the acoustic tag specifications sheets shared by Lance Keller following today's meeting (Item IV-A). (*Note: Keller provided the specifications sheets by email following the meeting on June 25, 2019, as distributed to the HCP Coordinating Committees by Rohrbach that same day.*)
- Lance Keller will provide additional information on the change in ATS Inc. acoustic tag weights with different battery types (Item IV-A).
- The HCP Coordinating Committees meeting on July 23, 2019, will be held **in-person** at the Grant PUD Wenatchee office in Wenatchee, Washington (Item V-A).

Decision Summary

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

Agreements

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

Review Items

- The draft *Wells Project Subyearling Chinook Life-History Study 2011-2013 Draft Final Report* was distributed to the HCP Coordinating Committees by Kristi Geris on May 24, 2019, and is available for a 60-day review with edits and comments due to Tom Kahler by Tuesday, July 23, 2019 (Item I-A).

Finalized Documents

- There are no documents that have been recently finalized.

I. Welcome

A. Review Agenda (John Ferguson)

John Ferguson welcomed the HCP Coordinating Committees and reviewed the agenda. Ferguson asked for any additions or changes to the agenda. No additions or changes were requested.

Kirk Truscott was unable to attend today's meeting and has asked for additional time to consider the decision item "2020 Survival Verification Study – Coded Wire Tags." Note that after discussion in the meeting, the members determined that additional time was needed to understand implications of the decision, so the vote was delayed (see summary of Item II-A).

Ferguson reminded the HCP Coordinating Committees that comments on the *Wells Project Subyearling Chinook Life-History Study 2011-2013 Draft Final Report* are due to Tom Kahler by July 23, 2019.

B. Meeting Minutes Approval (John Ferguson)

The HCP Coordinating Committees reviewed the revised draft May 28, 2019 meeting minutes. Larissa Rohrbach reviewed one comment and incorporated all comments and revisions received from members of the Committees into the revised minutes. HCP Coordinating Committees members present approved the May 28, 2019 meeting minutes, as revised. Jim Craig was absent from the May 28 meeting, so he abstained from voting to approve the minutes. Scott Carlon provided his vote to approve the minutes by email to Rohrbach and John Ferguson on May 17, 2019.

Ferguson provided a status update on the 2019 Columbia River sockeye return. He said this information pertains to a potential desire to revisit the decision made by the Wells HCP Coordinating Committee on May 28, 2019, to approve the Columbia River Inter-Tribal Fish Commission's annual request to tag sockeye salmon at Wells Dam in 2019, with the caveat that approval of the tagging will be reviewed again if low flow and warm water migration conditions develop. Ferguson said the 10-year average through June 23 is 117,556; this year's count as of June 23, 2019, is 22,894. Ferguson said sockeye abundance could be low this year (approximately one-fifth of the 10-year average) or could be late due to river conditions.

C. Last Meeting Action Items (John Ferguson)

Action items from the HCP Coordinating Committees meeting on May 28, 2019, and follow-up discussions, were as follows. (*Note: Italicized text corresponds to agenda items from the meeting on May 28, 2019:*)

- *Lance Keller will review subyearling Chinook salmon sampled at the Rocky Reach Juvenile Sampling Facility (RRJSF) during the summer spill season at Rocky Reach Dam, to determine the following: 1) whether the index samples collected represent overall passage trends based on passive integrated transponder (PIT)-tag detections in the bypass across the season, notably during high flow years such as that experienced in 2018; and 2) whether any adjustments are needed while also maintaining continuity with historical data in the Columbia River Data Access in Real Time database (DART; Item II-C).*

Keller provided the results of his analysis via email following the meeting, as distributed to the HCP Coordinating Committees by Larissa Rohrbach that same day. Keller said the fish count trends are similar between the subyearling Chinook salmon index sample counts at the RRJSF (bypass) and counts of PIT-tagged subyearling Chinook salmon detected at the Rocky Reach Dam Juvenile Surface Collector (RRJ) site. Keller said that the subyearling count at the bypass begins 3 days earlier than at the RRJ. He said more fish passage occurred at night, which aligns with observations made at other sites. He said the question is whether sampling is occurring at the right time. Keller said that he posed the question to fish passage statistician Dr. John Skalski who provided the expert opinion that as long as sampling is carried out at the same time of day and same days of the year every year, the obligation to observe fish presence or absence according to HCP obligations has been met.

- *Kirk Truscott will contact Lance Keller to further discuss options to increase attraction flow through the cul-de-sac area in the Rocky Reach Dam forebay (near Turbine Units C1, C2, and C3) while Turbine Units C1 and C3 are offline for maintenance (Item II-C).*

This action item will be carried forward.

- *Lance Keller will provide updates about the repair of Rocky Reach Dam Turbine Unit C1 and Turbine Unit C3 to the HCP Coordinating Committees as soon as additional information becomes available (Item II-C).*

This action item will be discussed during today's meeting and will also be carried forward.

- *Anchor QEA, LLC, will contact Jim Craig to obtain U.S. Fish and Wildlife Service (USFWS) approval of the updated HCP Hatchery Committees and Priest Rapids Coordinating Committee (PRCC) Hatchery Subcommittee email distribution lists (Item III-A).*

Kristi Geris emailed Craig with this request following the meeting on May 28, 2019, and Craig provided USFWS's approval of the lists via email on May 29, 2019, as distributed to the HCP Coordinating Committees by Geris that same day.

- *The HCP Coordinating Committees will begin discussing the necessity and significance of the data behind the Columbia River Inter-Tribal Fish Commission's (CRITFC's) annual request to tag sockeye salmon at Wells Dam during the HCP Coordinating Committees meeting in December 2019 (Item IV-A).*

Kristi Geris added this to the agenda for December 2019.

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

Tom Kahler said a memorandum is currently being drafted and he may be able to present findings in July. This action item will be carried forward.

II. Douglas PUD

A. DECISION: 2020 Survival Verification Study – Coded Wire Tags (Tom Kahler)

Tom Kahler sent information supporting the request for a decision via email, as distributed by Kristi Geris on June 14, 2019. The email stated the following:

"In 2009, the HCP Parties approved a request by Douglas PUD to not coded wire tag study fish for the 2010 Survival Verification Study because 100 percent of those fish would be PIT tagged and ad-clipped. Douglas PUD made that request to not CWT study fish to avoid any negative cumulative effects of multiple tags/marks on their survival. As we near the date for ad-clipping and CWT tagging for the BY 2018 summer Chinook yearlings at Wells Hatchery, Douglas PUD again requests to not CWT the component of the Wells yearling summer Chinook that will serve as study fish for the 2020 Survival Verification Study.

Specifically, with the approval of the Wells Coordinating Committee, Douglas PUD would not CWT 110,000 of the 320,000 (release target) yearling summer Chinook from BY 2018, and instead, those

110,000 fish not tagged with CWTs would be PIT tagged. Those 110,000 fish would be ad-clipped this summer (when the remainder of the BY 2018 yearlings are CWT'd and ad-clipped), then PIT tagged in November. The 110,000 number of PIT-tagged fish is a conservative tagging rate to ensure the availability of at least 100,000 PIT-tagged study fish for the study in April and May 2020, accounting for the in-hatchery mortality rate of PIT-tagged study fish between tagging and release in 2010."

Kahler said that in preparations for the previous 2010 summer Chinook Survival Verification Study (2010 Survival Study), a decision was made not to tag those study fish with CWTs in addition to the PIT tags used for the 2010 Survival Study. Kahler said Douglas PUD had not asked for a similar change to the CWT tagging approach for Wells Hatchery summer Chinook salmon when developing this 2020 study. He said that when working through the bioprogramming issues, they realized in the 2010 Survival Study that Douglas PUD had elected not to tag study fish with CWTs to minimize handling stress and effects of multiple tags. Douglas PUD decided to bring this proposed change to the Wells HCP Coordinating Committee this June as a decision item because CWT tagging would need to occur in July.

Douglas PUD proposes that out of 320,000 Wells Hatchery program yearling summer Chinook salmon that normally receive a CWT and are adipose fin-clipped, the 110,000 designated as 2020 Survival Study fish would be PIT tagged and adipose fin-clipped but would not receive a CWT. Fish would still be available for harvest because of the adipose fin clip.

Keely Murdoch had questions about the proposed change to tagging. Murdoch asked if the fish designated for the 2020 Survival Study would be part of the actual hatchery production or in addition to the normal production. Kahler responded that they would be part of the normal Wells Hatchery production but that in 2010 the Survival Study fish were in addition to the normal hatchery production. Kahler said this is an important difference between the decision made for the 2010 Survival Study and the proposal for the 2020 Survival Study. Murdoch asked if there are any hatchery monitoring and evaluation programs that could be compromised by the use and interrogation of PIT tags instead of CWTs. She asked if SAR estimations that depend on CWT counts could be compromised, noting that in her observation SARs estimated using CWTs differ from SAR estimates made with PIT tags detections due to differences in redetection efficiency. Murdoch also asked if there is any place where these fish would normally be interrogated for CWTs but not for PIT tags, for instance in creel surveys, and if so, would some redetections be miscounted, or harvest information missed? Jim Craig said the USFWS does scan for PIT tags during carcass surveys. Andrew Gingerich asked if Chad Jackson knew whether there are any areas where CWTs are normally interrogated, but PIT tags are not. Jackson said the one concern may be whether the reduction in coded wire tagged fish released would affect ocean surveys or ocean harvest data collection. John Ferguson asked if SARs are calculated using CWT counts. Murdoch said yes, CWTs are collected in spawning surveys

and broodstock collection. Kahler said for Wells Hatchery summer yearling Chinook salmon, CWTs are the only source of data for calculating SARs except for the PIT tags used in the 2010 study.

Craig asked if this proposal has been brought to the HCP Hatchery Committees. Kahler said no because the Hatchery Committees did not meet this month. Kahler said this topic was discussed in the HCP Hatchery Committees in 2009 for the previous 2010 Survival Study where more time was available to discuss the tagging prior to making a decision. Kahler read from the May 2009 HCP Hatchery Committees minutes to review the approach taken in 2010. Kahler said the same questions came up but that the proposal was approved after discussion.

Ferguson said the proposal to mark Wells Hatchery program fish with a PIT tag instead of a CWT for the 2020 Survival Study is different from the approach used to rear and tag additional fish for 2010 Survival Study. Ferguson said there are questions that require further consideration and the consensus is that the Wells HCP Coordinating Committee is not prepared to vote on the decision in today's meeting.

The following action items were outlined to further the discussion via email, which should lead to a decision prior to CWT tagging operations at Wells Hatchery (*Note: This Decision Item will be brought forward to the July 23, 2019 meeting agenda*):

- Kahler will inform the HCP Coordinating Committees of the planned dates in July when CWT tagging will occur. (*Note: Kahler stated via email on June 26, 2019, that CWT tagging will occur in August, as distributed by Larissa Rohrbach the following day.*)
- Kahler will respond to Keely Murdoch's initial questions about the effects of a decision not to tag with CWTs the 2020 Survival Study fish on the following:
 - Monitoring and evaluation studies
 - Estimates of SARs
 - The collection of harvest information
- Jackson will determine whether there are concerns associated with not coded wire tagging the study fish from an ocean harvest standpoint.
- Rohrbach will distribute draft meeting minutes from this agenda item to Kirk Truscott and Scott Carlon following the meeting for their immediate consideration. (*Note: Rohrbach emailed a draft of the relevant minutes on June 26, 2019, to Truscott and Carlon, Cc Kahler, Ferguson and Geris.*)
- HCP Coordinating Committees representatives will email their own or their Hatchery Committees representative's comments and questions to Rohrbach for distribution by next Wednesday July 3, 2019. (*Note: Per Kahler's email on June 26, 2019, a CWT tagging date in August allows the issue to be brought to the HCP Hatchery Committees in the regular monthly meeting on July 17, 2019.*)

- The HCP Coordinating Committees will vote on whether to approve Douglas PUD's request via email or at the next meeting depending on when a decision is needed for CWT tagging operations. (Note: Kahler stated via email on June 26, 2019, that CWT tagging will occur in August, as distributed by Rohrbach the following day.)

B. Wells Project Subyearling Chinook Life-History Study 2011-2013 Draft Final Report (Tom Kahler)

The draft *Wells Project Subyearling Chinook Life-History Study 2011-2013 Draft Final Report* was distributed to the HCP Coordinating Committees by Kristi Geris on May 24, 2019, and is available for a 60-day review with edits and comments due to Tom Kahler by Tuesday, July 23, 2019.

Kahler asked whether representatives had any questions regarding the content of the report. Keely Murdoch asked for clarification on differences in migration behavior between Snake River subyearling Chinook salmon and Upper Columbia River subyearling Chinook salmon, information that was initially provided in the associated presentation that was given in the May 28, 2019 meeting.

Kahler said that in the Snake River, the Chinook salmon are fall-run Chinook salmon that are already in the migrant stage and are larger by the time the juveniles migrate through the lower Snake River hydroprojects as subyearlings. In contrast, Chinook salmon from the Okanogan and Methow rivers or Rocky Reach tributaries are passing through reservoirs at a very small size; they are essentially swim-up fry. To give an idea of the size of the subyearlings in the Snake River, 99% of the size distribution can be tagged with a Juvenile Salmon Acoustic Technology System (JSATS) tag to evaluate passage through the Snake River projects, even though the minimum fish length for tagging is 95 mm (fork length).

John Ferguson asked what the survival rate requirement is for the Snake River hydroprojects. Kahler said they don't have a "project" (tailrace-to-tailrace) survival rate requirement for individual hydroprojects like they do for the mid-Columbia PUD projects. Instead, they have a dam-passage (forebay-to-tailrace) survival standard of 96%. It was noted that the survival standard is for yearlings, and the survival standard for subyearlings in the FCRPS is lower: 93% dam-passage survival.

Murdoch asked for confirmation that the mid-Columbia HCPs do not have that same requirement, and Kahler answered that is correct. Kahler said the main point to emphasize is that in the Upper and Mid-Columbia, biologists are trying to study fry, whereas in the Snake River they are studying the migrant life stage.

No other questions about the draft report were asked in the meeting. Ferguson concluded the agenda item by reminding the HCP Coordinating Committees that the 60-day review period is ongoing and ends on July 23, 2019.

III. Chelan PUD

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

Lance Keller said work continues on Turbine Unit C1. He said the unit has been disassembled to the point that the trunnion bushings are revealed. He said the project is still on the same timeline for completion as previously discussed. The disassembly will allow for the replacement of the trunnion seals to avoid the problem with seals that has occurred with Turbine Unit C3.

Keller said new engineered Chesterton seals for Turbine Unit C3 are on site at Rocky Reach Dam. He said the seals have been engineered for the site and are undergoing testing to determine if they are performing as designed. He said testing began last week. Keller said he would provide an update on performance of the Chesterton seals by end of week. Keller said Chelan PUD will continue to explore the blade block option for Turbine Unit C3, as well. He said there will be engineers from Italy on site next week. He said that even if the seals work, hydraulically locking the blades may be pursued as an additional control option.

Keller said there are additional seals en route from Voith (a hydroproject manufacturer) for Turbine Unit C3 that could also be installed and tested.

Keller said that at the end of September or early October, Turbine Unit C9 will also be coming on line. Keller said that Chelan PUD has never conducted commissioning of two turbine units simultaneously. Keller said because of this conflict he will inquire whether the schedule for bringing C1 online may shift earlier. He said either way, the return of Turbine Unit C1 to service will occur outside the 2019 juvenile passage season.

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

Lance Keller said Chelan PUD continues to modernize Turbine Unit B4. Keller said some parts have caused delayed (the rotor poles and hydraulic power unit) but Chelan PUD does not expect the schedule for project completion to be delayed. Keller said Turbine Unit B4 is scheduled to come online in the fourth quarter of 2019.

Keller said the operating ring that sits on top of the wicket gates associated with Turbine Unit B4 will be repaired and retained to avoid schedule delays. The rings on the other units will be modernized and replaced first. There is no critical need to change the operating ring on B4 immediately so it will be modernized after the other units. The head cover unit for B4 will also be replaced.

IV. Joint HCP Coordinating Committees and PRCC

A. Subyearling Chinook Salmon Studies (All)

John Ferguson welcomed Peter Graf (Grant PUD) who joined the discussion of approaches to subyearling Chinook salmon studies.

Lance Keller reviewed the availability of current acoustic tag technology to illustrate improvements that have been made since the last review in 2016. Keller distributed specifications sheets for current tag types and made comparisons to tags that were discussed in 2016 (acoustic tag specifications sheets were emailed by Keller and distributed by Larissa Rohrbach following the meeting, see Attachment B).

JSATS AMT by Lotek

In 2016 the JSATS AMT by Lotek was the smallest tag offered by the company. It weighed 0.28 gram in air and had a 25-day battery life using a 5-second ping rate (model number L-AMT-1.416). The specific information for this tag is still current, as the tag has not changed since 2016.

Chelan PUD uses a 3-second ping rate for higher resolution in the immediate proximity of their hydroprojects. A higher ping rate provides more detections and higher accuracy in the location of the last detection. Andrew Gingrich said there is better detection probability, but shorter tag life associated with the higher ping rate. Keller said yes. Ferguson asked what tag lifespan is needed. Keller said it is ideal to have a tag that has adequate tag life to ensure detection throughout the project area, as well as the downstream detection arrays. Keller said this is easily achieved with spring migrants (that move downstream rapidly and are sure to out-migrate), but not ideal for use in subyearlings that could possibly residualize in the reservoirs. Gingrich said the fish does not even have to residualize, it just has to take 15-20 days to move downstream, which it looks like many subyearlings do.

Keely Murdoch said if you were catching run-of-river fish in the Juvenile Bypass System at Rocky Reach Dam you would have a higher propensity to capture actively migrating fish of an appropriate size. Murdoch asked whether there are any subyearling hatchery releases upstream of Rocky Reach Dam. Keller said yes, from Chief Joseph Hatchery and Wells Fish Hatchery. Keller said in late May you see a pulse of hatchery-origin subyearling Chinook salmon that causes Chelan PUD to initiate the spill program, while the wild subyearlings begin outmigrating later into June.

Murdoch asked whether there is any PIT-tag data that could be used to observe migration rate. Tom Kahler said they have been PIT tagging fish at Wells Fish Hatchery to support the Comparative Survival Study fish. Keller said using PIT-tagged hatchery fish would lead to an assumption that the migration rate of the hatchery fish represents the whole population. Murdoch said there are similar assumptions made in other cases. Keller said Chelan PUD tags fish that are run-of-river; as long as

size and health criteria are met, fish are tagged and regardless of their origin. Keller said it is obvious when hatchery subyearlings arrive in May and wild-origin summer fish arrive later. Keller said the timing of the wild fish is not very predictable and depends on environmental conditions. Murdoch asked if there are any studies that are tagging wild fish. Kahler said there are some in the Methow and Okanogan rivers, and the Colville Confederated Tribes continue tagging in Wells Reservoir. Graf said some fish are tagged in the Entiat River screw trap. Graf said that for the previous subyearling summit held in 2016, he analyzed PIT-tag data coming from the Entiat River. Graf said some subyearlings come out of the Entiat River and go through Rocky Reach Dam quickly, then have a long delay downstream of Rocky Reach Dam; some go straight to McNary Dam and some take a year to get to McNary Dam. Graf said Tom Desgroseillier (USFWS) may have carried on that work. Kahler emailed presentations from the June 2016 subyearling workshop by Graf (*Comparing the Migration Patterns of Yearling Spring Chinook and Subyearling Summer Chinook Salmon Through the Mainstem Columbia River Using Available PIT-Tag Data*) and Desgroseillier (*Life-History of Subyearling Chinook Migrants from the Entiat River*), as distributed by Rohrbach that same day.

Vemco-HTI Tag

Keller said the next tag to discuss is the Vemco-HTI tag. He noted that Vemco and HTI have merged and that HTI's parent company Amirix has been purchased by InnovaSea, a company focused on aquaculture. Keller said the 307-kilohertz tag is 0.3 gram in air, can be detected on Vemco or HTI receiver systems, and the battery life is 45 to 90 days (it is closer to 45 days with a 3-second ping rate). Keller said the finished product will be more complete (requiring less steps for the user) than in the past. Keller said the size is slightly smaller than in the past (Vemco was previously using a 0.5- to 0.65-gram tag in 2011, which was still the best available tag in 2016). Graf asked if the batteries are different or if they are all from technology developed at Pacific Northwest National Laboratory (PNNL). Gingerich said PNNL will do the research and development of tags, and then after a year or so, hand off the specifications to the manufacturers who then mass produce the tags. Ferguson said the batteries would likely be manufactured by a battery manufacturer.

ATS JSATS SS300 Acoustic Micro Transmitter

Keller introduced the next tag, the ATS JSATS SS300 acoustic micro transmitter. Keller said it has multiple ping rates; the battery lasts 23 days using the 3-second ping rate. More battery life requires the larger tag size and additional batteries. In 2016 the tag weight was 0.34 gram in air, now it is 0.3 gram, and the battery life is the same. Gingerich said this is the tag that has been used by U.S. Army Corps of Engineers exclusively on lower Columbia River studies.

Ferguson asked what the body burden recommendations are, approximately 5%? Keller said yes and noted a recent PNNL presentation that showed injury from barotrauma associated with passing through hydroelectric turbines increased with an increase in tag size/tag burden. Keller noted that

there is a broad range in body size for subyearlings. Gingerich said for reference, a 0.3-gram tag is similar in weight to 3 PIT tags.

Murdoch asked how much heavier a tag would be with additional batteries. Keller said it is probably quite a bit bigger since the battery is a large proportion of the tag. Murdoch asked if tag shape has an effect on barotrauma. Keller said no, not to his knowledge. Ferguson said not barotrauma, but tag shape affects incision size and extrusion rate. Gingerich said barotrauma had to do with how much air has to be brought into the swim bladder to compensate for the tag burden. Kahler said the observations with barotrauma were tag extrusion, viscera extrusion, and swim bladder rupture. Ferguson said this has to do with the air bladder being larger already and putting pressure on viscera when the air in the bladder expands as the fish passes through low pressure areas below turbine unit blades.

ATS SS400 Acoustic Transmitter

Keller said the ATS SS400 acoustic transmitter is the “injectable tag” developed by PNNL. Keller said it does require a large needle compared to PIT tags, so the standard practice is still to create an incision. Gingerich asked if there were sutures. Kahler said no sutures are necessary. Keller said a 3-second ping rate would have a 48-day tag life, and it weighs 0.216 gram in air. Keller, Graf, and Kahler saw the tag in person and said it is obviously bulkier than a PIT tag. Keller said that even with a 48-day tag life, there is still the issue with non-migrants influencing passage statistics. Graf said ATS Inc. is still recommending not tagging fish less than 95 millimeters (mm) in length, which is no different than the ATS SS300. Keller said yes, this is not an improvement regarding being able to tag smaller fish, but there is not a need for sutures and there is less tag burden, which is a major improvement to the tagging process. Keller said that with high water temperatures there is always increased stress and disease problems with holding and tagging fish. Murdoch asked for further information on tag weight with additional batteries from ATS Inc. Keller said he would ask ATS Inc. for that information.

Eel/Lamprey Acoustic Tag (ELAT)

Ferguson asked about the Eel/Lamprey Acoustic Tag (ELAT). Keller said they did see the ELAT in-person as well, but it is not commercially available at this time. Keller has reached out to Ryan Harnish for more information. Kahler said it has a 40-day life with a 5-second ping rate. Gingerich roughly estimated that the tag burden would be 2% to 3% for a 95-mm-size fish.

Ferguson asked for any additional questions; no others were posed in the meeting. Ferguson asked what the next steps should be for conveying information in preparation for survival studies. Keller suggested a presentation be given in July by Dr. John Skalski to understand whether there is a statistical model that can be created from the best available data. This allows the Rock Island and

Rocky Reach HCP Coordinating Committees time to draft a statement of agreement (SOA) in August (the current SOA that maintains Rock Island and Rocky Reach subyearling Chinook salmon in Phase III [Additional Juvenile Studies] status expires in late September).

B. HCP Tributary Committees Dispute Update (All)

John Ferguson said the formal dispute has been retracted by Steve Parker (Yakama Nation) at Ferguson's request, allowing the Policy Committee time to convene a meeting to discuss the topic informally. Ferguson asked Keely Murdoch to thank Steve Parker for withdrawing the formal dispute. He said the Policy Committee discussion of the Tributary Committees' issues will be on July 9 in the Chelan PUD offices. Tom Kahler will represent Douglas PUD as the Policy Committee representative. Richie Graves (National Marine Fisheries Service) will attend by phone. Ferguson will issue a simple agenda later this week for the meeting. Ferguson said the idea is to have a straightforward and open discussion of the issues.

Ferguson asked if there were any questions; Murdoch asked if a step to bring the issue to the HCP Coordinating Committees was skipped because of time. Ferguson said that retracting the formal dispute allows the Policy Committee to take the time to set a meeting date when all parties can attend and that is not being driven by the schedule established by the HCP. He indicated the HCP Coordinating Committees have discussed the dispute issues and made it clear they would be unable to reach a consensus position and would in all likelihood pass the dispute along to the Policy Committee. He said retracting the formal dispute allowed for all parties to meet in July. He said meeting informally does get to the intent of getting the Policy Committee together to discuss these issues because the Tributary Committee cannot reach a consensus on some funding or land ownership decisions at this time. Ferguson said the Yakama Nation issue paper will be presented as the main agenda item at the Policy Committee meeting. Ferguson said a goal will be to determine whether the Policy Committee can provide guidance to the Tributary Committees on how they should be operating. The Policy Committee may require only one meeting or they may require more. Ferguson said this uncertainty around the time needed requires more flexibility for ongoing discussion and led to the request to retract the formal dispute at this time.

V. HCP Administration

A. Next Meetings (John Ferguson)

The next scheduled HCP Coordinating Committees meeting is on July 23, 2019, to be held in-person at the Grant PUD Wenatchee office in Wenatchee, Washington.

The August 27 and September 24, 2019 meetings will be held by conference call or in-person at the Grant PUD Wenatchee office in Wenatchee, Washington, as is yet to be determined.

VI. List of Attachments

Attachment A List of Attendees

Attachment B Acoustic Tag Specifications

Attachment A
List of Attendees

Name	Organization
John Ferguson	Anchor QEA, LLC
Larissa Rohrbach	Anchor QEA, LLC
Lance Keller*	Chelan PUD
Tom Kahler*	Douglas PUD
Andrew Gingerich*	Douglas PUD
Jim Craig*	U.S. Fish and Wildlife Service
Chad Jackson**	Washington Department of Fish and Wildlife
Keely Murdoch*	Yakama Nation
Peter Graf**	Grant PUD

Notes:

* Denotes HCP Coordinating Committees member or alternate

† Joined by phone

** Joined for the joint HCP Coordinating Committees and PRCC portion of the meeting