



Conference Call Minutes

Aquatic Settlement Work Group

To: Aquatic SWG Parties

Date: December 10, 2020

From: John Ferguson, Chair (Anchor QEA, LLC)

Re: Final Minutes of the November 13, 2020, Aquatic SWG Conference Call

The Aquatic Settlement Work Group (SWG) met by conference call on Friday, November 13, 2020, from 10:00 a.m. to 12:00 p.m. Attendees are listed in Attachment A of these conference call minutes.

I. Summary of Action Items

1. Douglas PUD will develop a list summarizing the new documents that were recently added to the juvenile and adult Pacific Lamprey literature reviews and document libraries for discussion during the Aquatic SWG conference call on December 9, 2020 (Item VI-1).
2. The Yakama Nation (YN) will verify weight and length thresholds the YN has established for tagging juvenile (macrophthalmia) and larval (ammocoete) Pacific Lamprey using 8- and 10-millimeter (mm) passive integrated transponder (PIT) tags (Item VI-1). *(Note: Ralph Lampman provided information on tagging thresholds to Kristi Geris following the Aquatic SWG conference call on November 13, 2020, which Geris distributed to the Aquatic SWG that same day.)*
3. Douglas PUD will provide a presentation summarizing the 2013 and 2016–2017 Pacific Lamprey studies conducted in the Wells Project, during a future Aquatic SWG meeting (Item VI-1).
4. Douglas PUD will distribute a draft 2020–2021 Bull Trout Radio Telemetry Study Plan for review, and Aquatic SWG members will review the plan, provide comments, and be prepared to vote to approve the draft plan during the Aquatic SWG conference call on December 9, 2020 (Item VI-4). *(Note: the draft plan was distributed to the Aquatic SWG by Kristi Geris on December 3, 2020.)*
5. The Aquatic SWG meeting on December 9, 2020, will be held by conference call (Item VII-2).

II. Summary of Decisions

1. There were no decisions approved during today's conference call.

III. Agreements

1. There were no agreements discussed during today's conference call.

IV. Review Items

1. The draft plan, *Bull Trout Passage and Take Monitoring at Wells Dam and Twisp River Weir*, was distributed to the Aquatic SWG for review by Kristi Geris on December 3, 2020 (Item VI-4).

V. Documents Finalized

1. There are no documents that have been recently finalized.

VI. Summary of Discussions

1. Welcome, Review Agenda, Meeting Minutes Approval, and Review of Action Items (John Ferguson):

John Ferguson welcomed the Aquatic SWG members (attendees listed in Attachment A). Ferguson asked for any additions or changes to the agenda. No revisions were requested by Aquatic SWG members.

The revised draft October 14, 2020, conference call minutes were reviewed. Kristi Geris said Ralph Lampman provided edits from the YN just prior to today's call, which Geris projected on the WebEx for Aquatic SWG review. Geris said Lampman's edits included minor clarifications under the agenda item, *Juvenile Pacific Lamprey Tagging – Methow Subbasin Screw Traps*. Geris said no other edits or comments were received from members of the Aquatic SWG. Geris said she also added a note to the minutes to document distribution of the 2018–2020 Pacific Lamprey Translocation Detection Table, per a Douglas PUD action item. Aquatic SWG members present approved the October 14, 2020, conference call minutes, as revised.

Action items from the Aquatic SWG conference call on October 14, 2020, are as follows (Note: the following italicized item numbers correspond to agenda items from the October 14, 2020, meeting):

- *Aquatic SWG members will: 1) review the juvenile and adult Pacific Lamprey literature reviews and document libraries in terms of format, structure, and content, in preparation for discussion during the Aquatic SWG meeting on November 13, 2020; and 2) provide to Douglas PUD any new documents members wish to include in the juvenile and adult Pacific Lamprey literature reviews, and Douglas PUD will add these documents to the respective document libraries (Item VI-1).*

- Chas Kyger said he uploaded recent Pacific Lamprey literature received to date to the extranet site. He said he has not yet completed filling in the metadata for the tables but plans to do so soon. John Ferguson asked if Douglas PUD then plans to discuss these libraries further during the Aquatic SWG conference call on December 9, 2020. Kyger said he is not sure there is a need to discuss this further unless Aquatic SWG members want to. Ralph Lampman asked if additional literature can be sent today. Kyger said yes, additional items can be added at any time as literature becomes available. He asked that literature be sent to him and he can upload the documents to the extranet. Lampman suggested for the upcoming meeting that Douglas PUD provide a verbal summary of the new literature, notably highlighting what is new for Pacific Lamprey passage, and then the Aquatic SWG have a discussion. Kyger said Douglas PUD will develop a list summarizing the new documents that were recently added to the juvenile and adult Pacific Lamprey literature reviews and document libraries for discussion during the Aquatic SWG conference call on December 9, 2020.
- *Douglas PUD will update the Pacific Lamprey Translocation PIT Tag Information System (PTAGIS) File and Detection Summary Tables ("Last Seen" tables) to include new 2020 data and updated 2018 and 2019 detection data, and will distribute the tables for discussion during the Aquatic SWG meeting on November 13, 2020 (Item VI-4).*
Chas Kyger provided a 2018–2020 Pacific Lamprey Translocation Detection Table to Kristi Geris, which Geris distributed to the Aquatic SWG prior to the Aquatic SWG conference call on November 13, 2020.
 - *The YN will verify weight and length thresholds the YN has established for tagging juvenile (macrophthalmia) and larval (ammocoete) Pacific Lamprey using 8-, 10-, and 12-mm PIT tags (Item VI-5).*
Ralph Lampman said he just distributed an email about thresholds for 12-mm PIT tags, but he still needs to locate information for 8- and 10-mm PIT tags. He said for 12-mm tags, one study result indicated minimum thresholds of 130 mm (in fish length) and 3.0 grams (in fish weight). He said while the study showed good survival for this size fish, it is better if the fish is a little larger. This action item will be carried forward.
 - *The YN will discuss with a Columbia River Inter-Tribal Fish Commission (CRITFC) geneticist a recommended sample size for collecting genetic samples from juvenile or larval Pacific Lamprey tagged at the Methow River rotary screw trap (RST) needed to estimate the proportion of fish in the population produced by parents that were translocated into the basin (Item VI-5).*
Ralph Lampman provided responses from Jon Hess (CRITFC), which Kristi Geris distributed to the Aquatic SWG on October 16, 2020.
 - *Douglas PUD will redistribute the final 2013 study plan and report and final 2016–2017 study plan and report for Pacific Lamprey studies conducted in the Wells Project, for*

Aquatic SWG review and planning for the upcoming adult Pacific Lamprey passage study scheduled to occur in 2022 (Item VI-6).

Kristi Geris distributed these documents, as well as the most recent Pacific Lamprey Statement of Agreement and Pacific Lamprey studies excerpts from the 2019 Aquatic Settlement Agreement Annual Report, to the Aquatic SWG on October 15, 2020.

- *Douglas PUD will provide a presentation summarizing the 2013 and 2016–2017 Pacific Lamprey studies conducted in the Wells Project, during a future Aquatic SWG meeting (Item VI-6).*

This action item will be carried forward.

- *Douglas PUD will verify with Wells Fish Hatchery (FH) staff the selection process for surplus White Sturgeon at Wells FH and will relay this information to the Aquatic SWG (Item VI-7).*

This action item will be discussed during today's conference call.

2. COVID-19 Updates (John Ferguson):

John Ferguson asked if Aquatic SWG members had any new updates to share regarding impacts of COVID-19 on Aquatic SWG-related monitoring and evaluation activities.

Andrew Gingerich said Douglas PUD has no new updates except that COVID-19 cases are increasing locally. Ferguson said he understands this is the case everywhere. The Aquatic SWG had no other new COVID-19 updates to announce.

3. 2018–2020 Pacific Lamprey Translocation Detection Table (Chas Kyger):

Chas Kyger said a 2018–2020 Pacific Lamprey Translocation Detection Table (Attachment B) was distributed to the Aquatic SWG by Kristi Geris prior to the Aquatic SWG conference call on November 13, 2020. Kyger said this is the same table from the past 2 years of translocation, only it has been updated with PIT detections through October 30, 2020, for all release groups. He reminded the Aquatic SWG that the color-coding denotes river basin detection locations, as follows: 1) Orange = Mainstem Columbia River; 2) Blue = Methow River Basin; and 3) Green = Okanogan River Basin. He said this table shows a summary of where fish were last detected within a tributary or river basin. He said the largest number of fish were last detected within the Methow River Basin, and at Starr Boat Launch (*Rls: Starr Boat Launch*), which is actually a release location and therefore did not have a subsequent detection. He said some fish are likely overwintering and may show up in the spring, which is when he plans to update the table again. He said of note, there were quite a few fish released at Starr Boat Launch that ended up in the Okanogan River Basin, compared to previous year's releases. Ralph Lampman agreed and said translocation might have kickstarted this trend in the Okanogan River Basin, possibly attracting fish to the basin.

Andrew Gingerich said in addition to the river basin color-coding, the dark shading represents a release location (i.e., in the cells with dark shading, the last point of detection for these fish was at the release location).

Lampman asked if there were any fish released at Brewster Boat Launch in 2020. Kyger said no, all the Okanogan River Basin releases this year were given to the Colville Confederated Tribes (CCT) for distribution between Loup Loup, Omak, and Salmon creeks, and the Similkameen River. Lampman asked then if this cell should have light shading. Kyger explained that fish were released at Brewster Boat Launch in 2018, but not in 2019 and 2020, which is why these cells show zero. He said the dark shading is an artifact of switching release locations from Brewster Boat Launch in 2018 to Starr Boat Launch in 2019 and 2020. Lampman said if fish were released that year it makes sense to have dark shading, but if not, he thinks it is less confusing to change it to light shading. Kyger said he can update the table to be clearer that there were no releases at Brewster Boat Launch in 2019 and 2020. Lampman also suggested removing the shading, as well as the number zero, completely because no fish were released that year.

John Ferguson asked for an example of how to interpret the table. Gingerich said for example, under 2018 release locations, Omak Creek, there were 15 fish released, 3 fish were never detected beyond the release location, 3 fish were detected downstream at OBF (Omak Creek below Mission Falls), and 9 fish were detected farther downstream at OMK (Omak Creek Instream Array). Ferguson said, so in the Similkameen River, a lot of fish were released there in 2018 and 2020, and then these fish were never detected again, except 2 fish in 2018? Gingerich said this is correct and this may be a good thing. He said if these fish were released, migrated upstream, and completed a successful spawning event, it would not be expected to see (detect) these fish again. He said the actual fate of these fish is unknown, but there have been no downstream detections to date within this basin.

Gingerich said he thinks it might be worthwhile to review the 2020 data. He said 264 fish were released at Starr Boat Launch, and this does not include the additional 89 fish that were released in the Okanogan River Basin. He said just looking at the fish released at Starr Boat Launch in 2020, 1 fish was detected downstream at WEA (Wells Dam, Adult Ladders), 116 fish have yet to be detected anywhere, zero fish were released at Brewster Boat Launch, and 36 fish were detected upstream at LMR (Lower Methow River at Pateros). Kyger noted that these numbers are cumulative. Lampman asked if a fish was detected multiple times, does this table just show the last detection? Kyger said yes. Ferguson said the numbers are cumulative within each year and for an individual fish. Kyger said yes, and for each release location. Lampman said trends are definitely starting to appear. He said more fish seem to be

staying in the tributaries and less fish are migrating downstream. He added that even if fish are detected downstream, fish could still be successfully spawning and then drifting downstream. He noted the number of fish released at Starr Boat Launch that are migrating into the Okanogan River Basin and said this has not been seen before. Gingerich agreed and noted in 2018, in Omak Creek, 15 fish were released and only 3 fish were last detected at the release location and the remaining fish all went downstream. He said then in 2020, in Omak Creek, 22 fish were released, and 0 fish were detected going downstream. He said maybe these fish stayed in Omak Creek and plan to spawn this year. He said this is unknown, but the data are a bit encouraging.

Gingerich said Kyger brought up something to him that is worth pointing out—in 2020, 264 fish were released at Starr Boat Launch and 116 fish are still unaccounted for, which is partly due to there being no mainstem PIT detector arrays. Gingerich said if these fish migrated into the tributaries one would think the fish would be detected, especially this time of year with low river flows (with presumably higher detection efficiencies). He said contrast this with the Methow River releases in 2018, where 506 fish were released at the mouth of the Methow River and only 46 fish are unaccounted for. He said he is not sure this is a detection probability thing or what became of these 116 fish. He said only 56% of these fish were detected post-release. He said similarly, in 2019, only 48% of those fish were detected post-release. Kyger said there will likely be a few more detections in spring 2021. He said this year, only a few of the fish released in 2019 were detected in the spring, but not a significant portion.

Lampman said he thinks there are locations in the mainstem Columbia River where Pacific Lamprey can spawn, and now these areas might be getting seeded more, attracting even more fish to spawn in the mainstem. Steve Lewis asked if Lampman has a sense for where spawning might be taking place in the mainstem Columbia River. Lampman said he has not yet looked in detail for where these locations might be. He said such locations would likely be in similar locations/reaches where Chinook Salmon would spawn, with good gravel (ideal substrate sizes) and fast water areas. Ferguson asked at what depths in the mainstem might Pacific Lamprey be spawning in. Lampman said he does not know, but during snorkel surveys he has seen Pacific Lamprey spawning in water as deep as 7 feet. He said typically, Pacific Lamprey have been observed spawning in 1 to 2 feet of water. He said he thinks Pacific Lamprey could be spawning in deeper water, if conditions are right and fish can find a good flow break, but nobody typically checks these deeper water habitats during that time of year. He said Pacific Lamprey also cue into sites with groundwater upwelling (similar to other salmonids).

Lewis said it is interesting that 1 fish from the 2018 releases in the Similkameen River migrated all the way down to LMR. Lampman said of the YN releases, there seems to always be a few weird detections. He said, for example, 1 fish was detected all the way down to Hood River, even after several years of translocation. Gingerich noted under the 2020 releases, 1 fish released at Starr Boat Launch was detected all the way up at Zosel Dam, which is near the U.S./Canada border. He said further, this fish traveled 216 river kilometers in 6.3 days, which averages 34.3 km per day.

Ferguson suggested adding a legend to this table explaining the color-coding. Kyger said in the annual report, this table will include a caption explaining this.

4. Bull Trout Radio Telemetry Study Plan Development (Andrew Gingerich):

Andrew Gingerich said he and Dave Robichaud (LGL Limited) completed the draft study plan for 2021–2022, which is now with Shane Bickford for technical review. Gingerich said he hopes to distribute the draft plan for Aquatic SWG review in the next week or two. He said briefly, Douglas PUD has a Federal Energy Regulatory Commission license requirement to conduct another Bull Trout passage and survival analysis at Wells Dam and the Twisp Weir in Year 10 of the license.

Gingerich recalled that Douglas PUD conducted this analysis in 2016 and 2017, where 46 fish were tagged at the Twisp Weir and 14 fish were tagged at Wells Dam. He said Douglas PUD hopes to repeat the 2016–2017 study, with tagging starting in 2021 and monitoring in fall 2021 through spring 2022. He said the target sample size will again be 60 radio-tagged fish. He said the requirement is only 10 fish at Wells Dam and 10 fish at the Twisp Weir. He said in 2016, Douglas PUD asked the Aquatic SWG and U.S. Fish and Wildlife Service (USFWS) to tag more fish, despite the additional cost, to boost the sample size. This was because, as outlined in a tolerance table in the study plan, 10 fish is not very robust when conducting a passage and survival analysis. He said Douglas PUD will be making this same request for the 2021–2022 study, i.e., to increase the sample size to 30 fish at Wells Dam and 30 fish at the Twisp Weir. He said, however, similar to the 2016–2017 study, if 30 fish cannot be collected and tagged at Wells Dam, Douglas PUD is suggesting making up the balance of tags in fish collected at the Twisp Weir. He said justification for this suggestion is provided in the study plan, and is based on 2016–2017 data indicating that 36% of fish tagged at the Twisp Weir had subsequent interactions at Wells Dam post-tagging, i.e., for approximately every 3 fish tagged at the weir, 1 fish interacted with Wells Dam. This effectively boosts the sample size at Wells Dam even though the fish was not tagged at the dam. He said this can be vetted further once the study plan is distributed.

Gingerich said the proposed monitoring locations are almost the same as the previous study, with two small changes. First, data from the 2016–2017 study provided justification that the Buttermilk (Bridge) radio telemetry site, located about 5 river miles upstream of the Twisp Weir, did not have winter detections; therefore, Douglas PUD is proposing a 4 month outage for this station after the spawning period. He said the station is located within an incised canyon and it is difficult to keep the station powered up during winter months where solar is limited. Second, Douglas PUD is interested in coordinating with Chelan PUD to setup a station near Beebe Springs or Chelan Falls. He said there was no station here for the 2016–2017 study; however, Douglas PUD has conducted mobile tracking in the area that suggests Bull Trout may overwinter near here. He said aside from these things, the 2021–2022 study plan is basically a carbon copy of the 2016–2017 study plan.

Ralph Lampman asked if the study will use PIT arrays, and if so, are the arrays full-duplex, half-duplex, or both. Gingerich said the study will use radio telemetry stations and active tags that send out codes every 3 to 5 seconds. He said for the 2016–2017 study Douglas PUD double-tagged the fish, which is what is being proposed for the 2021–2022 study, i.e., to insert both radio and PIT tags (full-duplex). He said normally, Douglas PUD uses 12-mm PIT tags. He said both radio telemetry and PIT-tag data will be presented in the study report.

John Ferguson summarized that the 2021–2022 study plan is a carbon copy of the earlier study with a couple of proposed changes to detection locations, and justifications are included in the study plan. Gingerich said this is correct, and the plan is to distribute the draft study plan by next week and then discuss the plan during the Aquatic SWG conference call on December 9, 2020. He said if Aquatic SWG members need more time for review before approval, this can be accommodated; however, if members are ready to approve the plan at the December meeting this would be even better. He said a contractor is already in place, but Douglas PUD needs to purchase tags and equipment. He said preparing for a field study takes time and having an approved study plan sooner than later will help ensure everything is ready by May 2021.

Lampman asked about the array system at Wells Dam. Gingerich said there are five antennas along the upper deck of the dam to monitor the forebay. He said these do a reasonable job at detecting radio tags, but there have been a few missed detections. He said detection probabilities will be presented in the study report as in the previous study. He said there is also monitoring within the fish ladders in various locations. He said downstream of Wells Dam, about 3 river miles, there is a detection location called "Gateway." He said there is also a monitoring station in the immediate tailrace of Wells Dam on the east bank and another station at the Wells FH outfall. He said the radio tags in the 2016–2017 study had pretty

good detection probabilities and seem to perform better in turbulent locations and areas with entrained air compared to acoustic tags. He said radio tags do not perform well if the fish are deep in the water column and there is the potential to miss these fish. He said the tags seem to perform well in tributaries, where he believes 100% or nearly 100% of the fish are detected. He said detection efficiency for PIT tags, however, seems to be better in the fall compared to the spring.

Lampman said Pacific Northwest National Laboratory (PNNL) released a new sturgeon tag that is powerful and performs well in tailraces, other noisy environments, and within fish ladders. He said the tag was used in a study at Little Goose Dam for the adult portion of a juvenile and adult Chinook salmon study. He said it might be worth considering for Pacific Lamprey in the mainstem Columbia River for dam passage studies. Gingerich said he is not familiar with this tag, but it can certainly be discussed during Pacific Lamprey study plan development.

Lampman asked if the Bull Trout study is a 1-year study—spring 2021 through spring 2022? Gingerich said, in theory, the study will end in spring 2022. He said for the 2016–2017 study, because the study fish were large enough, a 2- to 2.5-year tag was used. The thinking at the time was if the study did not meet standards, the tags would allow for another year of monitoring, per Douglas PUD's Federal Energy Regulatory Commission license. He said the license allows for a repeat of the study if standards are not met, and by having study fish already tagged, this would avoid the need to handle additional fish. He said the proposed 2021–2022 study is also designed to be a 1-year monitoring study, from fall 2021 to spring 2022, but will also have the capability to monitor fish for an additional year.

Lampman asked, as it is getting closer to an adult Pacific Lamprey study, is there potential these arrays could still be in place in case radio telemetry is selected for the study? Gingerich said yes, in theory, if radio telemetry is selected for a Pacific Lamprey study it might make sense to keep infrastructure in place at certain locations. He recalled that 2021 is the last year of translocation and then a check-in study for Pacific Lamprey is planned for 2022. Lampman asked if a lot of work is needed to set up acoustic arrays within a fish ladder. Chas Kyger said, relatively speaking, setting up acoustic arrays is easy compared to radio telemetry stations. He said there is already an extensive array system at Wells Dam for monitoring White Sturgeon. He said if radio telemetry is selected for a Pacific Lamprey study and arrays are already in place from the Bull Trout study, it will likely only take a little more maintenance to operate the arrays for Pacific Lamprey.

Lewis asked if the intent is to obtain approval of the 2021–2022 study plan by the Aquatic SWG conference call on December 9, 2020. Gingerich said yes, understanding this is a big ask

because Douglas PUD typically provides a 30-day review for study plans. He said approval by the Aquatic SWG meeting on January 13, 2021, will provide about 4 months before the study and will likely be the latest Douglas PUD can wait to obtain approval in order to prepare for the study. Steve Lewis said this all seems straight-forward based on previous discussions. Lewis added that after the conference call in December, there will be the holidays, so USFWS will work hard to submit comments to Douglas PUD by the December meeting. Ferguson said that would be great, that having a decision in December on the full study plan will provide time to get equipment ordered. He said another thought, if Aquatic SWG members are not ready to approve the full study plan in December, if members can approve the technology and sample size, Douglas PUD can get started on ordering equipment after the December meeting while the Aquatic SWG continues to review the full study plan. He said this is not ideal, but it is an option.

Ferguson summarized that Douglas PUD will distribute a draft 2020–2021 Bull Trout Radio Telemetry Study Plan for review, and Aquatic SWG members will review the plan, provide comments, and be prepared to vote to approve the draft plan during the Aquatic SWG conference call on December 9, 2020. *(Note: the draft plan, Bull Trout Passage and Take Monitoring at Wells Dam and Twisp River Weir, was distributed to the Aquatic SWG for review by Kristi Geris on December 3, 2020.)*

Lewis said USFWS has been working with other PUDs in terms of exploring off-season fish ladder video count monitoring to determine if individual fish are passing the dam but are not being counted outside the salmonid upstream passage timeframes. He asked if Douglas PUD has any thoughts on doing this at Wells Dam. Gingerich said Douglas PUD already conducts year-round fish counts at Wells Dam. He said video is recorded at both fish ladders during the off-season and when fish counters return for the fish passage season, the counters review the off-season video for counts of all species including Pacific Lamprey and Bull Trout. Therefore, Douglas PUD is confident that all Bull Trout passing Wells Dam are being counted.

Ferguson asked if USFWS has a population estimate for Bull Trout in the Methow River Basin. Lewis said an estimate was developed while drafting the Biological Opinion, but the number is a moving target. Ferguson asked about the magnitude of the number. Lewis said he would need to review the data to confirm, and he asked why Ferguson is interested in this number. Ferguson said he is thinking in context of obtaining 60 fish for the 2021–2022 study. Gingerich said fish counts at Wells, Rocky Reach, and Rock Island dams could be a proxy for the population in the Methow River Basin, assuming the fish are adfluvial. He said these counts suggest the Bull Trout population is cyclical. He said in some years, the count has been 100-plus fish, and more recently, the count has been maybe one-third of this. He said

he is unsure about prey availability or what is driving these cycles, but he would say the estimate is pretty dynamic based on the fish counts at the mainstem dams. He said the tributaries are different. He said the Twisp River compared to other tributaries has a lot of Bull Trout. He said there is something about the Twisp River that keeps that population strong within the Methow River Basin.

5. 2020 White Sturgeon Telemetry Update (Andrew Gingerich):

Andrew Gingerich said he hoped to have a memorandum ready for this meeting, but it is still being drafted in coordination with Dave Robichaud. Gingerich said instead, he will provide a summary of detections and remind Aquatic SWG members where Douglas PUD is in terms of tracking White Sturgeon in the Wells Project.

Gingerich projected a Google Earth view of the fixed station VR2W array throughout the Wells Project. He said this view does not yet include one array located in the Methow River near Pateros, Washington, which was just added this year. He navigated downstream to Wells Dam and said the idea behind the arrays in the Wells Dam tailrace is to monitor for White Sturgeon traveling back downstream into the Rocky Reach Reservoir. He said Douglas PUD shares these data with Chelan PUD because Chelan PUD fish are also detected on the Wells Dam tailrace arrays. He said moving upstream there are additional arrays that act as gates. He said early data collected from the newly installed VR2W array at Pateros, Washington, and data from LMR (Lower Methow River at Pateros) indicate White Sturgeon do not enter this reach at the Methow River. He said this is not the case in the Okanogan River, where 2 fish were detected this year all the way up at the Malott Project Boundary VR2W, located about 12 to 13 river kilometers up the Okanogan River. Gingerich navigated down to the V0 Washburn Release array and reminded Aquatic SWG members that Douglas PUD formerly released White Sturgeon at Washburn Island, but eventually moved this release location farther upstream, away from a nearby cormorant colony, to Bridgeport, Washington. He said there are currently 22 acoustic receivers in operation. He said in general, there have been few changes and the core of this monitoring array has been in place since 2015.

Gingerich said of the 13 fish with acoustic tags, 8 fish are adults measuring 160 centimeters fork length or larger. He said 5 fish are subadults, including some hatchery-origin or repatriated fish, and a couple are wild-origin fish. He said Douglas PUD has been monitoring these fish for the past 3 years or so and intends to continue tracking them to evaluate habitat use and how the fish move seasonally. He recalled that in previous years, around June or when river temperatures reach 10°C or higher, both adult and non-adult fish begin moving upstream towards Chief Joseph Dam, which is also when fish might be spawning. He said these fish have been outfitted with 10-year tags, so Douglas PUD can monitor movement to

see if this behavior is repeated. He said once the memorandum is complete, he will distribute it to the Aquatic SWG. He said there is no deadline or formal approval; rather, the memorandum is just part of Douglas PUD's ongoing White Sturgeon monitoring and evaluation effort.

Ralph Lampman asked if the paired arrays have detection efficiencies close to 100%. Gingerich said yes, detection is usually pretty good, and Douglas PUD also knows which receivers work better than others, which is a function of river topography and the likelihood of getting biofouled. He said he does not have the data readily available, but he can look up detection efficiency for each station. He said very rarely is a fish missed going downstream, i.e., it is very uncommon for a fish to skip a detection location.

Lampman asked if it is more difficult to detect fish near the surface of the water or near the bottom of the water column. Gingerich said he does not have data on water depth since Douglas PUD tags do not have pressure functionality. He said in planning for a Pacific Lamprey study or any study using a different type of tag, it would be important to first conduct tag testing using a dummy tag. Lampman asked what type of tags Douglas PUD uses for White Sturgeon. Gingerich said a Vemco V16 tag is used, which is much too large for Pacific Lamprey. He said a V16 tag is almost as long as a pen and about three times as wide. He said Vemco makes smaller tags, but as tag size decreases, battery life also typically decreases. He said the V16 tags Douglas PUD uses for White Sturgeon are set to 'chirp' (or send a signal) every few minutes and smaller tags would not have the same tag life. He said acoustic tags can be programmed to go to sleep, which preserves battery life to extend the monitoring period.

Lampman asked if the PNNL tags might be compatible with the VR2W array. Gingerich guessed probably, but he also said Vemco indicates their equipment is proprietary and will not work with other tags. He said, however, some technology is cross engineered to make sure low-frequency tags will be picked up by any acoustic receiver. He said the most important thing is that the tag is transmitting at the same kilohertz (kHz) frequency as the receiver. He said Douglas PUD's VR2W array uses 69-kHz receivers, so the tags would need to be the same. Jason McLellan said the CCT use Vemco gear and in his experience, this gear only works well with Vemco equipment. He said the PNNL tags use 400-kHz receivers and Vemco has some 180-kHz receivers for juvenile salmonid studies. He said the V4 to V6 tags from Vemco use 180-kHz receivers and the V7 to V16 tags use variable powered receivers depending on the tag family and other specifications. He said the tag power also effects detection probability, in addition to the acoustic conditions. He said in the upper Columbia River, the CCT have found areas of non-detection because the acoustic conditions were so

good the signals were bouncing back and hitting the receivers and confounding the origin signal. He said as Gingerich said, it is important to conduct range testing. Lampman asked McLellan if he is saying that Vemco arrays cannot be used with any other tags. McLellan said exactly. He said if a study uses Vemco tags it needs to use a Vemco receiver of the same frequency. He said if a study uses PNNL tags it needs to use PNNL receivers. He said PNNL's Juvenile Salmonid Acoustic Telemetry System (JSATS) tags are 400-kHz tags, but Douglas PUD's VR2W array uses 69-kHz receivers. He said another consideration is range. He said the lower the frequency the greater the range. He said this also plays into tag power. Laura Heironimus said she just emailed Lampman the PNNL tag list, which indicates their sturgeon tag is 300-kHz. Heironimus said she agrees with McLellan that most PNNL tags are similar to the JSATS and would not be picked up on Douglas PUD's VR2W array. Heironimus also suggested asking if PNNL has conducted any testing with other equipment.

6. Wells FH Brood Year 2020 White Sturgeon Rearing Update (Andrew Gingerich):

Andrew Gingerich said a Wells FH White Sturgeon Rearing Update (Attachment C) was distributed to the Aquatic SWG by Kristi Geris prior to the Aquatic SWG conference call on November 13, 2020. Gingerich said this update includes summary tables outlining what is going on at Wells FH.

Gingerich said Table 1 in Attachment C shows a count of fish currently on station at Wells FH separated by Tank ID, population count, average fish per pound (fpp) in each tank, and the conversion to average fish size in grams. He said, for example, Tank 3 has 53 fish with an average fish size of 76.9 grams per fish. He said the tank with the largest fish are averaging 137.6 grams per fish, and as fish grow larger the fpp number decreases. He said Tank 11 has only 20 fish and these fish are much smaller in size compared to the fish in the other tanks, which hatchery staff see every year. He said the total count on station is 394 fish. He said he is optimistic about meeting the 325-fish release target with a minimum fish size of 200 grams each. He said the program is currently 21% over the release target and he does not expect to lose more fish, which means there will likely be one more surplus activity to the CCT.

Gingerich said Table 2 in Attachment C is a summary of the surplus actions taken so far this year. He said again, hatchery staff will likely need to conduct one more surplus and move approximately 50 fish to the CCT Resident FH. He said Table 2 shows the date when each surplus event took place, fish size at surplus, and the range of fish sizes on station at surplus. He noted that Wells FH staff intentionally surplused fish of similar size because staff recognize that the CCT Resident FH does not have as much flexibility to treat a lot of fish differently. He said in most cases, surplused fish were in the medium size range. He said another thing to note is that because these surplus activities took place over a period of

weeks and fish were being graded weekly, there is a pretty good random assortment of fish that were surplus to the CCT Resident FH over a several-week period. He said the surplus fish were all over a certain size threshold to provide confidence the fish would survive being surplus. He said at about 10 grams per fish or 50 fpp, the chance of mortality goes way down. He noted that the final surplus to the CCT Resident FH will likely consist of larger-sized fish.

Gingerich said Table 3 in Attachment C shows fish that were delivered to Wells FH by the CCT. He said 1,690 larvae arrived to Wells FH alive, 394 fish are currently on station, and 618 fish have been surplus to date, which results in survival-to-date of just under 60%, which is the highest survival so far for the Wells Program. He said he is cautiously optimistic going forward that the Wells Program will routinely achieve survival rates around 60%, and maybe even reach 70%.

Gingerich said Table 4 in Attachment C assumes that most of the population has the potential to grow 40% in terms of body weight on a monthly basis. He said Table 4 can be used to project when fish will reach the target 200-gram threshold. He said once fish reach 300 grams, the table reduces weight gain to 20%, which is consistent with previous years of rearing. He said part of this shift is because when fish reach this size, feed is reduced to about 2% feed. He said when fish are small, they have the potential to grow really quickly, and as fish age weight gain slows down. He said based on this table, there is a good chance most of the population will reach well over the 200-gram threshold at release.

Gingerich said Figure 1 in Attachment C is a graphical projection of Table 4. He said the horizontal dashed line is the 200-gram threshold. He said he is pretty confident all tanks except the 20 smaller fish (gray line on the bottom) will make size. He said Douglas PUD will still likely stock these smaller fish, but this can be further discussed with the Aquatic SWG prior to their release. He noted these are averages of data that in theory are normally distributed; therefore, hatchery staff need to grow fish to 250 grams to be sure the average is more like 200 grams.

John Ferguson asked if a date is planned for the final surplus. Gingerich said Tank 10 has the largest fish on station, which will likely be surplus to the CCT Resident FH. He said he is unsure when this will take place, but he guesses it will happen relatively soon. He said there is still a little internal discussion about how many fish to surplus.

Jason McLellan said that he spoke with Mitch Combs (Sherman Creek Hatchery Manager) yesterday who indicated he plans to conduct a hand count of fish on station at the facility today or early next week. McLellan said depending on the results of this count, some fish

surplused to the CCT Resident FH may be transferred back to Lake Roosevelt. Gingerich asked if Combs thinks he may be under program. McLellan said Combs suggested he might be under program, but during a calcein experiment where 509 fish were marked, staff calculated 73% survival for this tank. McLellan said he does not know if survival is close to this in the rest of the tanks, but there have not been any disease or pathogen issues that would suggest otherwise. McLellan said he thinks program will be met, but Combs did not seem as optimistic.

VII. Administration

1. U.S. Bureau of Indian Affairs – Marchelle Foster (John Ferguson):

John Ferguson said U.S. Bureau of Indian Affairs (BIA) designated Marchelle Foster as the point of contact for the Aquatic SWG. Ferguson said Foster replaces the former BIA point of contact, Keith Hatch.

Andrew Gingerich said he had a brief chat with Foster, who goes by Marcy. Gingerich said Foster formerly worked for the Bonneville Power Administration, accepted a position with BIA, and now plans to move back to Bonneville Power Administration for an intergovernmental affairs position; therefore, if Foster participates in the Aquatic SWG her participation will be brief. Gingerich reminded the Aquatic SWG that BIA is a nonvoting member. He said Foster did not indicate if BIA has a replacement for her in mind, but she expressed interest in what the Aquatic SWG is working on. Gingerich said he directed Foster to the Douglas PUD webpage (<https://douglaspud.org/>) where final Aquatic SWG documents are posted.

2. Upcoming Meetings (John Ferguson):

The Aquatic SWG meeting on December 9, 2020, will be held by conference call.

Other upcoming meetings include January 13, 2021 (TBD) and February 10, 2021 (TBD).

List of Attachments

Attachment A List of Attendees

Attachment B 2018–2020 Pacific Lamprey Translocation Detection Table

Attachment C Wells FH White Sturgeon Rearing Update

Attachment A – Attendees

Name	Role	Organization
John Ferguson	Aquatic SWG Chairman	Anchor QEA, LLC
Kristi Geris	Administration/Technical Support	Anchor QEA, LLC
Andrew Gingerich	Aquatic SWG Technical Representative	Douglas PUD
Chas Kyger	Aquatic SWG Technical Alternate	Douglas PUD
Steve Lewis	Aquatic SWG Technical Representative	U.S. Fish and Wildlife Service
Patrick Verhey	Aquatic SWG Technical Representative	Washington Department of Fish and Wildlife
Laura Heironimus	Aquatic SWG Technical Alternate	Washington Department of Fish and Wildlife
Ralph Lampman	Aquatic SWG Technical Representative	Yakama Nation
Jason McLellan	Aquatic SWG Technical Representative	Colville Confederated Tribes