

## FINAL MEMORANDUM

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**To:** Wells, Rocky Reach, and Rock Island HCPs Hatchery Committees  
**Date:** September 17, 2013  
**From:** Kristi Geris  
**Cc:** Mike Schiewe, HCP Hatchery Committees' Chair  
**Re:** Final Summary of the August 21, 2013 Wells Hatchery Modernization Workshop

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This memorandum provides a summary of the Wells Hatchery Modernization Workshop that was held at Douglas PUD headquarters in East Wenatchee, Washington, on Wednesday, August 21, 2013, from 1:00 pm to 3:30 pm. Attendees are listed in Attachment A to this memorandum.

### I. Wells Hatchery Modernization Workshop

#### A. *Wells Hatchery Modernization Workshop (Greg Mackey)*

Greg Mackey welcomed the attendees and introduced Ken Ferjancic, Jason Hill, and Ed Donahue from HDR Engineering, Inc. (HDR). Mackey presented background information on the Wells Hatchery Modernization (Attachment B), which Kristi Geris distributed to the Hatchery Committees on August 23, 2013. He noted that the modernization of Wells Hatchery was not required by the Federal Energy Regulatory Commission (FERC), but rather was a voluntary action by Douglas PUD to update the facility that was constructed in the mid-1960s. Mackey said that there are three major components of the rebuild, including: 1) a new incubation and early rearing building; 2) new circular tanks for the steelhead programs; and 3) a new adult trapping and broodstock holding facility. Lastly, Mackey reviewed the steelhead, summer Chinook, and non-Habitat Conservation Plan (HCP) program numbers that will be supported by the Wells Hatchery facility.

Ferjancic led HDR's presentation on the Wells Hatchery Modernization (Attachment C), which Geris distributed to the Hatchery Committees on August 23, 2013. He noted that some of the information that is included in his presentation is also included in the appendix of the Wells Fish Hatchery Modernization Master Plan, which was posted to the HCP ftp site by Emily Pizzichemi on May 14, 2013. Ferjancic reviewed metrics that were considered

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during the development of design criteria for the modernization, including Wells Hatchery program production numbers (as Mackey also noted), density indices (DIs), adult holding criteria, and water temperature profiles. Bill Gale asked why the DIs were not the same for all programs, and Shane Bickford explained that DIs for conservation programs were one-third compared to standard DIs. Ferjancic was asked if the water temperature data were for one year only, and responded that the water temperature profile data represent means for several years. He also noted the lag between peak well and peak river temperatures, and he added that the goal is to gradually reduce temperatures to the lowest temperature to try to mimic natural temperatures of receiving waters. The idea is to have the fish experience a low temperature prior to and coinciding with acclimation so they can experience naturally increasing water temperatures in the acclimation pond, resulting in a more natural and reliable smolting process. Ferjancic also reviewed planned Wells Hatchery inflow requirements, and noted that the inflow requirements are being used to develop the new and improved well field.

A Wells Hatchery site plan depicting general flow of water through the facility was discussed. Ferjancic identified a number of the physical components of the modernization, including removal of the spawning channel located along the western border of the site; a new hatchery building and 12-circular tank area, also located near the west end of the site; a new contingency area capable of housing eight additional circular tanks, located just east of the new 12-tank area; a new garage shop area just north of the new hatchery building; and a new adult trapping and broodstock holding facility located at the northeast corner of the site. Mackey noted that the modernization also is being planned so that the hatchery could remain fully operational throughout the duration of construction. He said that the approach is to install the new pipes, electrical, etc., in a utility corridor while the facility remains in operation, and then when everything is ready, engage the new systems. Ferjancic also noted that biosecurity has been a driving element in the design process, and that HDR will continue to incorporate biosecurity concepts into the design.

A site plan of the new hatchery building was discussed. Ferjancic said that the new building will house eight separate incubation rooms that are sized differently based on size requirements for the respective programs. He noted an area that has been set aside that will be plumbed in to allow natal water to be brought into the facility in the event that

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imprinting on natal water at the incubation (eyed-egg through alevin) stage is implemented. Bickford added that the area would just be a room that is plumbed in, and tanks can be brought in as needed. Ferjancic also noted that the area would need to be equipped with treatment infrastructure in order to store, treat, and recirculate water, if early imprinting is undertaken. Ferjancic added that the building will include space for offices and feed storage.

A diagram of the circular tank rearing area was discussed. Bickford noted that the enclosed rearing area will allow the fish to experience natural light. Ferjancic said that the area will be enclosed to provide predation control. Gale asked how the tanks will be stocked, and Ed Donahue replied that the tanks will be stocked from outside of the fence via a water-to-water transfer. Mike Tonseth noted that it would be similar to the setup at Chief Joseph Hatchery (CJH). Bickford said that the fish would be transferred from the start tanks to the circulars via water-to-water gravity feed. This is efficient and more fish friendly than using a fish pump or other transfer methods. Subsequent transfer to a fish distribution system, or dirt ponds, would also be water-to-water via gravity feed. He also stressed that the circular ponds will use a flow-through water system and will not be recirculated, and he noted that to achieve the water movement in the circular tanks to allow them to be self-cleaning and to provide the fish with a variety of water velocities in the tanks requires substantially higher flows than would be used in conventional raceways. Therefore, the fish will receive high flow indices and be reared at lower densities in the circular tanks. Gale questioned whether the proposed 3-foot clearance between tanks would be sufficient space for staff. Ferjancic responded that the exact spacing had not yet been addressed, but will be addressed to provide proper clearances for staff and operational needs. Tonseth asked how a tank would be removed if one located in the middle of the room was structurally compromised and need to be replaced. Ferjancic said that a “garage door-like” structure would need to be installed in order to remove a potentially compromised tank. He noted that support columns, as depicted on slide 11 of Attachment B, will need to be located between the tanks to allow room to remove the tanks. Ferjancic also noted that specific tank dimensions are included on slide 13 of Attachment B.

Ferjancic presented example bioprogramming results for Twisp River steelhead to illustrate how space and capacity requirements were developed (for each program) to be used in the design process. He said that typically in January of each year, river water and well water

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would be blended to achieve the desired water temperatures. He also noted that in March, when Twisp fingerlings are transferred to the acclimation site, they have already experienced a seasonal low temperature and temperatures at the acclimation site are on the upswing. Ferjancic said that in circulars, a minimum water velocity is needed for sweeping; and Gale asked if the same flow will be running into the circulars all year. Gale also asked if there is concern that flow will be too high at early life stages, and also if there is reason to increase flow when fish get larger. Ferjancic replied that flows can be regulated for early life stages he did not think it would be necessary to increase flow above that indicated in the bioprogram when the fish are larger. Kirk Truscott noted that fish can decide where they want to be in the circulars to regulate the flows they experience (i.e., outside in greater flow, or inside with less flow).

Lastly, Ferjancic presented a series of rearing unit allocations for each month of the year. Mackey said that one reason for this exercise is to identify any scheduling issues, such as where and when extra space or conflicts for space occur. Tonseth asked if and how fish location and rearing vessels affect tagging, and Ferjancic replied that those details have not yet been choreographed. Donahue said that fish can be gravity released from any of the circular tanks to a fish handling/distribution center where marking can occur. Tonseth said that his concern is to be able to mark and tag the conservation steelhead programs when all circulars will be in use. Truscott said that butterfly screens can be used with circulars to open space for tagging efforts, and Tonseth replied that he was not suggesting there would not be capacity; however, he thought the issue deserved early consideration.

Gale asked if Bob Rogers has been involved in modernization discussions, and Bickford replied that he had. Gale also asked if the proposed contingency area is already needed, and Bickford replied that it is not. Gale noted that in the rearing unit allocations that were just reviewed, all of the contingency tanks were filled for each month, and Bickford and Ferjancic clarified that those allocations were hypothetical (i.e., if needed). The allocation scenario showed how the facility would be allocated if the contingency space was in use.

Truscott asked if there is ever a month where there is a pinch-point for water, and Donahue replied that there should not be. Bickford said that the bioprogram indicated that peak consumption is about 13,000 gallons per minute (gpm), and the well field will be developed

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to deliver 18,000 gpm. Gale asked about the effluent from the dual drain tanks, and Donahue replied that a microstrainer will be installed to the clarifier, and then the water will go to overflow. Bickford added that the system will be single-pass water, and that the idea is to try to minimize future use of chemicals. He also added that the circulars help minimize effluent treatment and discharge concerns.

Tonseth asked about the timeline for the renovation. Bickford said that, originally, the plan was to put the project to bid in spring 2014; however, Douglas PUD needs to notify FERC of the proposed project and determine their level of desired involvement. He said that, in the meantime, Douglas PUD is moving forward with the well field redevelopment. He added that the goal is to get to 18,000 gpm as soon as possible so that the well is available prior to disruptions at the hatchery during construction. Lynn Hatcher asked if there was anything that the Hatchery Committees could do to help move the modernization process forward. Bickford suggested that perhaps a Statement of Agreement (SOA), indicating the Committee support and approval of the proposed renovations, would help. He added that it may put FERC at ease if they know that the plans have also been reviewed and approved by the Hatchery Committee. Tonseth asked when the renovations can be expected to be complete if everything goes as planned, and Donahue replied that the project would take 2 years to complete.

Mike Schiewe asked about adult collection and processing, and Bickford replied that Douglas PUD has been working with Bryan Nordlund (NMFS) regarding trap design and fish handling. Bickford said that because the volunteer channel and trap is considered a passage structure, the Wells HCP requires that the Coordinating Committees approve the structure. Tonseth suggested using direct current (DC) for anesthesia in order to keep the fish in water the entire time. Mackey said that Douglas PUD is looking into DC electro narcosis units (i.e., low voltage DC), and hopes to be able to have a system that can anesthetize multiple fish at once. Gale suggested that, for sacrificing fish, a carbon dioxide (CO<sub>2</sub>) system is much less expensive than an electro anesthesia (EA) system. Tonseth said that the problem with a CO<sub>2</sub> system is the human safety concerns. Gale said that tricaine methane sulfonate (MS 222) is also an option, in lieu of an EA system. He also suggested that if an electro narcosis system is used that the design also allows other anesthetic options to be used, such as MS 222. Hatcher said that National Marine Fisheries Service (NMFS) engineers have historically supported the

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use of electro narcosis using DC-based units. Tonseth said that Washington Department of Fish and Wildlife (WDFW) put together a position paper on using DC-based units for electro narcosis; and added that WDFW has data for Chinook and steelhead. He also noted that with DC, there can be human contact with the water. Mackey said that Douglas PUD is still discussing all options.

Keely Murdoch asked about the future use of the east ladder trapping facility, and Bickford replied that the facility is rarely needed anymore. He added that the facility was originally built for the Carlton Chelan PUD program, which is no longer in place. Tonseth said that the facility has also been used for steelhead programs; however, this use also does not occur as much anymore because programs have shifted broodstock collection locations. Tonseth said that the only reason to use the east ladder now would be for adult management, or if a third party wanted to conduct sampling. He added that if the east ladder were to be used in any capacity, it would need improvements. Bickford said that the area is not ideal because of federal security requirements and the uncertainty in getting fish back across the dam during emergency or construction activities, and that the only reason that he could see needing to use it would be if there was a requirement to sample 100 percent of the spring Chinook run.

Gale asked about the feed storage room, and Bickford said that Douglas PUD has been discussing potentially purchasing feed in bulk, as opposed to in individual bags. He said that purchasing bulk feed and using automated feeders would reduce labor, and he added that the feed would be stored in a high-density plastic hopper. Use of bulk feed would reduce the need to handle bags of feed multiple times. Gale asked if using automated feeders would cause concern that fish are not being directly monitored while feeding, and Bickford replied that Douglas PUD has discussed this issue as it relates to the ability to observe fish behavior. Tonseth added that size disparity could also quickly become an issue without close observation. Ferjancic suggested that staff be trained to continue fish behavior observations, despite the fact that they no longer need to physically feed the fish. Todd Pearsons mentioned automated underwater feeding systems that have been implemented to improve feeding, and Gale noted that there are no data to support the claim that underwater feeding systems benefit fish. The group discussed several studies that tested naturalistic rearing treatments and that the studies generally did not find biologically significant differences in the enhanced versus standard rearing approaches. Ferjancic said that he recently came across

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a paper out of Norway published in the Proceedings of the Royal Society B titled, “Environmental enrichment promotes neural plasticity and cognitive ability in fish” by Gro Veia Salvanes, Moberg, et al. (2013). He said that the paper had some interesting thoughts on environmental enrichment and that he will email it to Geris for distribution. *(Note: Ferjancic provided the paper to Geris, which was distributed to the Hatchery Committees on August 23, 2013.)*

Gale noted the importance that enough space is planned for marking trailers to access needed areas, and that there will be easy access to power in those areas. Ferjancic said that these details are not laid out at the master planning level; however, he said that HDR will be sure to incorporate these details in future planning. Gale asked if the Hatchery Committees will be involved in that planning, and Bickford replied that the Committees can be involved if they want. Bickford said that when planning reaches 30 percent design, it will be a good time for another Hatchery Committee review.

Truscott asked, regarding the circulars, if there is a restriction on how many groups can be simultaneously removed at the terminus of the fish conveyance system. He further explained that releasing volitional migrants is desired and that the distribution system should be able to collect separate programs. Donahue replied that sorting details have not yet been worked out. Bickford said that a couple of options have been discussed for efficient fish transfers and releases.

Bickford said that the dirt ponds will be covered with netting to minimize predation, and he added that the biggest problems are small ducks and herons. He said that, last year, about 20,000 fish were lost to predation. Gale asked if the transmission tower in dirt pond 2 will cause problems installing the bird netting. HDR and Bickford responded that the netting can be installed to account for the effects of the tower.

Bickford said that Douglas PUD plans to submit the Part 12 notice to FERC in the fall of 2013. Schiewe suggested that Douglas PUD keep in touch about the letter to FERC, so that the Hatchery Committees can stay involved and possibly help move things forward. Tonseth asked if HDR needs to wait for FERC’s response, and Bickford replied that HDR can keep moving forward. Ferjancic said that 30 percent design will likely be reached by the end of

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the year. Bickford reminded everyone that the Wells Hatchery Master Plan was finalized following a 60-day review period, which ended on July 13, 2013, as described in an email distributed to the Hatchery Committees by Geris on August 2, 2013. As noted in the email, no comments were received from Hatchery Committees members on the draft plan.

### **List of Attachments**

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| Attachment A | List of Attendees   |
| Attachment B | Wells Hatchery Modernization (Douglas PUD)                |
| Attachment C | Wells Fish Hatchery Modernization (HDR Engineering, Inc.) |

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

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<b>Name</b>	<b>Organization</b>
Mike Schiewe	Anchor QEA, LLC
Kristi Geris	Anchor QEA, LLC
Shane Bickford	Douglas PUD
Greg Mackey*	Douglas PUD
Tom Kahler*	Douglas PUD
Kenneth Ferjancic	HDR Engineering, Inc.
Ed Donahue	HDR Engineering, Inc.
Jason Hill	HDR Engineering, Inc.
Todd Pearsons	Grant PUD
Lynn Hatcher*	National Marine Fisheries Service
Keely Murdoch*	Yakama Nation
Kirk Truscott*	Colville Confederated Tribes
Bill Gale*	U.S. Fish and Wildlife Service
Mike Tonseth*	Washington Department of Fish and Wildlife

Notes:

\* Denotes Hatchery Committees member or alternate

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