Columbia River System (CRS) Fish Facility Design Review Work Group (FFDRWG)
USACE, Portland District (NWP) and Walla Walla District (NWW)

January 2026 Notes

Thursday, February 5th @ 09:00

FFDRWG Files: https://public.crohms.org/tmt/documents/FPOM/2010/FFDRWG/CY2026/

1 *FFDRWG contact list - ** notify Chuck and Jake of any changes*

BPA	***LAURIE PORTER (CRITFC)***	Mark Leonard	Tucker Gossett (BON)	Sarah Ebner (HD)
BEN HAUSMANN	Greg Silver (CRITFC)	Scott Livingston	Jase Owens (BON)	***KYLE SAUTTER (HDC)***
CAROLINA ANDES	Pete McHugh (CRITFC)	Nicole Tancreto	***BECCA CATES (BON)***	**CENWW-PM**
CHRISTINE PETERSEN	Aaron Jackson (CTUIR)	**CENWD**	***ERIC GROSVENOR (TDA)***	***CHUCK BARNES***
Josh Ashline	Ralph Lampman (YN)	***DOUG BAUS***	Jeff Randall (TDA)	***RYAN ASHCRAFT***
Leah Sullivan	Keely Murdoch (YN)	Tim Dykstra	***AARON YOUNG (TDA)***	***JEREMY NGUYEN***
Tammy Mackey	***TOD SWEEN (NPT)***	Dan Feil	***DAVID MILLER (JDA)***	***KAREN KELLY***
Emily Leake	Jay Hesse (NPT)	Cindy Studebaker	Michael Lotspeich (JDA)	Greg Linklater
NOAA	Lyman Jim (CTWS)	***LISA WRIGHT***	Laura Rickets (JDA)	Karen Robison
TREVOR CONDER	Casey Baldwin (CTCR)	Sean Tackley	Robert Wertheimer (FFU)	***CHRIS YANE***
Kelsey Swieca	Michael Karnosh (CTGR)	Ian Chane	Darren Gallion (FFU)	***KAT HERTZOG***
Chris Magel	Lawrence Schwabe (CTGR)	**CENWP-PM**	Kyle Tidwell (FFU)	**CENWW-OD**
Emi Melton	Torey Wakeland (CTGR)	Ida Royer	**CENWP-ENC**	***CHRIS PEERY***
Kinsey Frick	**NPCC**	Erin Kovalchuk	Shari Dunlop (HD)	***TIFFANY STOECKIG-DIXON***
JESSE LAMB	Kris Homel	***MARK BIERMAN***	Aaron Litzenberg (HD)	Denise Griffith
USFWS	Kate Self	***JAKE MACDONALD***	Chris Motti (HD)	Bobby Johnson
DAVE SWANK	**FPC**	***MARIE ADAMS***	***STEVE SCHLENKER (HD)***	Deb Snyder
Shelby Fowler	***ERIN COOPER***	David Trachtenbarg	Max Wilson-Fey (HD)	Steven Lee
States	Noah Campbell	***BRIAN BELL***	Adam White (DE)	**CENWW-ENC**
ERICK VAN DYKE (ODFW)	**PSMFC**	David Hamernik	Dan Penn (DM)	Jon Renholds
CHARLIE MORRILL (WDFW)	***GORDY AXEL***	**CENWP-OD**	***ERIKA MITCHELL (DM)***	Travis Foster
Jonathan Ebel (IDFG)	***GABRIEL BROOKS***	Nick Bertrand (ODT)	Adam Jones (DG)	***RYAN LAUGHERY***
CRITFC/Tribes	Darren Chase	***PATRICIA MADSON (ODT)***	Nicholas Rillstone (DS)	***BROCK WINEGAR***
TOM LORZ (CRITFC)	Roger Clark	***JEANETTE WENDLER (BON)***	***WILL GUEST (DS)***	***ANDREW GLENCROSS***

2 *NWP Projects*

2.1 NWP BON1 Ice & Trash PIT Detection – Mark Bierman (PM), Erika Mitchell (TL), Jeanette Wendler (BON)

- *Delivered on Monday (2/2). Looks good. Project is working electrical and coordinating with PSMFC for install. (Bierman)*

2.2 NWP BON2 exit channel PIT detection for post-construction evaluation – Erin Kovalchuk (PM), Adam White (TL), Becca Cates (BON)

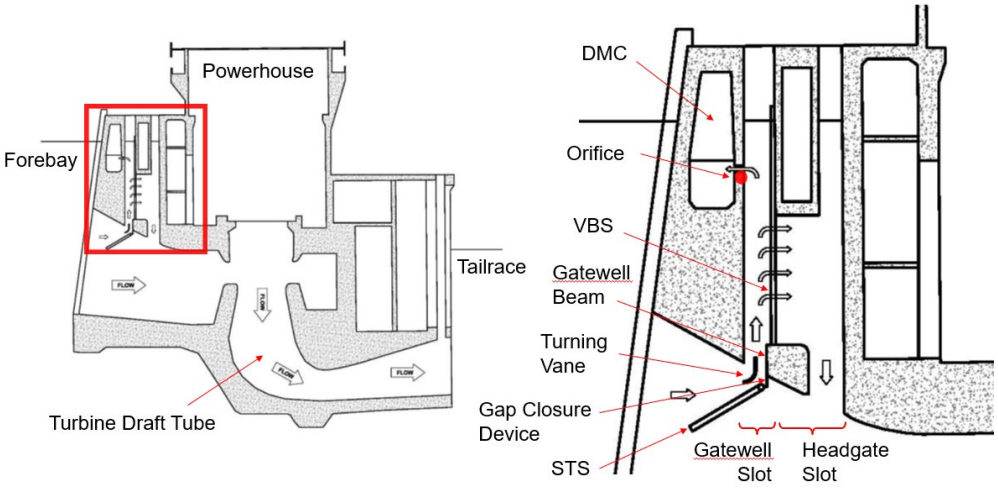
- Preliminary results from the 2025 passage season were presented by Bob Mueller/Hadley VandeVusse (lamprey) and Ben Sandford (salmon) at SRWG. Presentations available here: https://public.crohms.org/tmt/documents/FPOM/2010/SRWG/SRWGAnnualReview
- *Conder: Are we keeping the antenna in place for continued evaluation? Axel: Yes. The antenna has been added to the region's PIT infrastructure as a component of the BO4 array, operated and maintained by BPA/PSMFC. Wendler: No USACE O&M concerns with leaving the antenna in place indefinitely.*

2.3 NWP BON2 Submerged Traveling Screen (STS) Rehabilitation Phase 1a – Karen Kelly (PM), Will Guest (TL), Becca Cates (BON)

- SCOPE: PDT is developing alternatives to replace or rehabilitate all 24 screens as well as procure one spare. The work envisioned in this project is to review the existing materials, update cost and schedule estimates, and proceed into Phase 1. Uniformity of devices and commonality of spare parts is a priority (including Bonneville and John Day).
- Current schedule:
  - 30% phase 1a (Constraints & Criteria) phase 1a ~June 2025
  - 60% phase 1a (Alternatives Evaluation) phase 1a ~February 2026
  - 90% phase 1a (Draft Final) report ~March 2026
  - Final phase 1a report complete ~April 2026
- *Overview of Phase 1a criteria/constraints and alternatives (Macdonald/Sautter)*
  - *One primary constraint is B2 FGE gatewell hydraulics.*

- *B2 FGE reports suggested a couple opportunities for improvement:*
  - *"Obstructions near the edges of the gatewell such as the STS hoist arms, sudden contractions and expansions and increased boundary layer effects likely contribute in part to the significantly higher turbulence and reduced sweeping velocities near the edges." (Alden, 2015)*
  - *"In all [test] cases, the flow field was biased toward the north, which suggests, perhaps, that flow approaches the gatewells from the south side, and flow momentum toward the north is not dissipated at the STSs or turning vanes leading to the gatewells." (Alden, 2022)*
- *About half (12) of the B2 STS frames are in poor condition.*
  - *Material loss in key structural components*
  - *Loss of protective coating accelerating material loss*
  - *Reasonably expected to fail within next 10+ years without complete overhaul*
- *About half (12) of the B2 STS frames are in serviceable condition.*
  - *Little to no material loss in key structural components*
  - *Intact protective coating inhibiting material loss*
  - *Reasonably expected to last for decades with routine maintenance before needing complete overhaul.*
- *Recommended Alternative: Alternative C: Replace all damaged STS*
  - *Replaces 12 STS found to be in poor condition*
  - *Estimated to cost $18.9M*
- *Next Best Alternative: Alternative B: Replace all STS*
  - *Replaces all 24 STS*
  - *Estimated to cost $23.6M*

- *Cautionary tale (for Phase 1 design team). When TRD went in, NOAA was opposed to it but USACE was insistent. It ultimately didn't work. Don't get too far down the road and fall in love with a design before seeking input from regional technical experts. (Conder)*
- *The alternatives presented in a Phase 1a report are 'recommended' or 'preferred' by the PDT preparing the phase 1a report. They are not 'selected' by USACE or CWG at this point. Selection of an alternative to carry forward to design will occur in Phase 1, when/if we get there.*
- *Lorz: May need to check dates in the B2 FGE history section of the background. The dates we report for the first gatewell improvements are inconsistent with Tom's memory and may be inconsistent with "Dan's declaration".* ***Macdonald will research "Dan's declaration" and "Tom's memory", check for consistency with respect to dates for B2 gatewell improvements, and report any significant findings at next FFDRWG meeting.***
- *Porter: Are lamprey being considered in STS replacement project? Sautter: Yes, recommended alternative is to replace in kind, so we'll meet all the same fish criteria that we meet with the existing screens. Macdonald: Yes, the applicable passage guidelines for lamprey published by the PLCI are included as criteria in the P1A report for the P1 design team to keep in mind in the design phase.*
- *Conder: Why recommend replacing only half of them? Replacing all of them at one time is a lot cheaper than replacing half of them twice. Sautter: Replacing all at once is presented as the next best preferred alternative, but the "good" ones are expected to last for decades with routine maintenance before needing complete overhaul. Guest: The 12 that are in rough shape get used much more than others. Therefore, focusing on the lifespan related to usage, screens that don't get used as much would balance our wear and tear. Macdonald: Because of the magnitude of the cost estimates, we want to provide CWG with a lower cost preferred alternative to increase the likelihood of advancement to the design phase.*



2.4 NWP JDA North Fish Ladder Elevator Phase 1A – Marie Adams (PM), Adam White (TL), David Miller (JDA)

SCOPE: Perform a complete replacement/modernization of the John Day Dam North Fish Ladder Elevator #4 to improve reliability, safety, and compliance with current standards. The elevator, originally installed in the 1960s, is beyond its service life. It suffers from constant non-operability and unreliability, posing a risk to personnel and causing operational delays. Its current condition forces personnel to use alternate means like stairs, reducing efficiency and carrying capacity.

- Current schedule:
  - 30% phase 1a (Constraints & Criteria) phase 1a ~February 2026
  - 60% phase 1a (Alternatives Evaluation) phase 1a ~April 2026
  - 90% phase 1a (Draft Final) report ~October 2026
  - Final phase 1a report complete ~February 2027
- *Overview of Phase 1a criteria/constraints (Adams)*
  - *Space is the biggest constraint. Adjacent stairways and fish ladder prevent changes to the footprint of the elevator shaft. Our constraint of no major structural modifications is a way to keep costs under control and help this project's chances to advance to the design phase. (White).*
  - *FFDRWG requested a drawing/sketch of the elevator shaft and pertinent structural components around it to illustrate the space constraints the PDT identified.* ***Drawing number JDD-1-4-2/33, Monolith 3 Sections and Details is available on the FFDRWG website. Adam White will walk FFDRWG through the drawing at an upcoming FFDRWG meeting.***
  - *It may be possible from a fish passage standpoint to start some construction activities earlier than December, with proper coordination through FPOM. (Macdonald)*
  - *Beneficial Occupancy by March would be great, but from a Tribal fish collection standpoint, the beginning of May would be acceptable. (Porter)*
- *This project will have a limited list of alternatives to analyze, so should be a relatively short and simple Phase 1a process. Phase 1 design work is also expected to be relatively straightforward.* ***The PDT will seek opportunities to expedite the Phase 1a/Phase 1 processes and proceed to Phase 1 (and Phase 2) as soon as practical.***
- *PDT will present their draft alternatives evaluation to FFDRWG at our regular meeting in April or May.*
- *Porter: Is the elevator working now? (Looking forward to 2026 passage season). Miller: Yes, elevator is currently working but knowing its history, it could break down again at any time. Use at your own risk and have backup provisions for lamprey transport ready to go in the event it fails during the passage season. Macdonald: Same as the last several years…limping along with an unreliable elevator until we get it replaced.*

2.5 NWP BON1 B-Branch Stabilization Phase 1A – Greg Linklater (PM), David Hicks (TL), Becca Cates (BON)

- Scope: This project is to evaluate the portion of shoreline at Bonneville adjacent to spill bay 18 and provide recommendations for corrective actions with greater longevity than previous repair efforts.
- Current schedule:
  - 30% phase 1a (Constraints & Criteria) report ~February 2026
  - 60% phase 1a (Alternatives Evaluation) report ~May 2026

- 90% phase 1a (Draft Final) report ~August 2026
- Final phase 1a report complete ~October 2026

➢ *PDT will present their draft constraints & criteria to FFDRWG at our regular meeting in March.*

2.6 NWP BON1 Fishway Diffusers Phase 1A – Karen Robison (PM), Will Guest (TL), Jeanette Wendler (BON)

➢ Scope: A 2013 EDR explicitly identified several deficiencies with the fishway diffuser valve & gate system. Many of the gate components identified are highly corroded and subject to failure. In their current condition they present a risk of failure that would impact fish passage reliability and possibly put us out of compliance with the current BiOp. This project will restore reliable operability to the diffuser gates and AWS valves that need to operate to maintain criteria and permanently close any fish gates that are not necessary to maintain criteria.

➢ Current schedule:
- 30% phase 1a (Constraints & Criteria) report ~March 2026
- 60% phase 1a (Alternatives Evaluation) report ~June 2026
- 90% phase 1a (Draft Final) report ~October 2026
- Final phase 1a report complete ~March 2027

➢ The Hydraulic Evaluation of Lower Columbia Adult Bypass Systems (HELCRABS) reports from the early 2000's provides much of the basis for this project. **100% Bradford Island 'B' Branch Adult Fishway Evaluation (2004)** and **80% Bradford Island A Branch Interim Evaluation Report (2003)** are available on the FFDRWG website for reference.

2.7 NWP TDA Fishway Diffusers Phase 1 – Karen Robison (PM), Will Guest (TL), Eric Grosvenor (TDA)

➢ Scope: Depending on different locations in the Fish Ladders, the project has assessed that some of the valves and orifices need to be permanently closed, fixed in an open position, or restored to operability, with specific requirements to be determined by the PDT. Many of the diffuser valves are inoperable and\or obsolete. In their current condition they present a risk of failure that would impact fish passage reliability and possibly put us out of compliance with the latest BiOp. This project will restore reliable operability to the diffuser gates and AWS valves that need to operate to maintain criteria and permanently close any fish gates that are not necessary to maintain criteria.

➢ Limited alternatives (see figure below), so proceeding to phase 1, starting with constraints and criteria and enough design work to develop a class 3 estimate.

➢ Current schedule:
- 30% DDR (Constraints & Criteria) milestone ~March 2026
- 60% DDR milestone ~August 2026
- 90% DDR milestone & CWG check-in ~October 2026
- Final DDR complete ~March 2027

➢ The Hydraulic Evaluation of Lower Columbia Adult Bypass Systems (HELCRABS) reports from the early 2000's provides much of the basis for this project. **90% The Dalles Dam North Fish Ladder Hydraulic/Operational Evaluation (2005)** is available on the FFDRWG website for reference.

2.8 NWP TDA Spillway Gates 1-9 MMR/Phase 1A – Martin Evans (PM) Erika Mitchell (TL), Eric Grosvenor (TDA)

➢ Scope: The initial scope of this project is to complete a combined Major Maintenance Report (MMR) and Phase 1A Report in accordance with current HQUSACE planning and budgetary guidance, and NWD guidance on combined MMR/1A reports. The scope of alternatives should be consistent with HQUSACE guidance to "maintain the function of the structure to provide reliable navigation conditions, to mitigate potentially unsafe conditions caused by the deterioration of the original structure, and/or to provide a sustainable operations and maintenance approach to the project." This may include measures needed to meet current design standards and account for changes in load requirements.

➢ Current schedule:
- 30% P1A (Constraints & Criteria) milestone ~February 2026
- 60% P1A (Alternatives Evaluation) milestone ~August 2026
- 90% P1A (Draft Final) milestone ~March 2027
- Final P1A complete ~May 2027
- Phase 1 kickoff ~October 2027

2.9 NWP TDA North Fish Ladder Rockfall Repair (P&S/phase 1) - James Ettleman (PM), Chris Motti (TL), Eric Grosvenor (TDA)

- Scope: Project objective is to stabilize the rocks cuts along the North Fish Ladder between Weir 77 and Weir 132 through a combination of scaling, rock anchors, and small concrete retaining wall.
- 90% DDR was completed in 2015. **The Dalles Dam North Fish Ladder Rock Wall Stabilization 90% (Final) DDR (2015)** and a **2024 trip report from Alex Baumann and Bob Cordie (with pictures)** are available on the FFDRWG website.
- Current Schedule:
  - P&S (incl. BCOES): Apr 2026 – Jul 2027
  - Contract Solicitation and Award (IFB): Jul 2027 – Sep 2027
  - Construction (Onsite; IWWW): Dec 2027 – Feb 2028
  - Contract Closeout: Feb 2028 – June 2028

2.10 [paused] NWP JDA South fish pumps - Tim Ernster (PM), Marina Reilly-Collette (TL), David Miller (JDA)

- Short-term interim repairs = O&M/FPOM | Long-term full replacement of all three pumps = CRFM/FFDRWG
- Short-term repairs are going forward, see FPOM for current status.
- Long-term replacement project did not receive FY26 CRFM funds in PBud. On hold just shy of 30% design review.

2.11 NWP JDA Turbine Replacement – Dave Hamernik (PM), Curtis Lipski (TL), David Miller (JDA)

- Preparing to solicit a design build contract for 12 new turbine runners (6 adjustable, and 6 fixed) and generator rewinds.
- On-site work scheduled to start in March 2035 and continue through at least 2050.

2.12 [paused] NWP TDA Backup AWS debris management – Marie Adams (PM), Mehdi Roshani (TL), Eric Grosvenor (TDA)

- Final (pre-BCOES) DDR completed April 2025. See 2025 FFDRWG files website for final (pre-BCOES) design package.
- TDA backup AWS debris management did not receive FY26 CRFM funds in PBud.

2.13 [paused] NWP BON Spillway rock mitigation – Marie Adams (PM), Adam Jones (TL), Becca Cates (BON)

- Results of ROV spillway tailrace inspection completed 9/3/25 showed low volumes of debris in the stilling basin and no need for rock removal this year.
- DDR/Plans & Specifications for rock barriers on the apron is paused at 90% awaiting additional appropriations. See 2025 FFDRWG files website for 90% design package.
- BON rock mitigation did not receive FY26 CRFM funds in PBud.

2.14 [paused] NWP BON Bradford Island and Cascades Island LPS pump upgrades - Erin Kovalchuk (PM), Adam White (TL), Tucker Gossett (BON)

- equipment/supplies for upgrade have been procured.
- BON Project will perform the installation work, pending availability of Project personnel and funding.
- LPS pump upgrades project did not receive FY26 CRFM funds in PBud.

- *Lorz: Talk of earmark going to be passed. Are these [paused] projects available to be funded with that money? Macdonald: Good question, but not for this forum. Better to ask at SCT.*

3 NWW updates

3.1 NWW MNA Turbine Replacement – Jean DesJarlais (PM), Jon Renholds (TL)

- Renholds' January presentation on most recent fixed blade ERDC results and update on U14 outage is posted on the FFDRWG site.

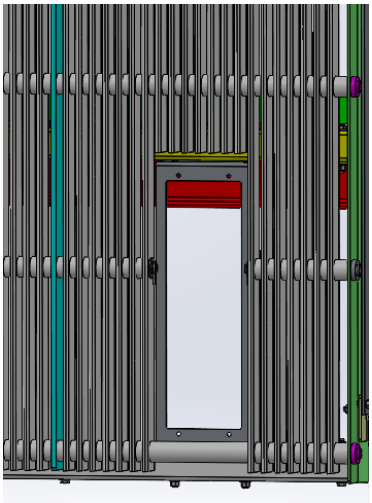
3.2 NWW IHR Turbine Cooling Water Exclusion - Karen Kelly (PM), Chuck Barnes (Bio)

- Should have enough lamprey at Ice Harbor by February to continue evaluation.

3.3 NWW LLA Adult Ladder Turn Pool Gate - Greg Linklater (PM), Chuck Barnes (Bio)

- Pictures from installation (Barnes)

- *Opening for Fyke can be seen in red circle. There was a plate bolted on at fabrication that is spec-ed to be removed and finger trap added by Project. Opening is designed for off-the-shelf products from Neptune Marine Products. Model RF 105 – 7" x 23.25" Trigger Model. Fyke will be purchased prior to summer and installed in opening seen in picture below.*



3.4 NWW MNA Avian deterrence – Karen Kelly (PM), Ryan Ashcraft (Bio)

- Final alternatives analysis report received and distributed to FFDRWG September 2025. See 2025 FFDRWG files website for final report. Did not receive FY26 CRFM funds in PBUD.

3.5 NWW MNA PIT Detection – Kat Herzog (PM), Chuck Barnes (Bio)

- Final scoping report (EDR) is available for review on the FFDRWG website.
- *Discuss selected alternative and any concerns FFDRWG has with our selection (Herzog)*
  - *Gabe B - New "smaller" matrix design presented.*

- *Trevor C- Pass over and under non typical of a pass through? Corps rejected TSW cap antenna. Why does this design not present the same issues?*
- *Gabe B - This would be a different size of antenna. Cannot use 3000 antenna which was proposed for the TSW cap. This would be IS1001 and must be in water.*
- *Trevor C - Could you use IS1001 on the TSW cap?*
- *Gabe B - One sided read range. The matrix would provide double sided detection x2 more.*
- *Trevor C - Tell me the functional reason why the cap wouldn't work. 1001. Using both methods.*
- *Chuck B - Couldn't design for structural support if you had to close the bulkhead.*
- *Trevor C - what about the BON detector.*
- *Gabe - No BON detector is not designed to have anything on top of it.*
- *Charlie M - Curious about the maintenance of removing debris.*
- *Kat H - Have some cost estimates of O&M for maintenance.*
- *Andrew G - It would look like Pickup, clean, then drop back down once it's clean.*
- *Gabe B - This idea is to be sub surface; debris would be passing over the detector.*
- *Trevor C - There are times when the debris load is extremely intense for weeks on end.*
- *Tom L - Need to confirm RFP cannot hold the weight of the bulkhead. Also, could we add a third detector with the new design. How are we supposed to provide comments on this?*
- *Kat H - This is the first refinement of the design, and we will take comments on the meeting minutes.*
- *Chuck B - We can add comments and responses into a report.*
- *Trevor C - We have great survival through the TSW, and it is hard to buy off on a device that could have a negative impact on the survival. I am reluctantly considering this design, but I feel there are other alternatives that we haven't fully put to bed. I'm very concerned we are going to create a structure that will decrease the survival.*
- *Andrew G - This design allows flexibility to move the matrix around to lower likelihood of debris buildup. Vertical movements.*
- *Gordy A - Detection time is much longer with the matrix than the top cap.*
- *Ryan L - We need to recognize that an unshielded antenna may not be feasible in this environment. We need to evaluate the noise in this environment to determine feasibility for both the matrix design or a weir cap. Bringing up the question of if a weir cap is feasible is a good question and is likely a "YES" but we treated the engineering feasibility as an unknown in original evaluation. We also noted the weir cap detection is good for detecting fish lower in the water column and likely result in lower detection probabilities due to fish being higher in the water column during TSW passage. We recognize need to validate feasibility of the matrix design which will include CFD modeling and the impacts of debris build up. We are reminding everyone that we are just starting to vet the preferred alternative for feasibility and looking to get go/no go level feedback while we continue evaluation.*
- *Erick VD - This conversation shows that we have not fully considered all alternatives before we discounted them. I will continue to support the idea of multiple detection methods through the TSW.*
- *Charlie M - How do we monitor the debris build up. Once a month doesn't seem sufficient.*
- *Ryan L - Didson cameras to monitor at other facilities. Load sensors could be an option for monitoring debris loads.*
- *Charlie M - 40 inch on top 40 on bottom? Why not add detection antennas on the bottom support.*
- *Gabe B - Would need to work with Biomark to explore that option because off the shelf, these antennas cannot operate that way but doesn't rule it out of consideration.*
- *Charlie M - There are further technological advancements with the barge. We need to continue looking at that.*
- *Gabe B - We are trying to stay within scope. Placement of barges continues to be an issue.*
- *Trevor C - Not strongly supportive. Debris issue is a major concern and "minimizing" debris is not good enough and I will not support that. Corps needs to come up with a solution that debris will not be an issue or have a remedy for it.*
- *Tom L - Project needs a crane and rigging crew for cleaning. Are we confident that they will be around to lift this thing. Automation may be the route to look at. Has the project been involved in these conversations.*
- *Kat H - Project has been involved in conversations.*

- *Ryan L - Marty has been involved with all meetings and conversations. Project knows that it may not be easy but we are working through these concerns.*
- *Trevor C - Not supportive of the once-a-month cleaning.*
- *Ryan L - Once a month cleaning maintenance has not been agreed on, it's just an example.*
- *Erick VD - Interested in other alternatives conversations. Are there conversations about the TSW cap? Or is that currently out of the conversation?*
- *Kat H - Debris management issue is major consideration at this time. TSW cap has been screened out during the last phase.*
- *Erick VD - Are you exploring other options in addition to the matrix?*
- *Kat H - We are trying to be careful of discussing other options, so we are staying in scope, we don't want to take a step back.*
- *Erick VD - You are having conversation internal but not in this meeting because it's not in scope?*
- *Trevor C - The top cap was designed for a single reader and was screened out because couldn't be done.. now hearing that it's not necessarily out of the conversation. Now we can't go back and talk about these. Taking a step back is not always a bad thing.*
- *Andrew G - Concerns with velocity at TSW cap.*
- *Trevor C - I would take less read time over no detection because detector had to be pulled out.*
- *Ryan L - 14ft per sec at crest of TSW cap.*
- *Kat H - Trevor if you want to provide written comments stating that you would like the corps to go back and look at the TSW cap.*
- *Trevor C - Will do. Thanks.*

3.6 NWW John Day Dam and Snake River Ladder Cooling – Karen Kelly (PM), Ryan Laughery (TL), Ryan Ashcraft (Bio)

- Final alternatives analysis report received and distributed to FFDRWG September 2025.
- Testing bubbler system at Lower Monumental this Winter, see website for 1/8 presentation (Laughery).
  - *Ryan L - Plan to install bubbler before end of FEB. Get 2nd bubbler in a few weeks later. Have the 2nd install done with FFDRWG reps on site to see how system looks. Also, observe the bubble interaction with the fish ladder exit, for buy in on continued testing.*
  - *Brock W - CFD evaluation. Stratified temp layers have been added to model. ~200 cfs from bubbler.*
  - *Tom L – Not much plume dispersion in model.*
  - *Brock W – We know little dispersion is shown, as we test the bubbler, we will be able to validate or calibrate our model to the physical test, including dispersion.*
  - *Ryan L - Very basic model and is displaying the "worst" possible outcome. Ie. worst conditions for plume do disperse.*
  - *Erick VD - Looks 2D based. Is that all you are looking at?*
  - *Brock W – Visual shown was a 2D slice of a 3D simulation.*
  - *Erick VD - Okay, that will help with verification.*
  - *Charlie M - How will you be able to model the entire forebay with a bubbler added in?*
  - *Brock W - Will develop a full forebay model without the bubbler then add those flow patterns to the bubbler model.*
  - *Charlie M - What is the timeline for the operation of this bubbler.*
  - *Ryan L - Idea is to have the bubbler running non-stop. If it doesn't work for cooling, it is showing benefits for debris load reduction.*
  - *Chuck B - Plan to implement fish behavior study to identify if bubbler affects fish migration.*
  - *Erick VD - Is there a change in the application, are we talking about more bubblers across the face of the dam?*
  - *Chuck - No, bubbler will be in the one corner "near" fish ladder.*
  - *Erick VD - Have interest in seeing how and what tools you plan to use to monitor fish behavior.*
  - *Dave S - How are you going to use bubbler temps to model changing temps and using what as a baseline?*
  - *Ryan L - Testing the bubbler and monitoring the hydraulics will give the information we are looking for.*
  - *Charlie M - May and June, look at PIT travel time to monitor the fish behavior past the bubbler.*

- *Chuck B - Yes, PIT tags will remain on the table as a tool to evaluate fish behavior.*
- *Ryan L - Mid March for a potential time to deploy bubbler 2 and have FFDRWG out to observe bubbler operations.*

4 Upcoming meetings and field trips

4.1 Fish Facilities Design Review Work Group (FFDRWG)

- first Thursday of every month (contact Jake Macdonald and Chuck Barnes if you need an invitation).

4.2 Fish Passage Operation & Maintenance (FPOM) Work Group

- second Thursday of every month (contact Patricia Madson and Chris Peery if you need an invitation).

4.3 Studies Review Work Group (SRWG)

- FY25 SRWG Annual Review presentations: https://public.crohms.org/tmt/documents/FPOM/2010/SRWG/SRWGAnnualReview/
- FY 2026 Planning Cycle: https://public.crohms.org/tmt/documents/FPOM/2010/SRWG/FY26AFEPplanning/
- FY27 planning cycle will kick off around February or March 2026.