

## MEMORANDUM FOR THE RECORD

Subject: FINAL minutes for the 10 November 2022 FPOM meeting. The meeting was held at WDFW office 5525 South 11th Street, Ridgefield, Washington and via WebEx and call in.

**In Attendance:**

<b>Last</b>	<b>First</b>	<b>Agency</b>	<b>Email</b>
Baus	Doug	NWP-RCC	Douglas.M.Baus@usace.army.mil
Bettin	Scott	BPA	swbettin@bpa.gov
Bellerud	Blane	NOAA	blane.bellerud@noaa.gov
Bertschinger	Paul	NWW	Paul.G.Bertschinger@usace.army.mil
Brower	Alan	PSMFC	ABrower@psmfc.org
Braun	Mark	NWP	Mark.W.Braun@usace.army.mil
Burnet	Sarah	NWP	Sarah.H.Burnet@usace.army.mil
Conder	Trever	NOAA	trevor.conder@noaa.gov
Cooper	Erin	FPC	ECooper@fpc.org
Day	Jim	NWP	James.E.Day@usace.army.mil
Ebel	Jonathan	IDFG	jonathan.ebel@idfg.idaho.gov
Edwards	John	WDFW	John.Edwards@dfw.wa.gov
Hausmann	Ben	BPA	bjhausmann@bpa.gov
Hesse	Jay	Nez Perce	jayh@nezperce.org
Iverson	Tom		t.k.iverson@comcast.net
Lorz	Tom	CRITFC	lort@critfc.org
Mackey	Tammy	NWP	Tammy.m.mackey@usace.army.mil
McDowell	Michelle	USFWS	michelle_mcdowell@fwa.gov
McGrath	Claire	NOAA	claire.mcgrath@noaa.gov
Morrill	Charlie	WDFW	Charles.Morrill@dfw.wa.gov
Petersen	Christine	BPA	chpetersen@bpa.gov
Peery	Chris	NWW	Christopher.A.Peery@usace.army.mil
Randall	Jeff	NWP	Jeffrey.W.Randall@usace.army.mil
Sachs	Steven	NWP	steven.a.sachs@usace.army.mil
Scott	Shane		shane@sscottandassociates.com
Skiles	Tom	CRITFC	skit@critfc.org
St. John	Scott	NWW	Scott.J.StJohn@usace.army.mil
Truscott	Kirk		
Urmston	Jenn		jennifer_urmston@fws.gov
Van Dyke	Erick	ODFW	erick.s.vandyke@odfw.oregon.gov

Wertheimer	Bob	NWP	Robert.H.Wertheimer@usace.army.mil
Wright	Lisa	NWD-RCC	Lisa.S.Wright@usace.army.mil

## 1. Approval of October Minutes: (Peery)

Approved.

## 2. Action Items

### 2.1. NWW

**2.1.1.**[July 22] LWG adult CH fallback (Bellerud/Swieca) **ACTION:** Bellerud will provide an update. Peery – It has been distributed. Ebel - We are looking for a full suite of models and results, currently looking for more background information. Output tables for AIC and variance of placement. Conder - Will look into it with Bellerud and Swieca. Ebel – I would like to see Delta AIC and variance inflation factors. Bellerud – It will take a little while but will look into it.

### 2.2. NWP

**2.2.1.**[July 22] Lethal Removal **Action:** (Sachs/Schmidt) will update. Weekly meetings are being held and the EA is being updated. Review planned for 30 January 2023.

### 2.3. Completed Action Items or to be discussed later in the agenda

**2.3.1.** BON 075MOC and 089MOC Hydro (Derugin) – *STATUS – Hydro-survey completed 2 November; results are still pending.*

**2.3.2.**LWG 08 MOC Trash Rake Crane Replacement (May 2022). *STATUS: Postponed.*

**2.3.3.** 22 IHR 07 MOC Fish Release Pipe Install Outage and Unit 3 Turbine. *STATUS: Postponed.*

## 3. Updates

### 3.1. NWW Updates

**3.1.1.**Upcoming maintenance/construction/research activities (previously coordinated MOC/MFRs).

**3.1.1.1.** 22 LWG 08 MOC BPA Outage 500 kV line - scheduled 14–18 November. Update – NO changes, will happen as scheduled.

**3.1.1.2.** 22 LWG 04 MOC T1T2 Gasket Repair - T1AC scheduled for 28 November, A month long but the outage will only be 12 hours a day. Update – No Changes, screens should be coming out on Monday.

Peery - TVA will be doing the work starting in November, the next outage will be in the spring, working on the how to have the least amount disruption for fish passage.

Conder –All units out during daytime correlates with zero flow criteria. Would rather have zero flow during the day and spill any extra at night

Bettin – There will still be spill so there will still be flow. Will look into running 5 and 6 at night along will spilling anything extra.

**3.1.1.3.** 22 LGS 08 MOC BPA Outage 500 kV line - scheduled 7–11 November. Update – Peery – It is ongoing, should be done tomorrow.

Bettin - Speed no load is 5 -7 K.

Perry – We are running speed no load on all outages.

**3.1.1.4.** 20 LGS 16 MOC Powerhouse Roof Repair – Perry - Outage in December to reconnect bus link is moved to January to accommodate another BPA outage.

**3.1.1.5.** 22 LMN 06 MOC BPA Outage 500 kV line – scheduled Oct 31–4 Nov. Update – Peery - Lost fish pumps for 2 hours. No 3 1643 to 1830.

Van Dyke – What part of facility is affected?

Perry - Providing water to the channel not the ladder portion, provides flow to the tailwater. Velocity is diminished when attraction flow is reduced, gravity water was the only thing flowing during those two hours.

**3.1.1.6.** 22 LMN 09 MOC T-2 Rehabilitation – Extended to 12 December, units 5 and 6 are out. – Update – No change

**3.1.1.7.** McNary crane status – Update – Peery - No changes. Still working with 2 of the spillbay hoist out. Plan is to implement the minimal micro/macro plan.

Lorz – What is the schedule?

Perry – The 2023 plan will be the start to replace one. The plan carries over the next 10 years.

Conder – Where is the best place to see the pattern?

Wright – The 2022 fish passage plan is the best place to see it.

Conder – We should have a note that we have an optimal plan and one that we have to do for now.

Peery – Will look into it and see if the wording on it can be changed.

Van Dyke – Is there a way to get better information about what needs fixing and specs?

Perry – There is a memo, will look to provide.

Hesse - Have spill patterns for MCN that are proposed been tested at ERDC; nor have we implemented them in the past?

Perry- They have not been tested or implemented.

Conder – What are the TSW’S?

Perry – TSW’s are in 19 and 20 both now have plates, but we still need the crane to take them out. Moved a hoist from 16 to 19. Bays 21 and 22 are the furthest out. Most bays are static, there are only 4 bays being adjusted within a range. If flows go up or down significantly, then a crane is used to adjust other bays.

Conder – There is an indication that in 2 out of 3 years tested there has been poor survival with sub-yearling survival with the TSW’s in. We would like to look at ERDC and see if there is a better flow ban and a survival band.

Bettin – Working on criteria, if flows are below 275 and 280 than we don’t take out the TSW.

Perry – There is not a plan to go to look at real time models at this point. Ryan would like to go to ERDC; there is not a formal plan at this time.

Morrill – Has there been any discussion on tagging studies with live fish?

Peery – No there has not been any discussion.

Lorz – We are using the entire CRFM money. Models cannot pick up everything that is seen in physical models. Using hydraulic models may not be acceptable without physical back checks. Using both may be the key.

Conder – It would be nice to have both models.

Perry – I will talk to Paul about it, in my mind it is the highest priority.

Hesse - There are frustrations with using an untested model with fish passage. We should not unknowingly put fish at further risk.

## **3.2. NWP Updates**

**3.2.1.** Upcoming maintenance/construction/research activities (previously coordinated MOC/MFRs).

**3.2.1.1.** 21BON001 MOC Navigation Lock 1 (old navlock) Bridge Replacement scheduled for CY 2023. (Trachtenbarg) Update – No update.

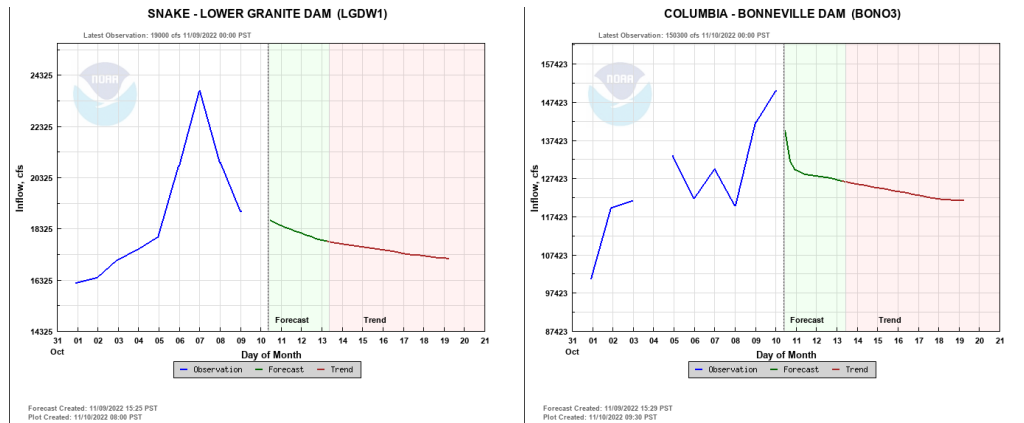
**3.2.1.2.** 22BON075 and 22BON089 MOC Hydro Survey (Derugin), Update – Survey completed on Nov 2<sup>nd</sup>, will update the MOC when results are available.

**3.2.1.3.** 19TDA04 MOC – East side powerhouse crane rails, Update – No update.

- 3.2.1.4. 18JDA02 MOC Trash rack replacement – Delivery Schedule and Dive Plan – Update – Delivery of the first set of Trash Racks is expected at the end of the month. We will start with unit 16 once the dive plan is approved. We will update the MOC for distribution once the plans are finalized.
- 3.2.1.5. 20JDA04 MOC STS crane replacement, has design phase been completed? Update – No update
- 3.2.1.6. 22JDA07 MOC Block Study - concluded 17 Aug, is the review available? Update – No update.
- 3.2.1.7. BON ITS end gate. MOC? (Derugin) Update – Plan to start the dewatering mid-January.
- 3.2.1.8. Bon ITS PIT Detector –  
Van Dyke – keep it on the agenda  
Put it in a place that needs to be
- 3.2.2. TDA AWS debris management – Have 2 alternatives been selected? - Update – There will be a dive on the 28<sup>th</sup> which will be the trash rack, one option is a mobile crane that has a brush as opposed a metal rake and the other is cycling the valve off.  
Conder – Does the brush option include restructuring the trash rack?  
With a brush you won’t have to change the trash rack.  
Lorz – Is there a way to test for effectiveness?  
Mackey – This could be asked at FFDRWG
- 3.2.3. TDA trunnion pin, Update –Is spillbay 10 in operation? Mackey - No spillbay 10 is not in operation. Hoping to get it done in in water work period.
- 3.2.4. TDA N Ladder Rockfall P#449517
- 3.2.5. JDA north pump #4. - Is the UFR in the FY25 budget submission? – Update – The project completed PMP for 250k. A budget request for FY25 has been submitted.
- 3.2.6. JDA spill bay 10, Still in manual operation.
- 3.2.7. JDA SFL Temperatures – Update – Will get an updated from FFDRWG
- 3.3. NWS updates. No update
- 3.4. Research/FFDRWG No in person meeting in Dec. Meeting notes available on website.
  - 3.4.1. NWP FFDRWG. Mackey - JDA Temp meeting notes are on website. St. John - Jan 26 for next meeting.
  - 3.4.2. NWW FFDRWG. No update.
  - 3.4.3. SRWG. No update.
  - 3.4.4. 2022 Research and Access requests:  
Is the Guide available? No update.
- RCC update.

Project	11/8 Average Outflow (kcfs)	5 Day (11/14) Forecasted Inflow (kcfs)	10 Day (11/19) Forecasted Inflow (kcfs)	Forecasted Inflow Low/High (kcfs)
LWG	18	18	17	17 (11/19) / 19 (11/10)
MCN	141	116	113	113 (11/19) / 120 (11/10)
BON	138	126	122	122 (11/19) / 140 (11/10)

\*\*At the time of meeting 11/9 hourly project data was not available.



**Table 1. NOAA Northwest River Forecast Center inflow forecast.**

### 3.5. Fish Count Program update (Peery, Wertheimer).

**3.5.1. BON WDFW – TDA** is conducting winter counting this year, JDA will be next year. Will be renewing contract in 2024.

Lorz - Will the new contract be more digital?

Peery – We would like to, but we need to make sure the technology works.

Ebel – Will contract be for both WW and PD?

Peery - Yes.

Ebel – What would be needed to count walleye at LWG?

Perry – Funding, as it is not an endangered species.

Ebel – We could summarize the data if that would help as the problem seems to be getting worse.

Peery – There are fewer fish at LWG for the counters so it's possible it could be added.

Hesse – Is there a cost to adding walleye?

Peery – The real cost would be the contractor needing to update their software. We did that for bull trout, and it was not a minor addition.

Van Dyke – Does the contract have language for incidental species?

Peery – We do have language for bull trout and sturgeon. However, there is not a species count for sturgeon.

Van Dyke - How is northern pike identified?

Perry – There is not a set procedure for northern pike.

Wertheimer – We will be talking about criteria with the new contract. The precisions that we have for our estimates are a major driver of costs. There are also the lamprey LPS counts that are being wired into the count station that will add cost.

Perry – The new contract will start Mar 1, 2024, it will go out on bid summer 2023. Early next year we will be taking comments.

### 3.6. Pinniped update

**3.6.1. Bonneville Dam – Hazing** ended 31 October, currently averaging less than 10 animals a day, we have not hit our 20-animal trigger yet. Currently doing a point count every day.

Steller's is the species we are seeing. We are working on the report from last year and are looking at mid-January for delivery.

Edwards – We've Been attempting removal since September, we have not been successful yet. Partly due to lower numbers, also hauling out on traps may be a learned behavior. We have pivoted to chemical darting, where animals are hauling out on tower it is non-viable.

Conder – Have we killed an animal with a dart?

Edwards - It is an option but has not been tried at BON in the past, were looking at using a new drug cocktail, darting is anesthesia, but it will enable capture and euthanasia.

We have put a new trap by tower island, they have been given time to acclimated to it and it may be used in the spring once they learn to use it. After trying for a month, the trap has been moved out.

Bettin – Removal counts for April and May at BON?

Edwards – 23 total, 14 Cal and 9 SES

ODFW – At WF 3 Cal in the spring

**3.6.2. Willamette Falls – Ebel - No Pinnipeds seen in Willamette R.**

Edwards – We believe that those in the river in the fall may have been removed last year.

**3.7. Lamprey update**

**3.7.1. BON LPS – All count stations are getting optical counters; cascade islands will be next year. There is a letter report from this year out by 28 Feb.**

Brower – LPS counts are now into the main counter? Is there going to be validation?

Wertheimer – We have weird fiber into the fish count stations, the lamprey optical counts will be included in the new fish count contract. We are working on validation for the optical counters right now. Once we complete it, we will let you know the level of precision we are getting, the question then becomes what level of precision we need as precision drives costs.

Brower - Hopefully there is some validation.

Wertheimer - 2023 we will be testing the fiber that has been laid in and will provide what precision we are getting with the current system. This work is lamprey work group funding.

**3.7.2. TDA – No update**

**3.7.3. JDA – We are ordering parts for the new water supply on the NFL LPS. Work is set to start during the December winter maintenance period.**

**3.7.4. NWW – No update**

**3.7.5. Lamprey Accords Work Group – No update**

**3.8. BPA update. – Is the LGS outage moved to January? Bettin - Units 5 and 6 coming back online on the 21st to 28th. Jumpers will be taken off in January to put the BUS back on. The roof repair is now completed.**

**3.9. NWP/NWW Critical Fish Passage O&M needs. – Available on the FPOM website, [send comments to Mackey by the first of December.](#)**

**3.10. Avian updates (10:30)**

**3.10.1. NWW – St. John – Bird counts are complete, there are still birds present at each project. LWG less 10 gulls, 38 DCCO and no turns or pelicans for the weekly report that ended the week of 31 October. LGS had min 5 with up to 75 gulls, min 12 up to 39 DCCO, no turns or pelicans. Birds present at all projects at the end of counting.**

Peery – Working on the draft MFR for the Blalock Island report, draft is in review. At Crescent and Badger, no big areas of turn nesting; at Crescent, there was evidence of gull nesting and dead chicks; greater presence of gull than turn. Still some turn and gull at Badger on the shoreline. Aerial photos are being reviewed.

Van Dyke – What is included in the report? Is this addressing the pool management changes?

Peery – The report includes the Blalock Islands and aerial photos of Crescent and Badger and addresses the changes.

**3.10.2. JDA – Sachs - There are lots of gulls which is normal this time of year. A total of 11 avian lines are down. We are working on a sole source contract to get new lines installed before the start of spill season in 2023.**

Conder – Is it normal to have this number of lines down in a year?

Mackey – It is not normal.

Conder - Would like an update at the next meeting for why so many lines went down this year.

Lorz – We are looking at MCN and would be interested in what caused the failures in the wires.

**3.10.3.TDA** – Day – A couple of avian lines are down over SW3, they are likely ageing over time. 100 Ringbill gulls but fewer California gulls and 100 Bonaparte gulls, may be feeding on juvenile lamprey in the ice trash sluiceway. Currently have 80 to 100 resident cormorants that will stay through winter. Working on falconry contract for next year, also working on a banding contract next year that will help track movements of gulls and cormorants.

Bellerud – The analysis needs to have a large effort put into it, on par with other research on the river.

Lorz - May make since to use falconry on Miller Rocks and have a joint project.

Day – Hoping on coordinating on falconry on Miller Rocks.

Ebel – Trying to have a discussion at FPAC and let us know what is needed support.

Conder – Who is analyzing the ethics of falconry.

Day - We are extending on an existing database. USDA may be seeing more DCCO because they are spending more time on the shoreline. Looking at different methods including using a drone that could take counts. Research funding may be needed to show results of the contracted option, do not currently have options.

Bellerud – Standard bird counts have a high level of variability.

Day – Looking toward avian lines type study to find how to move forward.

McDowell- Will put Day touch with WS research division, where they do research with non-lethal methods, should help with avian line questions. Will the non-lethal methods be the same with a contractor and will they be implemented? I need to look at what non-lethal measures are incorporated so that I can fully evaluate.

Mackey – We should make sure to work with Schmidt to get all hazing activities under one NEPA document, need to follow up on falconry.

Ebel – Where does falconry fall on lethal/nonlethal, how is that accounted for.

McDowell – Falconry falls under the falconry abatement permit, its mostly non-lethal but there are provisions if a bird is taken; it is a different permitting mechanism. Who should I send research to?

Day – Send it to me.

Bellerud – Airports have had many studies on falconry.

Day – Our contractor is looking at drones, using the same method as at airports but there may be complications.

McDowell – There is a loosening of using drones for the Fish and Wildlife Service that has just happened. Continue to look at it as a tool.

Day – We will be looking at drones just for counting, not proposed for hazing.

**3.10.4.BON** – Noah Strong of the FFU observed around 1000 Bonaparte Gulls in the spillway early this week which are migrating through the area and likely foraging on juvenile shad.

**3.10.5.Estuary** – Wertheimer - Pit recovery on ESI has been completed, data is shared with RTR, results available end of Jan as well as Rice, Miller, Pillar Islands.

Lorz – There were a high number of PITs on rice in the three weeks that the Turns were there.

Wertheimer – We are working to keep it from happening again, also working on the laser report.

Lorz – Grant County, RTR has sent out PIT data, can share with group.

Peery – Would like to see it.

#### **4. Coordination/Notification forms (need concurrence/discussion)**

##### **4.1. NWW**

**4.1.1. 22MCN16 MOC** – Extended winter outage for the fishway to install the rounded crest weir on entrance gate.

- 4.1.2. 22LMNXX – 2-hour loss of fish pumps on 3 Nov.
- 4.1.3. 22LWG11 MFR Change in Exit Temp Pump Operations – Peery – Trying to come up with a way to use pump to cool fishway, stopped using due to morts.  
Conder – How would this have caused morts?  
Peery – Fish may have been holding in places that they should not have been. Will only situationally operate it in the future. Will discuss with FFDRWG.
- 4.1.4. 22LWG12 MFR Jack Chinook Mort – No Comments
- 4.1.4.1. 22 LGS U1 OSS – Oil Loss – Update –  
Lorz - Loosing oil should cause taking offline, should have an MFR, as this took a while to catch, and a notification would be helpful.  
Peery – We are waiting to have an official report from environmental compliance.  
Conder – If this happens in the future will we be notified?  
Peery – The press release was put out too soon.  
St. John – Nov 18th is the scheduled return to service; however, it could be delayed.  
Peery -Will forward the environmental report, cannot short circuit the EC process.

## 4.2. NWP

- 4.2.1. 22JDA16 MOC Early ladder outage for Winter Maintenance – No comments received thus far. JDA staff would like to proceed. The deadline for comments is today. Group indicates good to move forward.
- 4.2.2. 22TDA14 MOC The Dalles Hydro-survey and Bonneville forebay, Operation has been delayed. (Ebner/Mills) Update –  
Swank - Hatchery has had a request for a 74ft operation during the same time period.  
Bettin – It runs through the 15<sup>th</sup> under a soft constraint.  
Conder – what was the issue with the hatchery?  
Swank -There were fish turning around and not making it up the hatchery weir.
- 4.2.3. 22TDA15 Main Unit 20 Sturgeon Mortalities (Cordie) – Jeff - There were 300 fish in the draft tube, there was water because it was clogged with mud and took 4 hours to clear. Something that Cordie was afraid of, an undersealed means of shutting the unit down, so it had lots of time to hold fish. Will do main unit 19 next and will be same conditions, insisting on spinning the unit beforehand.  
Mackey - Is spinning included in FPP?  
Day – Yes, it is included, but the unit could not spin, it was an unscheduled outage. They are doing a step saving procedure, Cordie is in notation to make sure it does get spun.  
Conder – Why would a clogged drain cause a fish kill?  
Day – Fish were not stuck against the drain, however there were injuries on fish. Some fish may have died from impingement on the drain.  
Fish save mode is 20 to 30 feet of water so there may be impingement at 7 to 8 feet.  
Day - At some point on Wednesday it was way down, some fish had marks from impingement.  
Lorz – Will there be an AAR, are there ways to prevent this in the future?  
Mackey – This may not be a worth wile expense at TDA.  
Day - 9 times out of 10 there is 3 fish in there and they are fine.  
Bettin - Could use a fish scanner and could us a go no go on draining.  
Mackey – If it below 7 feet in the afternoon, finish it.  
Conder – Is there a way to limit the flow?  
Mackey – No its either opened or closed.  
Van Dyke – How is BON different than TDA?  
Mackey – TDA is bigger units.
- 4.2.4. Dworshak Power Loss, 5<sup>th</sup> Nov, 0430 - 0530  
Perry - There was an incident at Dworshak Dam last Saturday. A windstorm caused the powerline to be down and had to shut down the unit. The regulating unit would not work.



And for 1 hour there was no flow out of Dworshak, tail water dropped. Water was below the spillway so they could not make spill, normal flow is 1000 CFS.

Will be an MFR on the incident.

Ebel – Can we get change in flow written into operational document?

Perry – Press release should be going out regularly.

## 5. Fish Passage Plan

5.1. The 2022 FPP is in effect through February 28, 2023, and available online at:

[pweb.crohms.org/tmt/documents/fpp/2022/](http://pweb.crohms.org/tmt/documents/fpp/2022/)

5.2. The draft 2023 FPP (chapters, appendices, and change forms) are posted at:

[pweb.crohms.org/tmt/documents/fpp/2023/changes/](http://pweb.crohms.org/tmt/documents/fpp/2023/changes/)

5.2.1. PENDING Change Forms:

*None*

5.2.2. NEW Change Forms:

5.2.2.1.23LMN001 - Early JBS Start (St. John) –

Will start on the 25<sup>th</sup> of March which is a week early. Changes when the screens are down.

Conder – Are we no longer doing the very early start on March 1<sup>st</sup>?

Peery – The very early start was to see what passage we would have, and we are not seeing much show up in early March, thus we should use information we have to adjust the schedule accordingly.

Hesse – In most years we have done an early start it has been cold. I wonder about maintaining this during future years for lamprey, they should be considered as well. My preference would be for the middle of the month.

Peery - Primary considerations are for salmon and steelhead, there would need to be further discussion to move things earlier specifically for lamprey.

Bettin – Is it detrimental to put screens down?

Hesse - Could be detrimental depending on time and location.

Brower – We are using operations to find more about fish passage and how it might change.

Peery – Tough to schedule and budget for an unknown date. LGW starts on the 25<sup>th</sup> of March, we would like to standardize but it is up for debate on when.

Conder - NOAA would support this change.

Peery – A schedule we can count on would make it easier.

Hesse – Is this stopping looking at early passage?

Peery – Yes

Brower – Is there any thought or discussion on evaluation of timing in the future?

Peery – This is open for discussion, what things do you want us to consider?

St. John – The NAV maintenance schedule is typically already complete and sent to the region by Nov, so it is hard to complete a request after that as both require a crane, we also now have RSW PIT detection beginning in March at LWG.

Morrill – We only have one year's data at LGS, I thought the plan was to have 2.

St. John – LGS only had one year in 2018, we only had one-year at LMN as well, LWG has two years.

Peery – There has not been a schedule.

Van Dyke – There was a schedule originally that did not occur.

Conder – What does the proposed action say?

Peery – That the Corps would look at early start at juvenile facilities.

Hesse – Want to push back on the sufficiency of the spillway RSW efficiency as 12 hours a week is not sufficient.

St. John – I agree it is not sufficient, it is just something new and available.

5.2.2.2.23LGS001 - Early JBS Start (St. John) – See comments above for 23LMN001

5.2.2.3.22AppJ001 – LMN, LGS JBS Start Date – Due to the above change forms.

5.2.2.4. 23IHR001- Unit 3 Operation Range

Perry – Based on the operation range modeling by John Renholds presented at the September FPOM.

Renholds - There was no beads analysis comparing the peak of the blade angle for the lower 1%. It was qualitatively looked at with beads and dye. There could be an instability in the lower 1% within the draft tube based on the performance model.

Brower – What does instability mean?

Renholds – There could be draft tube turbulence, which could be connected to indirect mortality.

Van Dyke – How is that measured?

Renholds – A bead analysis for the runner, but we could not do a full one during the study.

Perry - Based on the CFD and turbulence model show this is the best operation range for fish operations.

Renholds – Yes, the lower 1% is listed in the change form.

Conder – Is it on request or the projects discretion?

Peery – Unit 3 will still be the second in priority until unit 1 comes back up.

Conder – I agree with the turban survival perspective it's just the change in flow.

Renholds – We have both soft and hard limits at other operations, would like input from BPA. 1% range is pretty arbitrary, and this is more information than we have on most turbines.

Wright – All 3 change forms will be on the Dec FPOM agenda under pending, Change Form meeting will be Thursday Feb 2<sup>nd</sup>.

## 6. Task Group Updates.

### 6.1. Task Group Kelt Trigger (Wertheimer and Lorz). [Documents / FPOM / 2013 / FPOM Task Groups \(crohms.org\)](#)

Conder - Should set up a new meeting, starting to compile information and ideas.

Mackey – Could meet after Dec FPOM since we will be on Webex.

Wertheimer - Analysis of fish passing since April 2010 will be posted.

Van dyke – Has when the CC been operating been posted?

Wertheimer – Yes, it is posted.

Conder – Chs smolts are released from Klickitat in mid-March. There are a lot of fish in the 3<sup>rd</sup> week of march, its looking like we need to have it open. Not looking good for Aug.

Brower – Are we moving away from a fish-based trigger?

Conder – Yes, but more conservative, we would open early in March but during daytime.

Benton – Some years in the past didn't get triggered.

Conder – That was bad and is a consideration.

Ebel – Thank you for posting the links.

### 6.2. Task Group Hazing NEPA (CRC and Schmidt). [Documents / FPOM Avian Task Group \(crohms.org\)](#). Sachs – Meetings held Monday 1430 -1530.

<https://usace1.webex.com/meet/fishgoddess>

1-844-800-2712 Access code: 199 725 6195