

# ATTACHMENT 4

**Planning, Programs and Project Management Division (1165-2-26a)**

**Dear Fish Facility Design Review Work Group (FFDRWG) Participant:**

**Please find minutes from the 04 January 2001 FFDRWG meeting enclosed. If you have comments or questions on these minutes, call Rock Peters at (503) 808-4777.**

**Sincerely.**

**Robert Willis  
Chief, Environmental Resources Branch**

**Enclosures**

Copies Furnished:

CENWP-PM-E (Peters/Ebberts/Schwartz/Langeslay/Smith/Gaedeke)  
CENWP-EC-HD (Bird/Lee/Norris/Modini/Goodell/Buchholtz)  
CENWP-PM (Stanger/Tolonen/Clarke/Kranda)  
CENWP-OP (Johnson/Sprague)  
CENWP-OP-D (Armentrout/Williams/Cordie/Zyndol)  
CENWP-OP-B (Chenoweth/Mackey/Sturgill)  
CENWP-EC-DS (Sedey/Etzel/Hanson/Dewey/Chambers)  
CENWP-EC-DC (Chris Ferguson)  
CENPR-ET-PR (Turner)  
CENPR-PS (Anderson/Arndt/Merchant)  
CENWW-PL-ER (Wik/Kalamasz/Shutters)

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**Corps of Engineers AFEP Fish Facility Design Review Work Group  
Portland District  
January 4, 2000, Summit Conference Room, 9:00a.m.**

**DISCUSSION ITEMS:**

Screen Criteria for ESBS/STS/VBS: (langeslay/Smith)

**UPDATES:**

**The Dalles:**

1. The Dalles Combined System: (Sedey/Ebberts/Schlenker)
2. The Dalles Surface Collection (Blocked Trash Rack): (Tolonen/Ebberts)
3. The Dalles Survival Program: (Langeslay)
4. The Dalles Fast Track: (Stanger/Richards/Ebberts)
5. The Dalles Adult Ladder Modifications: (Langeslay/Russell)
6. The Dalles Rehab: (Tolonen/Schwartz)

**Bonneville:**

1. Bonneville Decision Process: (Clarke/Ebner/Schwartz)
2. Bonneville Corner Collector: (Clarke/Ebberts/Lee)
3. Bonneville 1 JBS: (Dewey/Schwartz)
4. Bonneville Adult Pit: (Dasso/Ebberts/Goodell)
5. Bonneville 2 FGE: (Helwig/Smith)
6. Adult Fallback Study: (Langeslay/Goodell)
7. Bonneville 2 JBS Follow-on: (Chun/Schwartz)
8. Bonneville Fast Track: (Ahman/Schwartz)
9. Bonneville 2<sup>nd</sup> AWS: (Maurseth/Schwartz)

**John Day:**

1. John Day ESBS: (Hanson/Langeslay)
2. JDA End Bay Deflectors: (Hanson/Ebberts/Goodell)
3. JDA RSW: (Hanson/Ebberts/Goodell)
4. JDA Survival: (Langeslay)
5. JDA Northshore AWS: (Buchholz)
6. JDA Southshore Fish Jumping: (Norris/Langeslay)

**System Studies:**

3. Turbine Survival Program: (Bird/Peters)
4. Gas abatement program: (Emmert/Peters)
5. Adult Studies: (Langeslay)

CENWP-PM-E (1165-2-26a)

MEMORANDUM FOR THE RECORD

January XX, 2001

**SUBJECT: Minutes from the Corps of Engineers Anadromous Fish Evaluation Program, Fish Facility Design Review Work Group (FFDRWG) Meeting, held on January 4, 2001. Note: FFDRWG meeting minutes can also be found by accessing the Environmental Resource Branch Web Page at <http://www.nwp.usace.army.mil/pm/e/ENFISH.htm>.**

The meeting was attended by the following individuals:

Rock Peters	COE
Steve Rainey	NMFS
Jim Nielsen	WDFW
Mike Langeslay	COE
Dennis Schwartz	COE
Blaine Ebberts	COE
Mark Dasso	COE
Bob Buchholz	COE
Natalie Richards	COE
Bill Hevlin	NMFS
Mark Smith	COE
Tom Lorz	CRITFC
Bruce Monk	NMFS
John Plump	HDR
Christine Mallette	ODFW
Laurie Ebner	COE
Stephen Shlenker	COE
Norm Tolonen	COE
Tony Norris	COE
Brad Bird	COE
Kim Fodrea	BPA
Miro Zyndal	COE
Lance Helwig	COE
Matt Hanson	COE
Mark Sawka	COE
Tom Carlson	PNNL
Randy Lee	COE
Noah Adams	USGS
John Beeman	USGS
Dean Brege	NMFS
Ed Meyer	NMFS

## DISCUSSION ITEMS:

1. Screen Criteria for ESBS/STS/VBS – The discussion started off with a question to NMFS about the justification of using fry criteria on turbine intake and vertical barrier screens. Steve Rainey provided some general background on screen criteria, and how NMFS has employed it historically. Rock brought the discussion back to the question of justification: is there supporting information that would justify changing existing designs to the smaller clearances required for fry protection. Some of the specific questions asked include the following:

- What is the target population(s), and what is fry contribution to adult returns for those groups?
- Are we selecting for certain groups or strategies through screen sizing?
- What is the effect of existing screens on fry condition and survival?
- How many fry pass through the current VBS?
- What additional studies might be required to resolve?

**Action** – COE will frame up our questions for NMFS regarding justification. Mike Langeslay will send these questions out to FFDRWG and set up an ad-hoc meeting to discuss.

## UPDATES:

### THE DALLES DAM

1. The Dalles Combined System – The 90% DDR has been submitted. The final is due in March.

Model – evaluating which conditions give best egress results.

Next trip Jan 8 – Agency trip to finalize operations and egress work.

Other issues: Changing design to improve passage velocities through system. We think they are too slow. In addition, we would like to change the design to a single chute instead of a double chute.

NMFS Concerns: The outfall is very sensitive. It doesn't take much to go from an acceptable to a marginally acceptable condition. Therefore NMFS is very concerned about sensitivity of the model. Lots of dye stalls in front of the bridge shelf - how will fish react to this? In addition, a surface eddy upstream of the outfall affects repeatability of model tests.

2. The Dalles Surface Collection (Blocked Trash Rack) – Prototype construction is on schedule. Getting DDR (for long term implementation ) underway (Montgomery Watson is AE) that includes blocked Trash Racks and Frames. The 30% DDR is due in April. Looking at alternatives such as trash racks, gap closure, etc. NMFS

commented that starting early on this DDR is good as long as we can incorporate what we learn from 2001 prototype testing before we are committed.

2. The Dalles Survival Program – We discussed two previously held SRWG meetings on The Dalles Survival Studies. The current scope developed through these meetings will involve using a 3D CFD model, the physical model, and sensor fish to assess physical conditions fish might experience as they pass through the stilling basin. In addition, we will evaluate the feasibility of measuring direct mortality and injury at the spillway, under full operation. This will be done using balloon tags. We have used balloon tags at the spillway in 1995, but only with 3 bays open. We handed out the sensor fish proposal and asked for comments to be submitted in a couple of weeks. There is an agency trip to the general model at WES scheduled for the week of 12 February. We plan to view a range of spill conditions and identify which locations and conditions to evaluate with sensor fish and CFD modeling.
3. The Dalles Adult Ladder Modifications – We presented a proposal that would allow construction placing refurbished collection channel bulkheads during the adult passage season. The proposal involves configuring the fishway so that the west entrance opens into the transportation channel rather than the collection channel. As such, all main entrances would be open for fish passage, and only the 17 floating orifice gates would be closed. These gates will have been closed for two previous years as part of an adult salmon and steelhead passage evaluation. We would be able to use results from these two years' work to make an assessment of potential negative effects on passage. We plan to configure the channel in the proposed manner during this winter maintenance period, in order to determine whether acceptable hydraulic conditions can be achieved. We are still waiting for Omaha District to provide a construction schedule and a cost comparison between working only within the in-water work period, and extending work outside the in-water work period.

**Action** – When the channel is configured in the proposed manner this winter, we will notify NMFS so they can look at it.

4. The Dalles Rehab – We index-tested Unit 9, which resulted in new performance curves (handout). We will conduct two more index tests on Unit 9: one with everything but the runner painted and one with everything painted. May 31 - June 1<sup>st</sup> will be final paint test. Data will follow.

**Action** – Agencies would like to see the unit after painting. Dennis will coordinate this.

#### THE BONNEVILLE DAM

1. Bonneville Decision Process – Laurie provided handouts summarizing how proposed operational rules at Bonneville Dam manifest themselves with the hydrographs. She also presented SIMPASS outputs and assumptions. FFDRWG needs to look at the circled assumptions and, if they disagree, should get back to Laurie. The next step is to do the SIMPASS runs for each species. Summary tables will be distributed when this is complete.

**Action** – Need to meet again on the numbers and documents. How will they get



incorporated and utilized. Dennis will schedule for the 3<sup>rd</sup> week in January.

**Action** – Dennis will mail out summary tables by middle of next week.

2. Bonneville Corner Collector – ENSR model trip – 24<sup>th</sup>. Review Meeting – to look at the past two years of plume dynamic modeling, velocity data, 1:30 model of outfall types and plunge pool, summarize guidelines research, review outfall types, cost estimating data, Geotech info, and plunge pool issues. We would also like to develop a schedule to set to final decision for outfall siting.

**Action** – John Plump will work with Blaine to schedule the review meeting.

3. Adult Fallback Study – We are preparing a contract to develop a Conceptual Design Report. This report will assess the feasibility, costs, and benefits of three alternatives plus options that would relocate the Bradford Island adult ladder exit to or near the Oregon shore. This contract will be awarded early to mid February, and completed by August. The information will be combined with the most recent radio telemetry work to form a decision document. This year's adult telemetry work for the fallback program will include an assessment of the potential ladder exit sites.
4. B2 FGE – The gatewell and VBS prototype installation contract will be awarded 23 January with construction occurring from 1 February to 13 April. Prototype components will be installed in unit 15 and include: partial beam removal, VBS variable porosity, fry criteria clearance on VBS plastic mesh, gap closure device, and inlet flow vane. Randy presented model results (see handout), rating curve for operating gate will be done by the end of the month. NMFS expressed concerns of about the prototype evaluation. The primary concern surrounded our ability to adjust gatewell flows. If we see poor gatewell survival or fish condition, we need a contingency plan for reducing gatewell flow. Backing off on turbine flow would compromise FGE study but would still get gatewell condition information to give us a target for next year. Ed Meyer also wanted to know how increased gatewell flow affects the screen's stagnation point. NMFS requested a separate meeting to discuss this and other issues, such as what is the decision point for implementing what we do with the TIES.

**Action** - Mark will coordinate a Jan 31 meeting.

5. B1 JBS – (Handout) Plans and Specs are currently being printed for BCOE review. Final Plans and Specs will be printed by March 1. With a March 9 decision, our schedule is to advertise May 3 and award June 5. Rock asked FFDRWG members how likely it was that they would decide to move out on constructing this year. Those present all agreed that there was not a pressing need to begin construction this year, and that would likely be their recommendation to SCT.

Comments for the BCOE review are due by February 7<sup>th</sup>. (WA wasn't present at the poll).

7. Bonneville Adult PIT – We have a prototype design for north shore ladder. Installation will occur from January 9 through the end of February. The next step is

to implement in other Bonneville ladders and other projects. APTCC will begin scoping this work once the north shore construction is completed.

8. B2 – Follow on contract elements: modify primary dewatering screen, improve switch gate seals, install new detector on main sampling flume. NMFS added that they would like something to cover the primary dewatering screen cleaner.
9. B2 AWS – We are finishing up the HELCRABS model verification and would like to block orifices and run model. We will install orifice blocks late in February, run the system and take hydraulic measurements for this verification.
10. Bonneville Fast Track – 60% DDR is out, Dennis will mail out to FFDRWG comments due by end of January. 60% Plans and Specs will be out on the 12<sup>th</sup> of January for deflectors on 6 outside bays. A 2001 prototype evaluation will be used for a 2002 decision on whether to install deflectors on the remaining bays
11. Bonneville MGR Test Report – We are still ironing out some data problems found in the draft report, so the final will be late. The turbine work group reports to NWPPC in February. Utilities and industry has been invited. We will do a preliminary briefing at our Division office the week before, (week of January 29<sup>th</sup>) and that may be a good opportunity for agency input.

#### JOHN DAY DAM

1. JDA Survival – Survival studies for JDA include spill and project survival under 12 versus 24 hour spill, and JBS survival under 30% day and 60% night spill. To measure project and spillway survival, fish will be released at Rock Creek. Forebay residence time, FPE, and tailrace egress will also be measured. Fish will be released in the collection channel at Unit 15 for the JBS survival component. Tagged fish and drogues will be mobile tracked at night for JBS releases. Sample sizes have been calculated to provide survival estimates at  $\pm 4\%$ , for  $\alpha=0.05$ :
2. JDA ESBS – (Handout) Deck slot cut complete by April. Since we will not be installing the ESBS for 2001, we will reinstall the original VBS. We are scoping model work to design a new ESBS and VBS that meet fry clearance criteria. Steve Rainey questioned whether WES can fit this work into their busy schedule, and what other work might be bumped as a result. He also requested we provide NMFS a draft model scope for their review.

**Action** – Tony will provide NMFS with a copy of the VBS and ESBS hydraulic modeling scope.

3. JDA End Bay Deflectors – We are finalizing the elevation for Bay 1. There are two WES trips planned for February and March to look at end bays effect on the tailrace and adult fishway entrances. Mike Snyder from WES studied end bay deflector elevation criteria and had 8 conclusions. We just got this report and will send it out to the region once it has been reviewed.
4. JDA RSW – The 90% DDR has been reviewed. The final will be completed when we finish flow deflector design for Bay 20. We are on schedule with design work for

the 2002 prototype test. April 9<sup>th</sup> and April 2<sup>nd</sup> are agency model trips. The geometry of deflector is only design issue.

5. JDA North Shore AWS – Cy Cook is evaluating system hydraulically and identifying the problem areas. Steve Rainey stated that they want an assessment of reliability, capacity, and ability to meet criteria. This year's work will result in a report that provides this information.

#### SYSTEM STUDIES

1. Turbine Survival Program – We are currently building a Bonneville turbine model. WES is working to have model ready for an MGR runner in April and a standard runner in July. Phase 1 draft report will be out in September 2001. We met with DoE on 14<sup>th</sup> of December to discuss their interest in a second year McNary test. DOE is funding some sensor fish development work. We considering a sensor package that can be implemented in live adult fish.
2. Gas Abatement – Final comments from COE on report are due on 29<sup>th</sup>. The report will go to agencies in February. We will need to schedule a briefing on this.
3. Adult Studies – We are conducting the following adult passage evaluations this year:
  - Adult Salmon and Steelhead Radio Telemetry – Tagging approximately 1000 each for Spring/Summer Chinook, Steelhead, and Fall Chinook. Objectives for NWP are fallback, interdam loss, fallback and delay in bypass systems, effect of closing collection channel orifice gates at BON and TDA, and General Migration Characteristics.
  - Kelt Evaluation – Passage routes, abundance, downstream conversion.
  - Adult Spring Chinook Energy Use - EMG Telemetry at Bonneville.
  - Adult Lamprey Radio Telemetry – Evaluation of prototype fishway improvements.

#### OTHER

1. **Action** – Agencies will send us comments on how to run big FFDRWG – (updates on every Tuesday or details and 2-day meetings).

**NEXT MEETING: March 27, 2001, 9:00 a.m., Summit Room, Portland District Corps of Engineers.**

**Corps of Engineers AFEP Fish Facility Design Review Work Group  
Portland District  
December 10, 2001, Summit Conference Room, 9:00a.m.**

**Bonneville:**

1. Adult Fallback Study: (Dasso/Langeslay/Higa)
2. Bonneville 2<sup>nd</sup> AWS: (Dasso/Maurseth/Schwartz)
3. Bonneville Decision Process: (Clarke/Ebner/Schwartz)
4. Bonneville 2 JBS Follow-on: (Clarke/Chun/Schwartz)
5. Bonneville 2 FGE: (Clarke/Helwig/Schwartz/Lee)
6. Bonneville FPE and Survival: (Clarke/Ebberts)
7. Bonneville Fast Track: (Takabayashi/Ahman/Schwartz)
8. Bonneville 1 JBS: (Takabayashi/Dewey/Schwartz)
9. Bonneville 1 Surface Bypass: (Takabayashi/Ebberts)
10. Bonneville Rehab: (Takabayashi/Schwartz)
11. Bonneville Corner Collector: (Clarke/Ebberts/Lee)
12. Bonneville Adult Pit: (Dasso/Ebberts/Bannister)
13. Bonneville AFCMF: (Dasso/Clugston)

**The Dalles:**

14. The Dalles Survival Program: (Tolonen/Langeslay)
15. The Dalles Spillway Improvement Study: (Tolonen/Richards/Langeslay)
16. The Dalles Surface Collection Blocked trash racks: (Tolonen/Sawka/Ebberts)
17. The Dalles Combined System: (Tolonen/Sawka/Ebberts/Schlenker)
18. The Dalles Adult Ladder Modifications: (Tolonen/Langeslay/Russell)
19. The Dalles Rehab: (Tolonen/Schwartz)

**John Day:**

20. JDA Survival: (Dasso/Langeslay)
21. John Day ESBS: (Dasso/Hanson/Feil/Lee)
22. JDA End Bay Deflectors: (Dasso/Hanson/Ebberts/McCune)
23. JDA RSW: (Dasso/Hanson/Ebberts/McCune)
24. JDA Northshore AWS: (Dasso/Buchholz)
25. JDA Southshore Fish Jumping: (Dasso/Langeslay)

**System Studies:**

26. Turbine Survival Program: (Krandall/Bird/Peters)
27. Adult Studies: (Dasso/Clugston/Langeslay)

CENWP-PM-E(xxxx)

DRAFT MEMORANDUM FOR THE RECORD

Subject. Minutes from the U.S. Army Corps of Engineers Anadromous Fish Evaluation Program, Fish Facility Design Review Work Group meeting held on December 10, 2001.

Meeting attendees.

Rock Peters	COE	503 808-4777
Mike Langeslay	COE	503 808-4774
Steve Rainey	NMFS	503 230-5418
Ed Meyer	NMFS	503 230-5411
Jim Stow	USFWS	503 231-2346
Laurie Ebner	COE	503 808-4880
Tom Carlson	PNNL	503 417-7567
Bruce Monk	NMFS	509 538-2626
Dan Feil	COE	503 808-4780
David Clugston	NMFS	503 808-4751
Ron Boyce	ODFW	503 872-5252 ext. 5403
Dennis Schwartz	COE	503 808-4779
Blaine D. Ebberts	COE	503 808-4763
Doug Clarke	COE	503 808-4710
Mark Dasso	COE	503 808-4720
Randy Lee	COE	503 808-4876
John Beeman	USGS	509 538-2299 ext. 257
Tom Lorz	CRITFC	503 238-3574
Matt Hanson	COE	503 808-4934
Norm Tolonen	COE	503 808-4708
Cal Sprague	COE	503 808-4305
Mark Sawka	COE	503 808-4951
Shane Scott	WDFW	

**ACTION ITEMS FROM LAST MEETING.**

No discussion. R. Peters will distribute notes from Sept. 2001 meeting.

**DISCUSSION TOPICS.**

**Bonneville**

1. Adult Fallback Study. In 2002, the COE will look at adult fallback rates relative to spill treatments (75%/cap). B. Hevlin questioned whether there were plans in place to get in-season updates on fallback rates. He indicated that spill may need to be curtailed if fallback rates become excessive. The COE's plans for juvenile passage research are currently being

developed based on the 75%/cap spill treatments, so curtailing spill mid-season will affect those studies.

**\*Action: Schedule meeting to discuss issue of spill, increased adult fallback, and juvenile studies @ Bonneville.**

2. Bonneville 2<sup>nd</sup> AWS. DDR has been completed. Needs to be printed and distributed. Closing orifice openings needs to be scoped out.

3. Bonneville Decision Process. Draft report has been sent to ISRP, will wait for comments to finalize DDR. Will consider options for B1 after ISRP report. BPA's position is that issues with B1 have been resolved and should proceed. R. Peters asked if more testing is needed on surface collection? R. Peters also mentioned that the results on multiple-bypass effects are inconsistent. R. Boyce suggested more discussion on B1 after ISRP review. ISRP's review will be available on website. R. Peters handed out ERDC hydraulic model trip schedule.

**\*Action: D. Schwartz will distribute ISRP review when available.**

4. Bonneville 2 JBS Follow-on. Knifegates: will evaluate fry passage in spring '02 before final decision is made. Goal is to close out CG work in '02, will extend if knifegate is needed. Contract has been awarded for action on walkway, add-in water bars, and reorient wedge-wire.

5. Bonneville 2 FGE. Contract to modify additional unit (17) will be awarded in January. Unit should be done in March.

-Lateral flow issue: During 2001 testing, forebay lateral flow was observed during partial loads. Concerns arose about the performance of the VBS with the existing lateral flow condition. The COE received a numerical analysis draft report from PNNL. The current design of the VBS looks good. Lateral flow is not present at the VBS and only extends about half way up the STS.

-S. Rainey asked what the next step will be if both unit 15 and 17 look good? R. Peters responded that if results are consistent, the COE will move to implementation.

-E. Meyer asked if lateral flow will be looked at in physical model? R. Lee responded that it would be difficult to setup therefore, probably not. Also, is there a way to verify lateral flow in CFD? May be able to verify with ADV, time is an issue. E. Meyer would like to verify CFD with prototype data from unit 17.

**\*Action: COE will develop plan for CFD model validation.**

6. Bonneville FPE and Survival. Not all survival issues will be addressed in 02 due to radio telemetry (RT) system limitations (current system can only monitor ~10,000 tags per season (spring and summer)). Will get project and spillway survival, but not 7 vs. 14 spill deflectors or B2 JBS. COE will likely evaluate B2 JBS after corner collector is complete, then compare B2 JBS with corner collector.

-R. Boyce asked why PIT-tags were not being used? R. Peters responded that detection at Bonneville is low which results in variances that are too high for COE objectives. Currently, the COE is designing RT studies with an error of  $\pm 3-5\%$ . Past studies that have resulted in an error of up to  $\pm 10\%$  or more are unacceptable. Also, RT survival studies that

the COE is using are designed to evaluate project/route specific survival, not reach survival. The highest variances with RT usually occur with subyearlings due to lower detection efficiencies (probably due to fish behavior). Therefore, higher numbers of subs need to be tagged for each treatment group to insure adequate variances are achieved.

7. Bonneville Fast Track. Bay 18 is just being finished (about 1 week behind schedule). Bays 16 and 17 are done. Prep. work has been completed in Bays 2 and 3. These bays are ready for saddle frames to be installed.

-Bonn. spill patterns will be developed during three trips to ERDC. B. Ebberts will take lead. Trips will be week of Jan. 7<sup>th</sup>, week of Jan. 28<sup>th</sup>, and the third trip TBD.

-Near-field tests will require 4-5 day alteration in spill schedule to deploy and retrieve instruments. Will look at 4 flows. High tailwater will be most difficult to accomplish. If late winter flows increase may be able to do tests before spill season.

8. Bonneville 1 JBS. DDR is in holding pattern pending SCT review report.

9. Bonneville 1 Surface Bypass. Proposal to remove portion of PSC, currently structure will remain in place.

**\*Action: B. Ebberts will setup meeting with regional reps. to discuss future surface collection testing at Bonneville.**

10. Bonneville Rehab. Unit 5 is out of service, will be commissioned in August 02 and return to service in Sept. 02. Unit 3 will be commissioned in mid-Dec. 01 and return to service in Jan. 02.

11. Bonneville Corner Collector. Scheduled to go to contract to complete in '04. COE management agrees that completion date to '03 is possible however, needs to be discussed at SCT (Dec. 20). Agencies need to make a decision quickly (by Jan. '02) if want to change to '03, as contract is scheduled to be advertised in April '02. Also, if completion date is moved to '03, in-water work period will need to be expanded to meet needs. Agencies need to be aware that once contract is awarded to complete in '03, any unforeseen problems that may delay completion will be costly. Advancing the completion date to '03 will likely reduce funds available for '02 fish research. S. Rainey would like to proceed with '03 completion. S. Scott not familiar with state individuals involved, but will work to facilitate as possible.

**\*Action: COE will present issues and options for discussion at Dec. 20 SCT meeting.**

-Avian control issues were raised at 90% DDR PRM. Current avian control measures (water cannons, shore to shore avian wires) are likely to be ineffective at the corner collector outfall site due to the size of the area involved. Options include installing piles to attach wires in immediate area of outfall and hazing.

**\*Action: COE will develop a plan that includes installing piles for avian wires and hazing.**

-Plunge pool dredge material will be deposited on Oregon side of Bradford Island. E. Meyer recommended that no new rip-rap be used in construction. If rip-rap is used, smaller size would probably be less likely to provide habitat for predators.

12. Bonneville Adult Pit. In 2001, 24 PIT-tag detectors were installed in the WA shore ladder for evaluation. Detection rates during the spring/summer were 96% and ~70% for the fall run. Near the end of Sept. amp readings had decreased for several detectors and currently, 9 of 24 detectors are expected to fail. The contract for full installation at Bonn. has already been let, and all antennas are scheduled for delivery. However, contractor is not comfortable with the current design being install as a production unit. A meeting will be held on Dec. 11 with contractors, NMFS, PSFMC, and the COE to discuss problem. The COE is responsible for all ladder modifications and BPA is responsible for electrical, including detectors. The COE is proceeding with cutting orifices to accommodate detectors. Consequently, either detectors or dummy inserts will need to be installed in the orifices for 2002 to keep ladder hydraulics consistent.

-Counting stations are being considered as additional installation site to boost detection efficiency. This option may not be feasible for lower Columbia River dams due to wider counting stations than current detector technology can handle.

**\*Action: COE will schedule meeting to discuss options to boost detection efficiency.**

13. Bonneville AFCMF. Modifications/Alterations will follow a 2 pronged approach. First, will look at short-term fixes, such as addressing safety issues, installing additional outlets, modifying flume, and modifying the brail pool. Then, long term operation of the facility and the modifications necessary for future operations will be considered.

## **The Dalles**

14. The Dalles Survival Program. Not all survival issues at The Dalles will be addressed in 02 due to radio telemetry (RT) system limitations (current system can only monitor ~10,000 tags per season (spring and summer)). Spillway is high priority for '02 survival. Currently, the COE does not plan to evaluate turbine or sluice survival with RT. This will affect turbine rehab. program and Outfall Site Selection Feasibility Study. Rehab. turbine (painted) was tested last year for improvements in efficiency with no difference found after painting. Will repaint and test again this year. The COE would like to have survival comparisons to make decision on turbine rehab. and/or replacement (MGRs) Even direct (balloon tag) mortality would be helpful in identifying possible survival differences.

15. The Dalles Spillway Improvement Study.

Four items are being considered for TDA spillway improvement: install deflectors, remove baffle blocks, modify end sill, and install training wall(s). Baffle blocks may not be removable, should know for sure by Feb. 2002. Spillway CFD will be complete in Feb. 2002 and will show to agencies sometime in March at Portland (L. Ebner will schedule).

**\*Action: M. Langeslay will distribute feasibility report to agencies when available.**

-Construction schedule is pending depending on results of feasibility study.

-S. Rainey asked when decision will be made on training walls? Work is continuing on verifying tailrace in physical model. Decision on spillway fixes are pending until results of '02 biological and hydraulic testing are considered.



16. The Dalles SGIDs. SGIDs are intended to decrease turbine entrainment at TDA. Decreasing turbine entrainment will result in more fish passing the project through either spill or the ice-trash sluiceway. There is concern with '01 study results not showing much of an effect w/ SGIDs in place. However, due to multiple problems, including deployment system inadequacies and low flows, '01 results may not be reliable. S. Rainey suggested that more of the '01 data needs to be analyzed before any decisions can be made to move ahead with full implementation. Both RT (USGS) and hydroacoustic (PNNL) data will be analyzed to specifically look for effects of SGIDs. Should have more complete data analysis by Feb. 2002. Also, '02 research plans are to look at 2-D fish behavior with RT and turbine passage with hydroacoustics. Currently, there is no guidance on how many Units should be fitted with SGIDs under full implementation.

-COE will proceed with Plans and Specs.

-COE is currently working on SGID handling/hydraulic system. May not be finished in time for in/out '02 testing. Mobile crane cannot be used as backup because of load requirements.

17. The Dalles Sluice Reloc.. Site Selection Feasibility Study has been initiated. Several agency trips will occur later in year as proposed sites are evaluated. Will consider 3 final sites. Study is scheduled for completion in 2 years.

-ODFW suggested proceeding with relocation due to predation concerns.

-S. Rainey offered that high predator density near outfall might be related to hydraulics around outfall plunge and the presence of disoriented juvenile salmonids passing through turbines upstream of outfall.

-New design may or may not include providing supplemental water for fish ladders. If adult ladder fixes work, outfall may not be required to provide ladder water. If possible, it would be best not to dewater flume.

18. The Dalles Adult Ladder Modifications. Almost done with plans and specs. Cost will be \$7-8 million. Scheduled for '04 completion. Completion by '03 possible if contractor can accomplish all in-water work during the Dec. '02 - Feb. '03 in-water work period.

19. The Dalles Rehab. JDA units were painted with similar paint as rehab. units 30 yrs. ago and still look good.

## **John Day**

20. JDA Survival. '02 will be the last year for 12 vs. 24-hour spill evaluation. Proposed spill treatments will include 2 days of constant 30% spill or 2 days of mixed 0% daytime/60% nighttime spill in a 2-day randomized block design. Spill schedule needs to be coordinated with BPA (also for TDA and Bonn). Priorities for survival at JDA are 12 vs. 24-hour spill and JBS. S. Rainey would like to look at 50% instead of 60% spill at ERDC during Bonn. spill pattern agency trip. Current spill treatments will allow testing of daytime vs. nighttime at 30% level and 30 vs. 60% levels at nighttime. R. Boyce asked what the purpose of the test was and suggested that there is no question that 24 hour spill is more desirable than 12-hour spill. M. Langeslay responded that the current data actually show higher survival with 12-hour spill. In previous years dam operations

have varied widely over the diel period. The COE will attempt to minimize operational differences in '02 however, due to power demand and fluctuating flow these operational differences cannot be fully eliminated.

-The COE has attempted to look at RSW stalling spill scenario but not feasible with current spill pattern. COE is currently planning to fund 3-D acoustic telemetry feasibility study in tailrace to determine if technology can be used in tailrace environment.

21. John Day ESBS. ESBS and VBS contracts awarded in late Nov. Agency trip to ERDC to view new design with flow control device will be either week of Jan. 7 or Jan. 28, 2002. R. Lee will consult with ERDC staff to determine when model will be ready for agency viewing. **Action: D. Feil will coordinate agency trip.**

-OPE has been revised to look at fish condition as function of gatewell residence time. Also, COE plans to fund pre-season testing with fry and juveniles to look at injury/mortality prior to juvenile fish migration.

22. JDA RSW. COE has been unable to find spill pattern to that will accommodate setting up spill stall conditions relative to RSW. COE plans to fund '02 3-D acoustic telemetry feasibility study in tailrace to determine if technology can be used in tailrace environment for possible evaluation of RSW.

**\*Action: B. Ebberts will schedule meeting to discuss future of RSW and surface bypass at JDA. Impacts to construction schedule need to be addressed.**

23. JDA Northshore AWS. Impeller inspection scheduled for next month. Need to either replace pumps or find another source of water. Replacing motors will not fix problem. With 6 pumps running and 2 entrances open, cannot meet flow criteria. Will likely need to look at alternatives. Alternatives study will delay the present schedule.

24. JDA Southshore Fish Jumping. Model visit scheduled for Dec. 17 & 18. Agency model trip will be scheduled for week of Jan. 21, 2002.

## **System Studies**

25. Adult Studies. D. Clugston handed out notes from Oct. 2 SRWG adult studies meeting.

-Fallback rates (preliminary) of ~5.1% were observed at Bonn. during no spill in '01.

-Uof I determined that tangle-net captured fish would not be adequate surrogate for naïve fish.

-U of I and USGS will do proximate analysis for Lower Salmon and Yakima in '02. Plan is to sample at Bonn, pre-spawn site, and post-spawn site. In the future will incorporate use of PIT tags.

-About 212 kelts will be tagged in '02

-Lamprey: More plates will be installed at Bonn. in '02. Serpentine weirs have been problem in the past, will refine antenna placement in '02. Also, will test trap design in '02.

26. Turbine Survival Program. Completion of Phase I, will have draft in May-June '02. Bonneville model calibration will occur in Jan. '02. Agency trip is scheduled for March '02. Tail log slots will be monitored at Bonn. with RT to determine residence time.

-Logistic issues to work out are: direct mortality (balloon tag study), Indirect mortality (RT), and screen effects under high loads.

-Additional funding contributions will be made by DOE.

-Adult release pipe will be 8" to handle kelts and steelhead. Larger release pipe (14") would be required to release adult salmon and is not feasible at this time.

**Next FFDRWG scheduled for February 28, 2002 9:00 am in the Room  
3B.**

CENWP-PM-E(xxxx)

DRAFT MEMORANDUM FOR THE RECORD

Subject. Minutes from the U.S. Army Corps of Engineers Anadromous Fish Evaluation Program, Fish Facility Design Review Work Group meeting held on February 28, 2002.

Meeting attendees.

Rock Peters	COE	503 808-4777
Kim Fodrea	BPA	
Gary Fredricks	NMFS	503-231-6855
Bob Hevlin	NMFS	503-230-5415
Tammy Mackey	COE	541-374-4552
Mike Langeslay	COE	503 808-4774
Steve Rainey	NMFS	503 230-5418
Ed Meyer	NMFS	503 230-5411
Jim Stow	USFWS	503 231-2346
Laurie Ebner	COE	503 808-4880
Tom Carlson	PNNL	503 417-7567
Bruce Monk	NMFS	509 538-2626
Dan Feil	COE	503 808-4780
David Clugston	NMFS	503 808-4751
Ron Boyce	ODFW	503 872-5252 ext. 5403
Dennis Schwartz	COE	503 808-4779
Blaine D. Ebberts	COE	503 808-4763
Doug Clarke	COE	503 808-4710
Mark Dasso	COE	503 808-4720
Randy Lee	COE	503 808-4876
John Beeman	USGS	509 538-2299 ext. 257
Tom Lorz	CRITFC	503 238-3574
Matt Hanson	COE	503 808-4934
Norm Tolonen	COE	503 808-4708
Cal Sprague	COE	503 808-4305
Mark Sawka	COE	503 808-4951
Shane Scott	WDFW	

**ACTION ITEMS FROM LAST MEETING.**

**Bonneville Adult Fallback Study**

It was decided to take no action to establish a rate of fallback that would result in curtailing spill at this time so as to allow the 2002 spill and fallback tests to proceed. How to determine a critical rate of fallback as well as an appropriate time period over which to evaluate fallback are problematic considering the day to day fluctuations in fallback rates. This item will be revisited pending results of 2002 study.

### Bonneville FGE

Discussions will occur during the updates.

### Bonneville Corner Collector

Department of Agriculture chose installing 13 miles of bird wire at the corner collector outfall area as the best alternative to reduce avian predation (see review drawings).

### Dalles Spillway Improvements

Action is completed and a CD has been sent out and awaiting comments.

### John Day RSWs

Future will be discussed at meeting to be arranged.

## **DISCUSSION TOPICS: (Handouts were provided for all action items)**

### **Bonneville**

Adult PIT. Dasso and Fodrea reviewed problems of leaking antennae in BON ladders. Bradford ladder installed, Cascade Ladder by Mar 8. McNary window detector installed and interference is minimal. System should be up and running by mid April. Fodrea said to expect good detection this year. Fredricks raised concerns about electric currents leaking into water and effects on fish behavior. He wants estimates of currents in area of antennae with worse case scenario. U of I (Peery) has been contacted to keep an eye on WA ladder for any adult passage problems. Late May or June a joint Portland-Walla Walla FDRWG meeting is needed to evaluate progress and decide how to proceed for next year.

Bonneville Fallback. Alternative study has been distributed. Two more years of telemetry evaluations are planned (FY02/03). No additional discussion on FY02 test plan.

Bonneville 2<sup>nd</sup> AWS. Discussed action for trash rake and need. It is estimated that 1.5 million costs will be needed for Mar 03 construction funds and should come up in the July-Aug SCT prioritization meeting.

Bonneville B2 Corner Collector. Clarke outlined fishing and project access changes, mods/repairs to ice trash sluiceway and surfacing of new construction. Durability and smoothness are main issues that were discussed. Concerns over the epoxy sealant and flushing tests were raised. COE is evaluating the finish both from a hydraulic and a longevity standpoint. John Etzel provided a handout on this issue. One of the areas of concern is the repair of the existing concrete that will be used. NMFS was concerned about the use of epoxy sealants for long term use and maintaining smooth conditions in the system. Explained that the COE was also concerned and will be looking at in detail. Another issue is that the current outfall of dewatering pipes into the ice-trash sluiceway will need to be moved and the UMT exterior channel bottom will be armored. Fredricks and Boyce were concerned about work affecting winter steelhead and would like pile pounding

to occur only at night, and wanted to find out if priority ladder can be switched to Bradford during construction.

**Action Item: Tammy Mackey will address construction timing and ladder prioritizing during construction period.**

Construction schedule was reviewed. Nov 15, 2002 pile pounding and excavation work will begin. Coordination between NMFS and COE are needed for in-water work during fish passage period. COE will be initiating an environmental task force during construction to monitor progress and assist in coordination. **(Action: Blain Ebberts will initiate the construction task force.)**

Bonneville 2 JBS Follow-on. Flume has deformed out of round 5-8% in spots. Around 40%, out of ovality problems occur from a structural integrity viewpoint. However, hydraulic conditions in the pipe were more of a concern at the current condition. Hydraulic Design is conducting an evaluation of the existing data to evaluate what will happen within the existing pipe and when it may be of concern. Need to develop criteria to decide when and if to fix (flow jump increase) and decide if a fix is needed. An additional evaluation of the pipe will occur during December 02 to re-evaluate if the ovality of the pipe is changing over time.

Also the ERG gates seals are currently being fixed and should be done by Mar 7-8.

Fredricks brought up list of problems at BON (difficulties with evaluating if orifices are blocked, are screen cleaners working up to specs [Clarke say yes], switch gates, add-in AWS). **Action: Dennis Schwartz will be setting up a meeting to discuss other issues.**

Boyce wanted to make sure the screens will be in at BON for the Mar 11-14 Spring Creek releases and that priority units be screened first.

BON Decision Document. Finalizing comments today. April 12 meeting of subgroup scheduled to finalize document. Also setting up a meeting that day to discuss B1 surface bypass.

Bonneville 2 FGE. Second slot completed 5 April. Need to evaluate fix and decide next step. What metric at what level needed to install more?

**Action Item: Schwartz will get summary of hydroacoustic and fyke net data to folks**

Bonneville FPE and Survival. Sluiceway survival testing is being planned for 03. Corner Collector evaluation will be in 04 with a more comprehensive evaluation of other passage routes. This will be discussed at the next SRWG meeting.

Bonneville Fast Track. Spillway flow deflector in water construction is completed. New hoists and dogging system going in but things delayed 2 weeks for electric hookups and tests. Using modified spill pattern without bays 1 and 18. **Action Item: Check out this modified spill pattern at WES next week, Mar 4-8.** Release pipes for research installed and completed soon.

Near field testing for the new deflectors and spill patterns was discussed. COE would like to do a high (May) and low tailwater (August) TDG test. Many objection were raised from the resource agencies and test needs more discussion and decision on how badly needed. COE will send out test plans with discussion to follow.

Bonneville 1 Surface Bypass. To be discussed at April 12 meeting.

Bonneville Rehab. Unit 3 back on and a 100 day test is requested starting Feb 26. Next unit to work on is Unit 1 planned to begin June 10.

Bonneville 1 FGE Scope. With the new gantry crane on B1 intake screens on VBS can be yanked. Project wants to check out the potential of hybrid VBS screens instead of 2 different types. Additional FGE tests may be needed prior to moving out with full deployment of screens due to changes (new screen material).

Adult Studies. Preparation for studies is ongoing.

Bonneville AFCMF. Flumes have been resurfaced and many of the crossbeams removed. Within 2 weeks draft plans for brail pool and discharge end modifications should be available for review.

## **The Dalles**

The Dalles Survival Program. Divers continue to install equipment for spillway survival studies. Meeting on March 20<sup>th</sup> to discuss the overall direction for The Dalles and related studies. **Action: Mike Langeslay to send out agenda for the March 20<sup>th</sup> meeting.**

The Dalles Spillway Improvement Study. COE is investigating the potential to install a training wall in the stilling basin at The Dalles. WES evaluations of training wall and other spillway changes are ongoing. Discussed potential for installing the training wall in FY03 or FY04. Agencies recommended to continue to look at potential for 03 installation. Need to make a decision in mid-summer. Efforts are needed to get down to WES to investigate.

The Dalles J Blocks. 2002 hydroacoustic results needed to decide how to proceed by the Jan 2003 deadline. Need to ensure we are measuring correct metrics for the decision. Will be getting re-write of 01 data in the near future and will transmit information to the agencies. Finalizing specs will begin in the mean time for the J-blocks full implementation. Also discussed the prototype roof extension. Agencies concurred to continue evaluating the effects of the roof extension.

The Dalles Sluice Relocation. WES evaluations of the 3 potential DS outfall sites proceeding in FY02. Discussion included the potential for the training wall to influence the location and resultant flows associated with the training wall. FFDRWG members agreed to continue effort in making progress on the sluice-way outfall location in FY02. This work will not precede the training wall investigations. Potential trip in July for siting the outfall location.

The Dalles Adult Ladder Modifications. Construction award is due in May 02. Projected to take one in-water work period and cost \$5-6 million. This issue has been discussed at SCT with concurrence to proceed.

The Dalles Rehab. Main unit 3 scheduled to be down June 1. This may compromise J Block tests in the summer season. Consider postponing until hydroacoustic tests completed on July 15. **Action: Blaine needs to work this issue and report back.** Unit 9 paint job for the turbine runner was not smooth enough to change the efficiency characteristics of the turbine. Current plans are to re-paint this unit with a finish that will bring it back to new. This will be completed by September 02. If the unit efficiency goes back to original efficiency, suggest testing the unit for direct survival. Discussion on this issue and agreed by FFDRWG participants was that doing a comparative survival test with Hi-Z tags would not probably allow for evaluating differences, but that understanding overall direct survival through the unit was important. This test will be coordinated through the SRWG.

### **John Day**

JDA Survival. Dive contracts have been let and dives are ongoing to set up for 2002 studies. Conservative estimates of power of spring and summer spillway and spring JBS studies is  $\pm 3\%$ ;  $\pm 5\%$  for summer JBS. Efforts are being made to improve downstream detection arrays to improve detection capabilities.

### **March 13 meeting set up to address priorities and techniques for in-river survival and efficiency studies in the future.**

John Day ESBS. Bay 7 float control device contract should be completed around Mar 29. Needs mechanical and biological testing. Install in 3 bays if successful. Need to start contract preparations in July 02 but have until Jan 03 to decide if to proceed. Gary Fredricks suggested project configuration evaluation should be done prior to initiating plans and spec. for 3 screen test. Need results of 12 vs 24 hour spill test and ESBS testing to evaluate against other work at project. **Action: Resource agencies would like the COE to initiate JDA Decision Document. This action may be an extended time frame for completion. Will bring to SCT for discussion and funding.**

Also briefly discussed the log boom at JDA. The agencies requested that we do a scope of work and cost estimate by the next FFDRWG meeting. Need to proceed with limited scoping of cost, size, etc. Will it aid screens. Fredricks brought up inability to see orifices to detect blockage at JDA and that boom could be a predator holding area.

JDA RSW. Need resolution of surface collection. Address as part of JD decision document. Deflector installation ongoing. 3d acoustic tailrace feasibility work moving to Granite to evaluate stalling in spillway, RSWs. Blaine will be going to WES to evaluate spill conditions and determine if we can mimic stalled spill conditions that may help work at JDA. Two issues will be tested if deemed appropriate and include



feasibility of sonic tracking in the spillway and influence of eddies or stalled spill in the tailrace.

JDA Northshore AWS. Report coming out in June. Rainey said need to recheck AWS for criteria capabilities to retune. Consider smaller fixes to bottlenecks like the lowest weir and bad velocities (increase pump power and improve conveyance).

JDA Southshore Fish Jumping. On schedule to modify to improve flows (4 ft slot move and continued modeling) and install next winter. In April the final design needs to be completed. Looking for agency trip in early April to evaluate slot changes to decrease turbulence in ladder.

JDA Temperatures. Retrospective analysis is looking at past telemetry data at JDA ladder for temperature differences, jumping, passage times effects (draft out in April). Need to determine if biologically important enough to modify ops or structures.

Handouts were provided for each of the major action areas. If you need a copy of the handouts, please contact Rock Peters at (503) 808-4777 or E-mail at [rock.d.peters@usace.army.mil](mailto:rock.d.peters@usace.army.mil).

**Next FFDRWG scheduled for April 26, 2002 9:00 am in the HDC Conference Room (8<sup>th</sup> floor)**

**CRFM Measure: JD RSW/Deflectors  
FFDRWG Update**

1. **Goal/Objective:** Investigate the benefits and costs of installing a removable spillway weir (RSW) and spillway flow deflectors at bays 1 and 20. The RSW installation and testing is intended to be a test of the skeleton bay surface bypass concept but could ultimately lead to a program where one or more RSW's are installed across the spillway in lieu of using the skeleton bays.
2. **Description:** Biological evaluation of tailrace egress while spilling flows that will mimic those anticipated once the RSW is constructed. It is anticipated that 2 years of testing will be necessary.
3. **Major Activities/Tasks:** In 2001, physical modeling of RSW spill seemed to indicate that major eddies would be created and that tailrace egress for juvenile salmonids could be negatively impacted. However, tailrace egress has not been formally studied in the past and it was agreed by the region that it should be tested prior to abandoning the RSW concept for John Day Dam. It is anticipated that 2 years of study will be needed before enough data is available to make a decision whether to proceed with the RSW. Installation of the deflectors at bays 1 and 20 is also on hold pending the results of this biological testing; however, the deflectors will be installed regardless of whether the RSW project is terminated. In that case a normal deflector would be constructed in Bay 20 rather than the extended deflector that would be needed were the RSW project to proceed. If the RSW does proceed, the deflectors will be installed and evaluated for water quality and biological survival before pressing on with construction of the RSW.

<u>Milestone</u>	<u>Date (Mo/Yr)</u>
Initiate Biological Testing of Tailrace Egress, 2 Seasons	Mar/02
Complete Biological Testing of Tailrace Egress, 2 Seasons	Nov/03
Award Contract for New Deflectors, Bays 1 and 20 (contract on shelf)	Apr/04
Complete New Deflectors Contract, Bays 1 and 20	Mar/05
Initiate biological/water quality testing of deflector(s), 2 Seasons	Apr/05
Complete biological/water quality testing of deflector(s), 2 Seasons	Nov/06
Award Contract for RSW (contract on shelf)	Apr/07
Complete RSW Contract	Mar/08
Initiate Biological Evaluation of RSW , 2 Seasons	Apr/08
Complete Biological Evaluation of RSW, 2 Seasons	Dec/09

4. **Issues/Changes From Previous Meetings:**
  - Tailrace conditions that mimic RSW flow can not be achieved at John Day. The testing will be moved to the Lower Granite dam to test actual tailrace egress conditions caused by the recently installed RSW.