

FINAL Meeting Notes
Lewis River License Implementation
Aquatic Coordination Committee (ACC) Meeting
September 13, 2007
Ariel, WA

ACC Participants Present (16)

Clifford Casseseka, Yakama Nation (via teleconference)
Michelle Day, NMFS (9:45am via teleconference)
Pat Frazier, WDFW
Diana Gritten-MacDonald, Cowlitz PUD
Bernadette Graham Hudson, LCFRB
Adam Haspiel, USDA FS
Eric Kinne, WDFW
George Lee, Yakama Nation (via teleconference)
Jim Malinowski, Fish First
Kimberly McCune, PacifiCorp Energy
Bryan Nordlund, NMFS
Todd Olson, PacifiCorp Energy
Diana Perez, USDA FS
Frank Shrier, PacifiCorp Energy
Steve Vigg, WDFW
Shannon Wills, Cowlitz Indian Tribe

Calendar:

Oct. 10, 2007	TCC Meeting	Lacey, WA
Oct. 11, 2007	ACC Meeting and Habitat Prioritization Synthesis Subgroup Meeting	Merwin Hydro

Assignments from September 13th Meeting:	Status:
Vigg: Consult with Curt Leigh (WDFW) regarding the Merwin Trap phased construction approach and the 5% vs. 10% exceedance flows.	In process
McCune: Email the Acclimation Pond PowerPoint and provide the manufacturer link to the ACC for review.	Complete – 9/13/07

Assignments from August 9th Meeting:	Status:
Lesko: Respond to WDFW comments on Swift Upper Release Design and distribute to ACC.	Complete – 8/31/07
McCune: Email links to ACC for the FERC - Guidance for Shoreline Management Planning at Hydro Projects and Washington's Shoreline Management Act.	Complete – 8/9/07
McCune: Invite Karen Witherspoon/Skamania County to provide an update on the county's comprehensive plan at our September meeting.	Complete – 8/13/07
Frazier: Confer with staff and put together a memorandum relating to their 70mm to 100 mm parr logic and distribute to the ACC prior to the next ACC meeting on 9/13/07 to include speaking with Eric	Discussion took place on 9/13/07, although no memo was provided.

Kinne at WDFW.	
Frazier: Confer with Kinne regarding a desirable time line for Merwin Trap shut down during construction period.	Complete – 9/13/07
Shrier: Email latest Merwin trap and ladder numbers to ACC	Complete - 8/10/07

Assignments from June 14th Meeting:	Status:
Shrier: Acquire more detail on the HTI 1997 hydroacoustic study, including what equipment was used and report back to the ACC relating to the differences of the study compared to that of BioSonics hydroacoustic study.	In progress
Shrier: Review the Acclimation Pond Plan and send revision to the technical committee for final review and approval. The goal for completion is July 2007.	Pending Engineering Review – Plan delayed until Jan. 08

Opening, Review of Agenda and Meeting Notes

Frank Shrier (PacifiCorp Energy) called the meeting to order at 9:15 a.m. Shrier conducted a round-table introduction for the benefit of those participating via conference call and reviewed the agenda for the day. No changes to the agenda were requested.

In addition, Shrier requested comments and/or changes to the ACC Draft 8/09/07 meeting notes.

Bryan Nordlund (NMFS) request clarification to the discussion regarding the Merwin Trap pump intake screen criteria. The first and third paragraphs on page 5 will be modified as follows:

Bryan Nordlund (NMFS) informed the ACC that the logistics of adding a criteria screen in front of the pump intakes would be challenging due to the approximately 1,500 square foot of screen which would be required.

Nordlund communicated that the ACC participants need to decide if protection is needed for fry-sized fish in the Merwin tailrace, and if fry-sized fish will be bypassed from Swift reservoir or returned to the reservoir for rearing. The Settlement Agreement does not preclude installing a bypass pipe later in the future, so there may be smaller fish in the area at some future time if fry are bypassed and the bypass terminates in the Merwin tailrace.

Adam Haspiel (USDA FS) requested edits for further clarification to the discussion regarding New Topics. The third paragraph on page 7 will be modified as follows:

Adam Haspiel (USDA Forest Service) informed the ACC that the 2007 Pine Creek Instream project will be delayed to 2008 due to unresolved liability issues between ORM and Columbia Helicopter. The Rush Creek project was delayed due to no receipt of funds from PacifiCorp as of today's date so the Forest Service did not complete their portion of the project. High bids from the helicopter company and late approval of funding delayed the project.

The revised meeting notes were approved by the ACC attendees at 9:30am.

Relicensing Schedule Update

National Marine Fisheries Service (NMFS) submitted their BiOp to the FERC on August 27, 2007. PacifiCorp is reviewing the BiOp and looking for consistency in the BiOp in relation to the Lewis River Settlement Agreement. PacifiCorp contacted the FERC and the FERC representative indicated that the Lewis license is high on their priority list, although they did not commit to a time line for the FERC to issue the license. Based on information available at this time PacifiCorp is estimating license issuance on or about January, 2008.

Shoreline Management Plan (SMP) – Discussion and Development of ACC Vision and Update

Todd Olson (PacifiCorp Energy) provided an updated on the public meeting held on August 22, 2007 relating to the SMP affecting the FERC flowage easement lines within the FERC project boundaries. Olson informed the ACC attendees that approximately 80 people attended the meeting. Many other topics were discussed including erosion concerns, the need for new docks, if existing docks will be grandfathered, the need for a deepwater boat ramp, where is the FERC boundary line, and comments relating to no new development, deepwater ramps or additional docks.

In response to these concerns Olson communicated that he has scheduled two additional public meetings to take place in Woodland, WA as follows to address the public concerns outside the scope of the SMP:

September 13, 2007, 7:00pm – 9:00pm: Interested Public to Discuss Lewis River Shoreline Erosion Issues

October 17, 2007, 7:00pm – 9:00pm: Public Invite to Learn about the Lewis River Settlement Agreement and new Federal Energy Regulatory Commission licenses for continued operation of the Lewis River hydroelectric projects (**Attachment A** - Lewis River Public Meeting Invitation – Implementation of Settlement Agreement).

PacifiCorp's next step is to post GIS maps on PacifiCorp's Lewis River website for public review to aid in identifying the 249', 500' and 1010' contour lines for Merwin, Yale and Swift reservoirs, respectively, develop categories for certain areas of shoreline, zoning and delineating, provide a draft of the delineation to both the ACC and TCC for review and comment and then make available draft maps to the public for review and comment.

The consultants (Kleinschmidt) are coordinating with the DOE, counties, public and PacifiCorp for development of the SMP.

Jim Malinowski (Fish First) expressed that PacifiCorp needs to be direct when speaking to the public about the operational needs of a working reservoir and how the property owners along the shoreline are affected. In addition, Malinowski stated that the property

owners demonstrated a certain degree of unjustified entitlement as property owners and expect PacifiCorp to adapt to their needs rather than PacifiCorp operating the reservoir in the way it was designed. Malinowski said that it is very important for PacifiCorp to stick very close to the requirements of the Lewis River Settlement Agreement.

Clifford Casseseka (Yakama Nation) asked how consistent the SMP is going to be across the reservoirs. He further expressed that the agency's guidelines will have to complement the federal guidelines and applying throughout the reservoir. Olson communicated that once categories are developed that these categories will be appropriately applied to Yale, Merwin and Swift with the exception of an area that may have unique wildlife protection needs.

Merwin Trap Closure – Discussion and Decision

Shrier reminded the ACC attendees that PacifiCorp has identified a six month outage period during construction of the Merwin trap at which time the Lewis River trap will be the backup trapping facility. In order to provide further detail Shrier created a graph illustrating Lewis River run timing at Merwin Trap, Merwin daily average flow and Lewis River run timing at the Lewis River Hatchery Ladder, which was distributed to the ACC and Engineering Subgroup on August 29, 2007 and today in hardcopy, **Attachment B**.

Michelle Day (NMFS) asked which hatchery fish will be in the river during the June – December proposed outage period. Shrier indicated that all hatchery stock will be in the river during the requested time frame.

Nordlund suggested the ACC consider the feasibility of installing a temporary barrier to help guide fish into the trap to improve collection during the outage period. Shrier responded that if a temporary barrier was installed it would be in the middle of the most popular fishing area in the river. Eric Kinne (WDFW) noted that section of the river was very deep and would be a difficult place to install a barrier. Nordlund asked about whether it would be feasible to close part of the popular fishing area for the duration of barrier installation. (see post-meeting comments).

Day expressed concern about getting the hatchery fish off the spawning grounds. Shrier responded that he believes the ACC has determined that we don't have any wild fish (with the exception of the late-Winter steelhead stock).

Pat Frazier (WDFW) expressed that after conferring with other staff members within WDFW they prefer a July to December outage period. Shrier expressed that PacifiCorp may need to extend the outage into January if high water, or other unanticipated delays are experienced during the six month period.

Olson said that the task before the ACC is to determine what window the engineers have to work with. To give them what is available from a biological perspective.

Frazier suggested that we could possibly increase the bag limits to increase the harvest thus reducing the number of hatchery fish in the system.

When asked by the ACC, Nordlund indicated that typically a good estimate for the construction sequencing and duration would come at the 90% design level. The ACC participants agreed that WDFW's proposed July 1st to December 31st is an acceptable period for trap closure/outage during construction of the new trap. PacifiCorp will advise the engineering subgroup that we have a general window of closure and to consider reduction of closure whenever possible. However, Bryan Nordlund and Michelle Day wanted the ACC to think about any other alternatives that would help reduce the number of hatchery fish on the spawning grounds.

The parking lot items requiring further review and discussion include:

- Dredging of intake
- Brainstorm the weir
- Increase harvest by increasing bag limits
- Other ideas?

<Break 10:30am>

<Reconvene 10:40am>

Merwin Trap Pump Intake Screen Criteria Discussion and Phased Construction Approach & 30% Design

Frazier (WDFW) expressed to the ACC attendees that their data indicated evidence of 50 – 150mm fish in the Merwin trap near the area where the pump intake is to be placed.

Assignments from August 9th Meeting:	Status:
Frazier: Confer with staff and put together a memorandum relating to their 70mm to 100 mm parr logic and distribute to the ACC prior to the next ACC meeting on 9/13/07 to include speaking with Eric Kinne at WDFW.	Discussion took place on 9/13/07, although no memo was provided.

Day expressed concerns about PacifiCorp's 400 – 600 cfs flow design for the Merwin trap and that it's not within the Settlement Agreement criteria of 5-10% of the Fish Passage Design High Flow (see post-meeting comments).

Lee communicated to the ACC attendees to make sure plans going forward are to be used only to year 17 and not for the life of the license. Olson responded that a decision will be made at that time if we need to bypass fish.

The Settlement Agreement does not preclude installing a bypass pipe later in the future, so there may be smaller fish in the area at some future time if fry are bypassed and the bypass terminates in the Merwin tailrace. Olson said that the design of the pump intake screens is to consider the size and presence of the fish. Should a bypass facility occur and the number of fry increase in the tailrace, further thought and design will take place in year 17 to address the abundance of fish, if any.

Nordlund used swim speed data from Smith & Carpenter, 1987, to calculate an equation for a regression line for fish length and swimming speed. He concluded that as designed with a 1 ft/s approach velocity, the pump screen facility could provide good protection for fish down to a length of 78mm, and would protect some smaller fish as well.

Nordlund expressed that if there is an opportunity to provide additional screen area in the face of the powerhouse; PacifiCorp should to try use this area to further reduce velocity.

PacifiCorp will take the ACC recommendations to the engineering subgroup.

Nordlund would like to take a look at the physical model runs to confirm the viability of entrance attraction flows before a decision is made on the phased construction approach.

Study Updates

Shrier provided the following study updates, unless noted otherwise:

Swift Constructed Channel Concept Design – Olson informed the ACC that the final report was completed in June 2007 and completion is on schedule for next year.

Swift Upper Release Design – PacifiCorp responded to WDFW comments on 8/30/07 ([Attachment C](#)).

Large Woody Debris (LWD) Study – PacifiCorp's consultants, InterFluve, visited the site on August 10, 2007. The LWD Plan is currently on schedule with a draft plan expected by the end of October 2007 or the middle of November 2007.

Habitat Synthesis Tool – Subgroup is meeting today after the ACC meeting. The tool is very near completion.

Hatchery Upgrades (Pond 15) – Olson informed the ACC that Pond 15 is scheduled to begin January 2009 followed by Pond 13, 14 then Pond 16 in accordance with the Revised Hatchery Schedule, dated September 11, 2007 ([Attachment D](#)).

Speelyai Burrows Pond – Olson informed the ACC that this project is on schedule for 2008.

Hatchery and Supplementation Plan (H&S) – The goal is to complete in January 2008; dependent on the completion of the HGMP/Coho.

Acclimation Pond Plan – Shrier informed the ACC that this project is on hold until such time PacifiCorp gets an engineer on site for review of technical concerns. The proposed sites are Crab Creek, Clear Creek, Muddy River and Eagle Cliff as an alternate. Shrier provided a PowerPoint presentation relating to a portable acclimation pond located on Foster Creek installed by ODFW & Portland General Electric ([Attachment E](#)). The pond is 5' x 60' x 10' which is located on a side channel to Foster Creek and its holding capacity is 100,000 Spring Chinook. The ponds construction is galvanized steel frame; sheet metal siding, cables underneath for support, drain line which goes underground to the pool and a polypropylene line. The ponds construction also consists of a backup oxygen system for up to 24 hours and a pager alarm system. The pond has been used for one year thus far. During the off season the pond is deconstructed. The pond can be manufactured in any configuration or design with costs that are reasonable and flexible.

George Lee (Yakama Nation) communicated that using a portable system is not thinking long term or in terms of greater numbers of supplementation fish. Shrier responded that the acclimation ponds are modular and can be added on to.

Kimberly McCune (PacifiCorp Energy) will email the PowerPoint and provide the manufacturer link to the ACC for review.

Aquatic Funding – McCune informed the ACC attendees that the 2008 Aquatic Funding availability of Funds notice was sent in hard copy to all interested parties on September 5, 2007, with pre-proposals due on October 5, 2007. Shrier informed the ACC that Shelly Spalding (USFWS) would like to further discuss the ACC funding process for funding projects and an update on the Rush Creek gravel enhancement project at the October ACC meeting.

New Topics

Swift Sorting Collector: Shrier informed the ACC that PacifiCorp is considering eliminating the sorting gate which is triggered by coded wire tags (CWTs) to separate out the supplementation fish from the 10% sample used for M&E purposes. There was a lot of complicated electronics associated with that system and the reliability was doubtful since the equipment had not been applied in this manner. Instead, a timer will periodically shunt 10% of the fish to the sampling tank where the fish can be wanded for CWTs and the supplementation fish will be transferred to the hauling tanks at that point before they are subject to further marking. Shrier brought this up to make sure this change in the Swift sorting facility didn't cause any great concern. Shrier provided a handout titled, "*Updated Swift Sorting Diagram Draft per Discussion with the M&E Team, dated 9/5/07*" that illustrates the changes and requested ACC input on the revision.

Merwin Adult Trap and Sorting Facility: Shrier informed the ACC that the design team has evaluated the process for adult fish that do not go upstream and should be returned to the river. Instead of designing a "corkscrew" tube to return fish to the tailrace, the fish will be placed in the recycling tank and trucked to a predetermined location in the lower Lewis River. This will not require any additional tanks at the sorting facility.

The ACC participants agreed that rather than the "corkscrew" return tube, trucking the fish would be better.

Agenda items for October 11, 2007

- Study/Work Product Updates
- Relicensing/BiOp Update
- Shoreline Management Plan – Discussion and update
- Aquatics Funding criteria revisited – Shelley Spalding to provide white paper on the issues
- Skamania County – Karen Witherspoon/Commissioner Paul Pearce
- Habitat Prioritization Synthesis Subgroup Meeting – Review of CD

October 11, 2007	November 8, 2007
Merwin Hydro Facility	Merwin Hydro Facility
Ariel, WA	Ariel, WA
9:00am – 3:00pm	9:00am – 3:00pm

Meeting Adjourned at 12:30pm

Handouts

- Final Agenda
- Draft ACC Meeting Notes 8/09/07
- **Attachment A** - Lewis River Public Meeting Invitation – Implementation of Settlement Agreement
- **Attachment B** – Lewis River Implementation Fish Trap Timing
- **Attachment C** – Response to WDFW Comments on the Swift Canal Upper Flow Release Projects, dated August 30, 2007.
- **Attachment D** - Revised Hatchery Schedule, dated September 11, 2007
- **Attachment E** - Foster Creek Acclimation Pond PowerPoint
- **Attachment F** – Updated Swift Sorting Diagram Draft per Discussion with the M&E Team, dated 9/5/07

Post Meeting Comments (identified as highlighted)

Bryan Norlund NOAA Fisheries: Pg 4 -- Nordlund suggested that the ACC consider the feasibility of installing a temporary barrier to help guide fish into the trap to improve collection during the outage period. Shrier responded that if a temporary barrier was installed it would be in the middle of the most popular fishing area in the river. Eric Kinne (WDFW) noted that section of the river was very deep and would be a difficult place to install a barrier. Nordlund pointed out that a deep cross section would also provide lower velocities, and even if initial installation is a little more difficult it would be an easier site to operate through a broader flow range. Nordlund asked about whether it would be feasible to close part of the popular fishing area for the duration of barrier installation.

Michelle Day, NOAA Fisheries: Pg 5 -- Day expressed concerns about PacifiCorp's 400 – 600 cfs flow design for the Merwin trap and that it's not within the Settlement Agreement criteria of 5-10% of the Fish Passage Design High Flow (i.e. the mean daily average streamflow that is exceeded 5% of the time during periods when migrating fish are normally (historically) present at the site, as determined by a flow-duration curve summarizing at least the previous 25 years of daily streamflows during the fish passage season).

FINAL Meeting Notes
Lewis River License Implementation
Aquatic Coordination Committee (ACC) Meeting
Sub-Committee on Habitat Prioritization Synthesis
September 13, 2007
Ariel, WA

ACC Participants Present (4)

Bernadette Graham Hudson, LCFRB
Adam Haspiel, USDA Forest Service
Frank Shrier, PacifiCorp Energy
Kimberly McCune, PacifiCorp Energy

Calendar:

Oct. 11, 2007	ACC Meeting and Habitat Prioritization Synthesis Subgroup Meeting	Merwin Hydro
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Assignments from August 9th Meeting:	Status:
All Attendees: Whenever possible take pictures of lower mainstem for addition to matrix.	
Shrier/McCune: Create another CD to include all the modifications and resubmit to the subgroup for review and comment prior to the September 13, 2007 ACC meeting.	In process

Opening, Review of Agenda

The Synthesis Subgroup meeting was postponed pending completion of tasks. Bernadette Graham Hudson (LCFRB) had some comments to relay from Jeff Breckel (LCFRB) regarding incorporating more of the EDT information and Diana Perez (USDA FS) offered that she would work with Graham Hudson to incorporate this information into the spreadsheet.

Next Meeting

October 11, 2007
Merwin Hydro Facility
Ariel, WA
1:00pm – 3:00pm

September 6, 2007

Subject: Lewis River Public Meeting – Implementation of Settlement Agreement

PacifiCorp invites you to a public meeting to learn about the Lewis River Settlement Agreement and new Federal Energy Regulatory Commission licenses for continued operation of the Lewis River hydroelectric projects. This meeting will allow PacifiCorp and the Public Utility District No. 1 of Cowlitz County, Washington (Cowlitz PUD) to explain social, cultural, and environmental measures the Utilities are required to implement under the November 30, 2004 Settlement Agreement and pending federal licenses for Merwin, Yale, Swift No. 1 and Swift No. 2. The agenda for the meeting includes a presentation describing the history and status of project licensing, a presentation of new measures by resource area, and the opportunity for public questions on activities. The Utilities will have subject matter experts available for individual discussions at the conclusion of the meeting.

For those who wish to review the Settlement Agreement in advance of the public meeting please use the following link: <http://www.pacificorp.com/Article/Article76278.html>

Everyone is welcome.

Place: Lewis River Golf Course
3209 Lewis River Road
Woodland, WA

Date: Wednesday, October 17, 2007

Time: 7:00pm – 9:00pm

Contact: Kim McCune, PacifiCorp (503) 813-6078

Thank you for your interest in the above matter.

Sincerely,



Todd Olson
Implementation Program Manager
PacifiCorp Energy

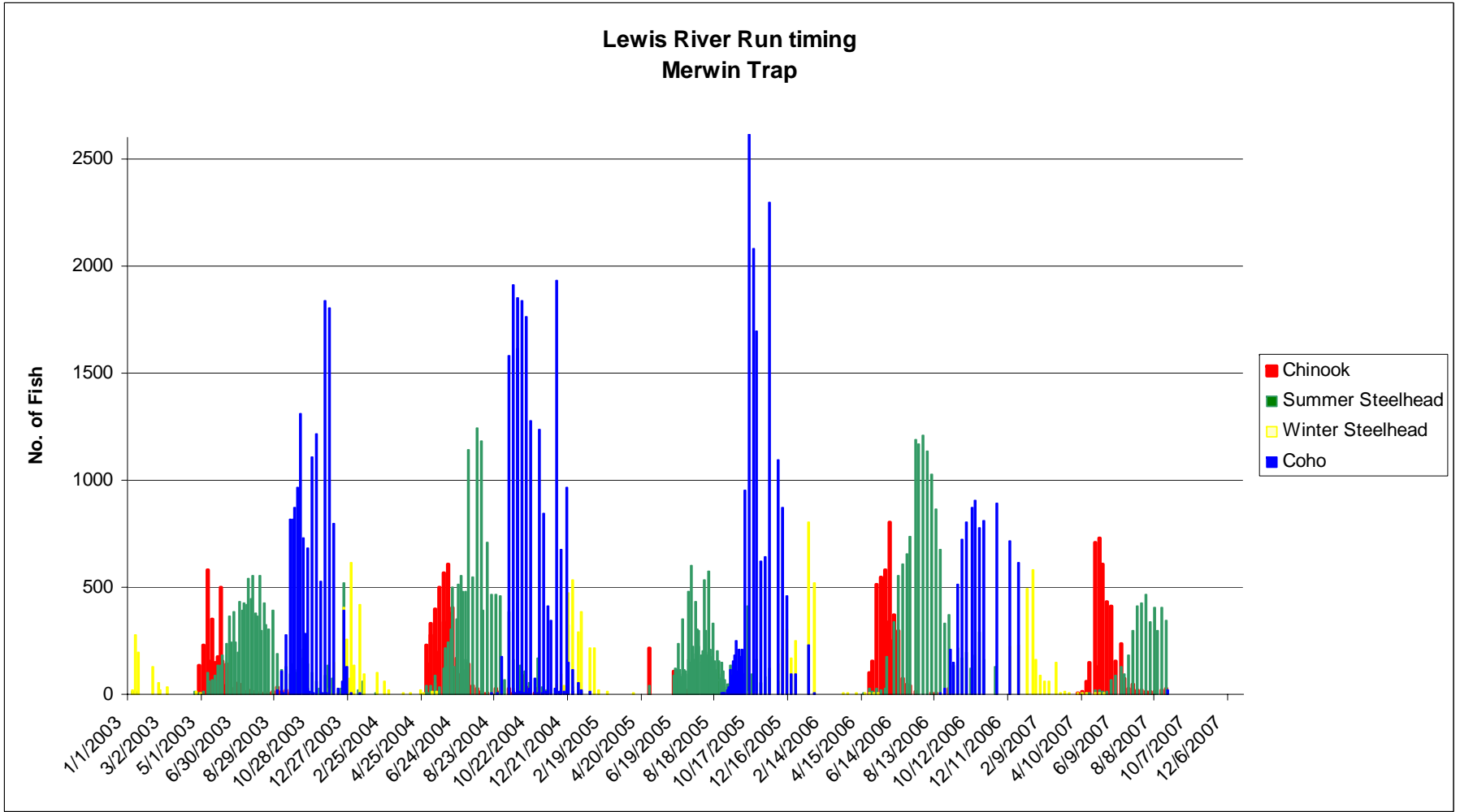


Figure 1. Merwin Trap capture timing by species (last update 8/28/2007).

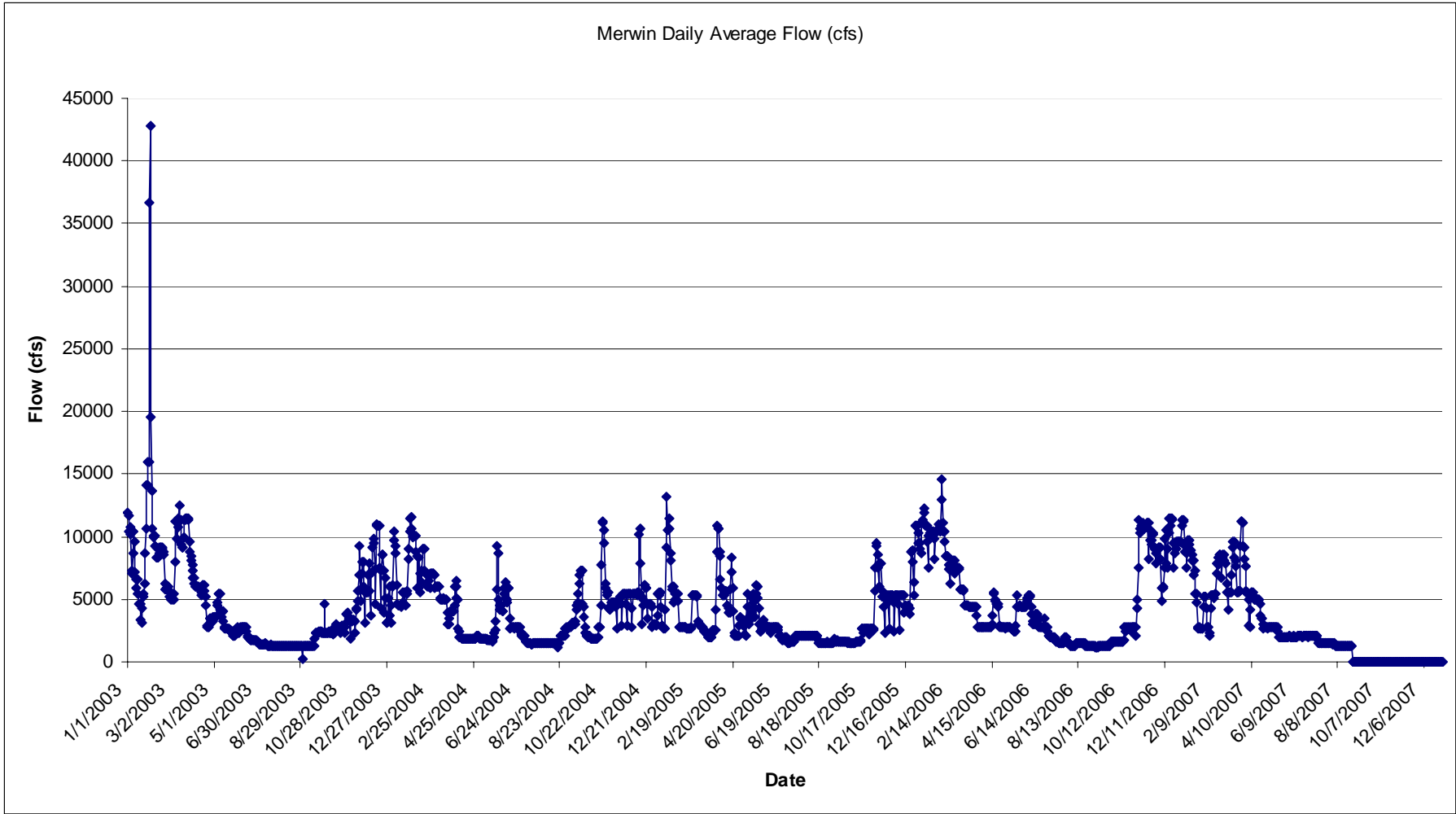


Figure 2. Average daily flows (cfs) as measured at Ariel Gage.

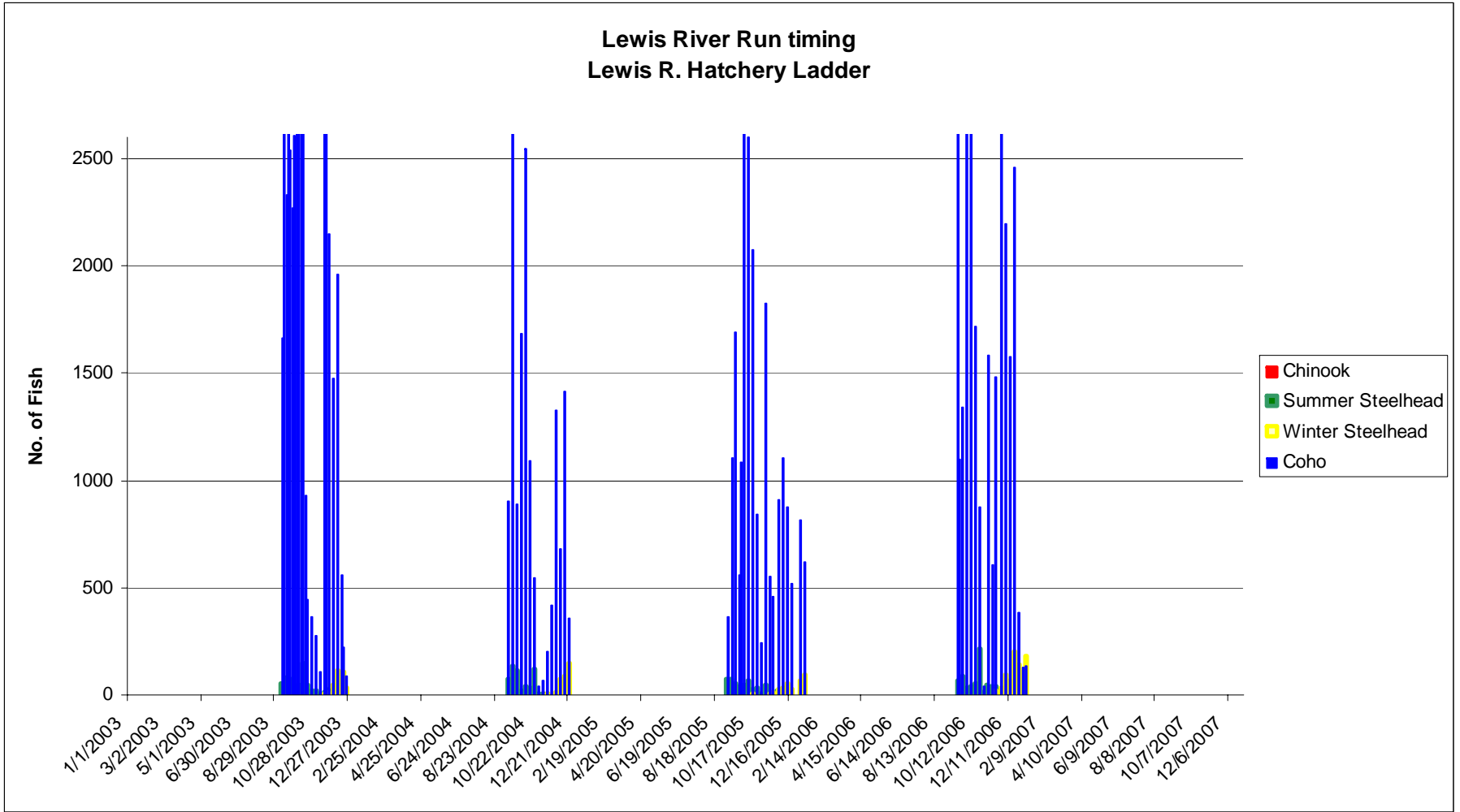


Figure 3. Lewis River Hatchery ladder capture timing by species (last update 8/28/2007). Note: although they do not show (hidden behind the coho bars), there were 33 spring Chinook captured in mid-September 2003.

August 30, 2007

Mr. Curt Leigh
Washington Department of Fish and Wildlife
600 Capital Way N
Olympia, WA 98501

Subject: Response to Washington Department of Fish and Wildlife Comments on the Swift Canal
Upper Flow Release Projects

Dear Curt:

Please find attached PacifiCorp Energy's responses to comments submitted by you and your engineering staff (via email) on February 12, 2007, addressing the 60 percent design drawings of the Swift Canal Upper Flow Release. The 60 percent design drawings were submitted to the Lewis River Aquatic Coordination Committee (ACC) for comment in January 2007. In response to this review, the Washington Department of Fish and Wildlife (WDFW) was the only party that submitted comments.

As you recall, the Upper Canal Release project was designed with significant input from the Washington Department of Ecology (WDOE). Specifically, the design of the spawning channel is based in large part on suggestions made by Brad Caldwell during a planning meeting on November 29, 2006 at WDOE offices. Many of the comments submitted by WDFW refer to this aspect of the design drawings. Brad Caldwell provided his rationale for these suggested design ideas during the January 11, 2007 ACC meeting. Mr. Caldwell did respond to your comments in an email to you on February 8, 2007. I have also tried to capture those responses in the attached table.

Despite the delay in license issuance, the intent is to begin construction on both release structures in the summer of 2008.

I appreciate your review and comments on this project.

Sincerely,



Erik Lesko
Senior Aquatic Biologist

cc: Diana McDonald, Cowlitz Public Utility District
Brad Caldwell, WDOE
Lewis River Aquatic Coordination Committee

	WDFW COMMENT	PACIFICORP RESPONSE
1	Plan Sheet 3, Erosion Control Plan: Recommend added a bench along the area indicated by the silt fence location to reduce erosion and sediment from flowing into the channel. Width should be approximately 5- to 10- feet. Another alternative is to avoid spoil disposal on the river side of the power canal dike, and within the channel area.	A bench will be included in the final drawings.
2	Plan Sheet 3, Erosion Control Plan: The upstream and downstream channel (into plunge pool) should be similar in width, shape, and with the same invert elevations.	Channel morphology was derived based on flow and depth recommendations from Washington Department of Ecology (WDOE)
3	Plan Sheet 4, Intake & Upper Channel: The invert elevation of the channel entering the plunge pool should be the same as the invert elevation of the downstream channel (either 585.5 or 584.7). How do these elevations relate to the plunge pool elevation of 596+/- found on Sheet 2?	The invert of the upper channel was selected to meet the desired spawning depth as shown on Sheet 5. The plunge pool elevation is controlled by the grade control structure at the upstream end of the lower channel. The plunge pool elevation will be lowered as part of this work. Elevation 596+/- is the current plunge pool elevation.
4	Plan Sheet 4, Intake & Upper Channel: The upstream and downstream channel (into plunge pool) should be similar in width, shape, and with the same invert elevation.	Same as Comment No. 2
5	Plan Sheet 5, Upper Channel Plan: The upstream channel appears too wide. At a width of 75-feet and 90-feet, flow depth drops below the WDFW criteria of 0.8- feet. It appears that a channel of 25- to 50-feet in width would be more appropriate (similar to the lower channel size).	The channel is designed to provide the deeper, faster water at the beginning of the channel and shallower, slower water at the end. This variability is intended to make it usable for all salmonid species (seven in all) that may use the channel.
6	Plan Sheet 5, Upper Channel Plan: In Section B, the grade control appears to be too wide. A sharp crested weir would be more appropriate to provide a plunge pool and some channel complexity, without creating such a wide footprint in the channel. Weir also appears to not be sufficiently embedded into the bank to prevent the flow from end-running the structure.	Channel morphology was derived based on flow and depth recommendations from WDOE at the Nov 29, 2006 meeting
7	Plan Sheet 5, Upper Channel Plan: In Section A, the bottom of the channel is too flat and wide. Recommend adding a thalweg with a bench to provide more channel complexity than a pancake flat bottom. A v-notch thalweg with a bench would be appropriate as well.	The channel does incorporate a thalweg. See comment No. 5
8	Plan Sheet 5, Upper Channel Plan: In Section A, the large 18" to 24" rock should be buried 2/3 to 3/4 of its diameter. The rock, if possible, should be embedded into the existing channel and not floating 6- to 9-inches above the bottom, to prevent this rock from sluicing out.	To be incorporated
9	Plan Sheet 5, Upper Channel Plan: In Section A and plan, what is the streambed gradation? It should not be solely washed river cobble of uniform size. It should be well graded with approximately 10% fines. An appropriate streambed rock gradation would be: $D_{100} = 4$ -inch, $D_{50} = 2.5$ -inch, $D_{30} = 1$ -inch, $D_{15} = .25$ -inch, and 10% fines.	Largest placed gravel to be 4-inch diameter, however, all gravel will be washed (per WDOE) as flow is controlled and not able to wash the fines out.
10	Plan Sheet 6, Lower Channel Plan: In Section B, the grade control appears to be too wide. A sharp crested weir would be more appropriate to provide a plunge pool and some channel complexity, without creating such a wide footprint in the channel. Weir also appears to not be sufficiently embedded into the bank to prevent the flow from end-running the structure.	The purpose of the grade control structure is prevent erosion of the channel invert during operation of the spillway during high flow events where flows in excess of 10,000 cfs are common. A sharp crested weir has a greater likelihood of causing undermining of the weir foundation during a high flow event. Undermining could cause loss of the weir and grade control functions that the rest of the design relies upon. We will look at the edge embedment details for the grade control structure.
11	Plan Sheet 6, Lower Channel Plan: In Section A, the bottom of the channel is too flat and wide. Recommend adding a thalweg with a bench to provide more channel complexity than a pancake flat bottom. A v-notch thalweg, with a bench would be appropriate as well.	Same as comment No. 7
12	Plan Sheet 6, Lower Channel Plan: In Section A, the large 18" to 24" rock should be buried 2/3 to 3/4 of its diameter. The rock, if possible, should be embedded into the existing channel, to prevent this rock from sluicing out.	Same as comment No. 8
13	Plan Sheet 6, Lower Channel Plan: A plan view detail indicating the rock and or LWD placement is also recommended.	Will be provided
14	Plan Sheet 8, Energy Dissipation Structure: What is the purpose of the rock (large and small) inside the energy dissipater? It appears unstable and will likely sluice out. If energy dissipation were the reason, then concrete baffles with no rock might be more effective.	The design of this structure is a balance between fish behavior and energy dissipation. A deeper pool was considered, but there was concern that adults could use a deeper pool to jump up onto the velocity barrier and injure themselves. Injury was also a concern with the use of concrete baffles. The structure shown is designed to have some sluicing such that the channel will achieve equilibrium and have a more natural character, but will not have an excessively deep pool to enable fish to jump on the velocity barrier.
15	Plan Sheet 8, Energy Dissipation Structure Plan: The large 18" to 24" rock should be buried 2/3 to 3/4 of its diameter. The rock, if possible, should be embedded into the existing channel, to prevent this rock from sluicing out.	Same as comment No. 8
16	Plan Sheet 9, Energy Dissipation Structure Profile: What is the purpose of the rock (large and small) inside the energy dissipater? It appears unstable and will likely sluice out. If energy dissipation were the reason, then consider concrete baffles with no rock. A deeper (4- to 5 foot or 2 times the vertical drop) concrete vault set below the elevation of the grade control is another option. A vertical slot in the grade control may be necessary to allow fish to exit the pool without the potential for stranding.	See comment No. 14

REVISED HATCHERY UPGRADE SCHEDULE (Activities from Schedule 8.7 of the Settlement Agreement)

Updated: September 11, 2007

Activity	LY	Construction Dates	Construction Period (Days)	Year						Status	Permitting	NOTES
				2006	2007	2008	2009	2010	2011			
Lewis River Hatchery												
Pond 13 (conversion to raceways)	2	May 1 - July 31	90							On Schedule	Not Started	Coho held at LR in raceways longer
Pond 14 (conversion to raceways)	2	March 15 - July 31	135							On Schedule	Not Started	SCH held at Speelyai, Pond 16 & LR Pond 15
Pond 15 (conversion to raceway/sorting facility)	1	Jan 1 - August 30	240							90 % Design Complete	JARPA Submitted (Jan 11, 2007)	Movement of P15 causes other projects to move
Pond 16 (conversion to raceways)	1	April 1 - July 31	120							On Schedule	Not Started	Moved out to allow for rebuild of P15, P13, P14
Downstream water intake repair (screening modification)	2008	April 1 - July 31	120							On Schedule	Not Started	Needs to be done at same time of P16
Upstream intake and conveyance pipe testing & repair	2006	May 1 - May31	30							On Schedule	n/a	Testing in '09, Repairs in '10
Merwin Hatchery												
Upgrade ozone Treatment facility	2	July 1 - September 30	90							Upgrades ongoing	Complete	Upgrades completed in 2005
Improve flow and exchange rates in rearing ponds	2	June 1 - July 30	60							On Schedule	Not Started	
Modify release ponds to accommodate adults	2	June 1 - July 30	60							On Schedule	Not Started	
Purchase two fish hauling trucks	1,3	TBD	n/a							On Schedule	n/a	
Speelyai Hatchery												
Pond 14 (conversion to raceways)	4	February 1 - May 30	120							On Schedule	Not Started	
Burrows Pond Bank No. 1 (conversion to raceways)	1	July 1 - October 31	120							90 % Design Complete	JARPA to be submitted: Feb 16	SCH to Pond 14, kokanee to stay in one bank
Burrows Pond Bank No. 2 (conversion to raceways)	2	July 1 - October 31	120							On Schedule	Not Started	SCH to Pond 14, kokanee to stay in one bank
Repair water intake structure	3	June 1 - September 30	120							On Schedule	Not Started	
Expand adult fertilization area	2	January 1 - March 30	90							On Schedule	Not Started	
Construct kokanee trap weir/trap	3	May 1 - August 30	120							On Schedule	Not Started	
Expand incubation building	4	July 1 - August 30	60							Complete	Complete	
Net Pens												
Site, permit and Install Net Pens	2	July 1 - August 30	60							On Schedule	Not Started, may not be needed	10 - 20x20x16 pens for production of 20,000 lbs.



Foster Cr. Acclimation Pond

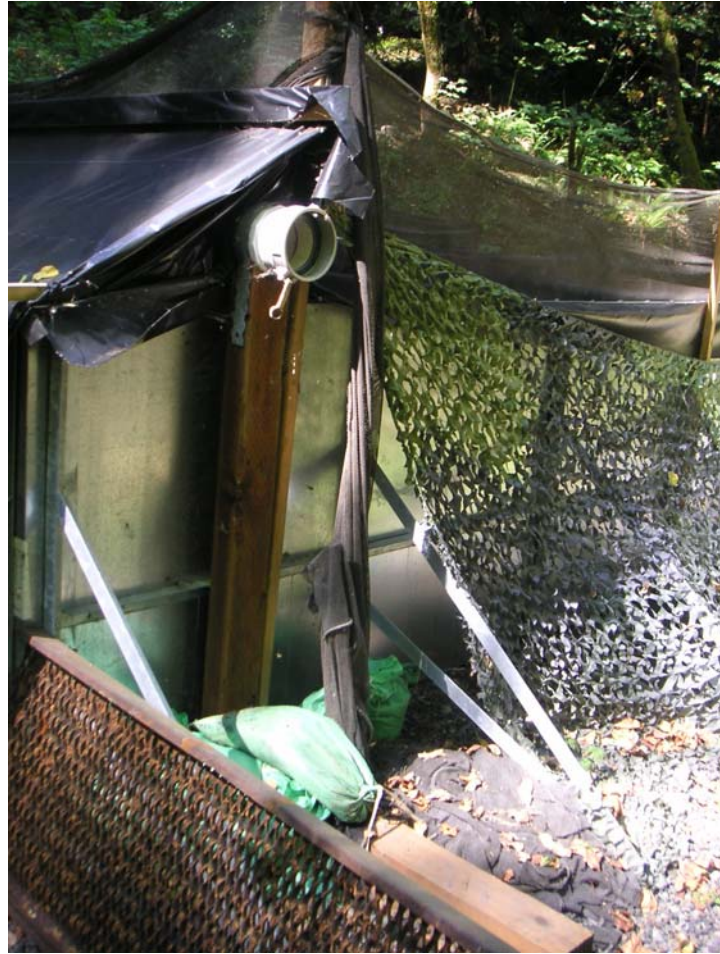






Bracing and Oxygen back-up







Outlet Drain



Buried drain line







Bracing and cable supports



Intake pumping area



9/5/07 - UPDATED SWIFT SORTING DIAGRAM
 DRAFT PER DISCUSSION WITH
 M&E TEAM

Notes:

- 1) Supplementation Fish will have Coded Wire Tag (CWT).
- 2) Number of Fish is peak design value, from Biological Criteria Table 3-1.
- 3) Subsample gate set to take random samples based on counted fish numbers, percent of time, or manual override (per M&E Plan). Design to accommodate a change in sampling in a daily basis.
- 4) Dual anesthetic tanks, designed to handle 12-15 fish/minute. Number of inspection stations TBD. Need a waste treatment system for MS₂₂₂ or other chemical anesthetics.
- 5) Inspect for Condition/Injury, Length, Weight.
- 6) USFWS would typically direct bull trout destinations on an annual basis.
- 7) Two tanks sized for 1,600 fry each.

