



FISH PASSAGE CENTER

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MEMORANDUM

To: Fish Passage Advisory Committee (FPAC)

From: FPC Staff

Date: March 1, 2018

Subject: Action Notes from February 20, 2018, FPAC meeting

On February 20, 2018, FPAC met for its monthly face-to-face meeting. The following people participated in the meeting:

Paul Wagner (FPAC Co-Chair NOAA)	Erin Cooper (FPC)
Tom Lorz (FPAC Co-Chair CRITFC)	Gabe Scheer (FPC)
Bobby Hsu (FPC)	Jay Hesse (Nez Perce Tribe, via phone)
Brandon Chockley (FPC)	Michele DeHart (FPC)
Charlie Morrill (WDFW)	Sheri Sears (Colville Tribes, via phone)
Dave Swank (USFWS, via phone)	Trevor Conder (NOAA, via phone)
Erick Van Dyke (ODFW, via phone)	

AGENDA ITEMS

Approval of Notes

- FPAC notes from February 6 were approved with change that were discussed at last FPAC meeting.
- FPAC notes from February 13 were approved without changes.

Water Supply/Flood Control and Dworshak Operations

- Dworshak inflows are at about 120% above average. Flows at Lower Granite are also above average.

- The upper basins are, in general, above average precipitation, while the basins at lower elevation are below average.
- In the 10-day forecast, the COE expects water supply of 2.9 – 3.0 MAF. There is a 2 MAF draft to the end of April flood control elevation of 1457'. Currently the elevation is 1528' and is expected to be 1520' by the end of the week.
- Although the Dworshak Hatchery would prefer lower outflows, outflows of 17 Kcfs are likely the minimum currently allowable and the COE will not reduce flows to 12 Kcfs.
- Jay Hesse (Nez Perce) pointed out that TDG levels are 106% at the collection chamber. Steelhead are primarily reared on this water. Some raceways receive this water mixed with the reservoir water. TDG in these mixed raceways is 99-100%. TDG where Chinook are currently held is 101-102%.
- FPAC members asked of Dave Swank (USFWS) and Jay Hesse if there is a possibility of reduced outflows from Dworshak for a small period of time, is it better for the hatchery to do it sooner or later?
 - Jay Hesse replied that they have accepted that there will be some GBT trauma in hatchery releases. However, damage will be less if TDG can be kept until release at less than 105%, above which juveniles stop feeding.
 - The more elevated TDG later in the season, the greater the potential impact on fall Chinook.
- Charlie Morrill (WDFW) asked if any cause of cataracts in steelhead had been identified. Dave Swank clarified that more sampling has shown that the cataracts do not occur across all rearing units. To minimize lethal sampling, no exhaustive search for the cause has been conducted.
- To reach the 1516' flood control elevation, they will have to keep outflows at 20 Kcfs.
 - Tom Lorz (CRITFC) asked if more information on the relationship between feeding and TDG will be available before tomorrow's TMT. It may be better to maintain 20 Kcfs outflows through Monday/Tuesday, at which point there will be better forecasts. There could be the opportunity then to reduce outflows to 17 Kcfs.
 - Jay Hesse and Tom Lorz agreed that the forecasts do not look that bad and that Steve Hall (COE) shouldn't need to increase flows above 20 Kcfs.
- FPAC members agree to maintain 20 Kcfs outflows through Friday, then evaluate to see if flows can or should be reduced.
- Erick Van Dyke (ODFW) asked if there has been a formal statement from the COE on the change in elevation forecasts for Dworshak. Tom Lorz replied that it will probably come tomorrow at TMT. Paul Wagner (NOAA) stated that they did a mid-month estimate to obtain the 2.9 – 3 MAF figure, but is not sure if this was official. Paul Wagner will clarify with Steve Hall and have it posted to the TMT website.
- Dave Swank suggested that to keep the hatchery TDG under 105%, it may be possible to drop outflows by at least 1 or 2 Kcfs. This will be evaluated later this week or early next week.

Sort-by-Code Request

- The two requests from Lyons Ferry were approved.
- Paul Wagner (NOAA) will approve the Gordon Axel request from NOAA by Friday unless concerns are submitted before then. Collection efficiency is not a focus of that study.

Adult Delay At Little Goose

- Paul Wagner (NOAA) had requested information on juvenile passage impacts of spill at Little Goose. Last year the spill was reduced for 8 hours/day for 5 days. See attached SPE curves.
- Paul Wagner stated that he does not anticipate that spill will exceed 45% at Little Goose. Tom Lorz (CRITFC) pointed out that maximum spill at LGS is approximately 42 Kcfs, and the spill percentage will be directly impacted by flows.
- Erick Van Dyke (ODFW) stated that Oregon will be attempting to identify unintended impacts of operations before making substantial changes.
- Paul Wagner pointed out that the SPE curves do not break out day and night, but just represent any 8 hours of SPE. Tom Lorz pointed out that the SPE curves are not only ignoring diurnal effects, but also does not incorporate system-wide impacts such as TDG levels.
- Michele DeHart (FPC) clarified that the analysis actually just uses overall SPE curves for the entire season, and applies them to any single day of the passage season.
- Brandon Chockley (FPC) pointed out that according to these graphs, if spill is reduced from 40% to 30% for 8 hours, an increase of 4% powerhouse passage is expected.
- Paul Wagner explained the final graph, which shows that the impact of reducing spill is higher during peak passage, so timing is important.
 - Erick Van Dyke pointed out that the tails of the run are also important and require protections.
- Tom Lorz requested that the graphs be expanded from 45% to 80% spill to make the graphs more informative and relevant to management decisions.
 - Paul Wagner will provide a written explanation of the graphs to FPAC members.
 - Erick Van Dyke suggested the spill cap ranges be adopted from the Spill Ops group.
- Michele DeHart explained that the SPE graphs and analysis boil down to an incremental benefits analysis. Small increments that reduce protections for juveniles add up through the entire hydrosystem, and the whole picture must be considered before management decisions such as these can be made.

Update on Modelling of Adult Passage at Little Goose

- Last Friday, NOAA, IDFG, and ODFW had a conference call with DART. Russ Kiefer (IDFG) reiterated his desire for 3 methods (FPC, DART, and NOAA) to evaluate adult passage.
- Paul Wagner informed FPAC that there was a request to include adult passage at all projects. However, to be realistic this request is focused on Little Goose and Lower Granite.

- Paul Wagner declared that three days of travel time between projects seems to be typical. Normal passage is approximately two, and three is getting into the possibility of delay. PIT tags could be used to evaluate travel times, with relevant environmental information and adult counts.
- There are only four years of PIT tag data for Lower Monumental and Little Goose dams.
- A product from DART can be expected in about four weeks.
- Erick Van Dyke (ODFW) stated that these analyses seem to still be focused on operations outlined in the BiOp for the emphasis of what's happening, and that may not identify the range of potential operations.
- Michele DeHart asked for clarification on the use of PIT tag detections. Tom Lorz (CRITFC) and Paul Wagner answered that the COE will use adult counts, but PIT tags can be used if sample sizes are sufficient.
 - Dave Swank (USFWS) preferred PIT tags if sample sizes are sufficient, because it is clear that the quality of adult counts is not always high.
 - FPAC managers agree that there is value to both forms of data. PIT tag data should be evaluated to see that peak passage matches adult counts.
- Charlie Morrill asked that the models analyze past years to identify delays.
- Paul Wagner (NOAA) stated that NOAA will likely not be producing a methodology for identifying delay. DART and FPC tools would likely be very similar to what NOAA would have produced.
- Tom Lorz (CRITFC) Asked for an update on the discussion of guidelines for these analyses. This discussion will likely occur at tomorrow's TMT meeting.

Update to Juvenile Bypass System Start Dates

- Tom Lorz (CRITFC) reported that the Lower Granite Bypass should be functional by March 26th, as planned. They will likely conduct a full water-up before that date.
- Little Goose bypass will start on March 1st. COE anticipates that may have more screens than originally planned in place at LGS prior to start-up.
- First five priority units are expected to be screened at John Day prior to start of sampling, which is on schedule to begin on or around March 1st.

Coordination

- SRWG and FFDRWG on Tuesday, February 27th in Walla Walla. Due to SRWG and FFDRWG meetings, next week's FPAC call will be Monday, February 26th, at 13:00.
- There will be a face-to-face FPAC meeting on March 6 at 10:00. Early transportation and the FPAC charter will be on the agenda.
- The ISAB will be discussing the block study design on Friday, February 23rd at 12:30.
- RIOG will be Wednesday, February 21st at 13:00.

These minutes have been reviewed and approved by the Fish Passage Advisory Committee.

FPAC Agenda February 20, 2018
Meeting time: 10:00 AM
Meeting location: FPC Conference room

1. Review and approval of notes from the February 6 and 13, meeting
2. Water supply status
3. Weather update and forecast
4. Dworshak operations
5. Sort by code requests:
<http://www.ptagis.org/services/separation-by-code/RequestDetail/1564/>
<http://www.ptagis.org/services/separation-by-code/RequestDetail/1566/>
<http://www.ptagis.org/services/separation-by-code/RequestDetail/1567/>
6. Adult delay: follow-up information on juvenile passage and delay modeling progress
7. Other
8. Coordination for other meetings

2018 ADULT SALMON COUNTS

Daily Totals for Last 7 days and Year to Date Totals (based on reporting dates since 2000)

[[FPC Home](#)] [[Adult Salmon Home](#)]

[Corp of Engineers Adult Fish Count Queries by Project and Fish Ladder](#)

NOTE:

- These data are updated as soon as the Corp of Engineers provides the data to us.

MORE HOT LINKS:

GO TO: [Adult Count RSS Feed](#) or [Annual Totals](#) or 10 Yr. Avg. vs 2018 and 2017 [Graph Table](#) or [Water Flow & Spill](#) or [Current Water Temperature \(January through December\)](#)
[Current vs. Historical Water Temperature \(April through Aug\) Offline until April](#)

FISHING REPORTS: [Oregon](#) or [Washington](#) or [Idaho](#)

WILLAMETTE FALLS 2)

DATE	CHINOOK ADULT	CHINOOK JACK	SPRING CHINOOK ADULT	SPRING CHINOOK JACK	SUMMER CHINOOK ADULT	SUMMER CHINOOK JACK	FALL CHINOOK ADULT	FALL CHINOOK JACK	COHO ADULT	COHO JACK	TOTAL STEELHEAD	UNCLIPPED 5) STEELHEAD	SHAD	SOCKEYE	LAMPREY	CHUM	PINK	SOURCE
02/13/18	0	0	0	0	n/a	n/a	0	0	0	0	3	3	n/a	n/a	n/a	n/a	n/a	WFA
02/14/18	0	0	0	0	n/a	n/a	0	0	0	0	8	8	n/a	n/a	n/a	n/a	n/a	WFA
02/15/18	0	0	0	0	n/a	n/a	0	0	0	0	9	9	n/a	n/a	n/a	n/a	n/a	WFA
02/16/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/17/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/18/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/19/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YTD	0	0	0	0	n/a	n/a	0	0	0	2	469	469	n/a	n/a	n/a	n/a	n/a	

BONNEVILLE DAM

DATE	CHINOOK ADULT	CHINOOK JACK	SPRING CHINOOK ADULT	SPRING CHINOOK JACK	SUMMER CHINOOK ADULT	SUMMER CHINOOK JACK	FALL CHINOOK ADULT	FALL CHINOOK JACK	COHO ADULT	COHO JACK	TOTAL STEELHEAD	UNCLIPPED 5) STEELHEAD	SHAD 6)	SOCKEYE	LAMPREY	CHUM	PINK	SOURCE
02/13/18	0	0	0	0	0	0	0	0	0	0	9	0	0	0	7	0	0	USACE
02/14/18	0	0	0	0	0	0	0	0	0	0	19	8	0	0	0	0	0	USACE
02/15/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/16/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/17/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/18/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/19/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YTD	2	0	2	0	0	0	0	0	1	-1	511	217	0	0	1	0	0	

THE DALLES DAM 2) **)

DATE	CHINOOK ADULT	CHINOOK JACK	SPRING CHINOOK ADULT	SPRING CHINOOK JACK	SUMMER CHINOOK ADULT	SUMMER CHINOOK JACK	FALL CHINOOK ADULT	FALL CHINOOK JACK	COHO ADULT	COHO JACK	TOTAL STEELHEAD	UNCLIPPED 5) STEELHEAD	SHAD	SOCKEYE	LAMPREY	CHUM	PINK	SOURCE
02/13/18	2	0	2	0	0	0	0	0	0	0	1	1	n/a	0	0	0	0	USACE
02/14/18	0	0	0	0	0	0	0	0	0	0	1	1	n/a	0	0	0	0	USACE
02/15/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/16/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/17/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/18/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/19/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YTD	9	0	9	0	0	0	0	0	4	0	36	7	n/a	0	0	0	0	

M McNARY DAM **)

DATE	CHINOOK ADULT	CHINOOK JACK	SPRING CHINOOK ADULT	SPRING CHINOOK JACK	SUMMER CHINOOK ADULT	SUMMER CHINOOK JACK	FALL CHINOOK ADULT	FALL CHINOOK JACK	COHO ADULT	COHO JACK	TOTAL STEELHEAD	UNCLIPPED 5) STEELHEAD	SHAD	SOCKEYE	LAMPREY	CHUM	PINK	SOURCE
02/13/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/14/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/15/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/16/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/17/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/18/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/19/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YTD	1	0	1	0	0	0	0	0	0	0	182	78	0	0	0	0	0	

NOTES:

- At Willamette Falls Dam, it takes the staff most of the day to accurately review one day of fish passage on tape when the counts are high. The WFA staff make every attempt to keep the counts as up-to-date as possible. Note: at WFA Monday's are extremely busy, as the staff attempt to catch-up with the weekend counts.
- The Corp of Engineers has stopped shad counting at The Dalles, starting in 2011 on the advice of the Fish Passage Operations and Management (FPOM) committee, made up of NOAA, CRITFC, ODFW, WDFW, IDFW, BPA, and COE biologists.
- 1) Since the year 2006, Priest Rapids Dam and Wanapum Dam jack counts have included mini jacks.
- 2) Shad are not counted at Willamette Falls, The Dalles, John Day, Lower Monumental, Little Goose, Rock Island, Rocky Reach and Wells Dams
- 3) Steelhead counts appear higher at Lower Granite Dam because most years a group which migrated into the river system between October and December overwinters below LGR and continues its migration in early March.

- 4) As the Army Corp of Engineers no longer collects adult counts from the PUDs, we now get data directly from Chelan, Douglas and Grant Co. PUDs and DART.
- The steelhead counts include unclipped (wild) steelhead. It is not appropriate to add the steelhead counts and wild steelhead counts together.
- 5) Unclipped steelhead are counted separately from clipped steelhead at ODFW and Corps dams on the Willamette, Columbia, and Snake Rivers. There are two categories for steelhead 1. Unclipped Steelhead and 2. Total Steelhead (combines unclipped and clipped). There is no distinction between unclipped and clipped steelhead counts at Public Utility projects.
- 6) Shad are typically not counted at any of the Corps dams after August 31 each year and shad are not counted at all Corps dams. An n/a in the shad columns at Bonneville Dam and Lower Granite Dam after August 31st means that the shad are not being counted.
- 7) In 2014, Grant County PUD trapped and transported hundreds of Lamprey above Rock Island Dam. Therefore, the ladder counts of Lamprey at Rock Island under estimate the true numbers of lamprey past the project.
- In 2012, the U.S. Army Corps of Engineers and NOAA Fisheries are currently developing automated counting systems for Lamprey Passage Structures (LPS) installed at Bonneville Dam. In the interest of publishing accurate counts, LPS counts will not be publicly posted in-season until the automated systems are fully operational.
- The adult counts in this report are based on reporting dates for dams recently established (2000). They are presented in the table below. A report with adult salmon counts based on historical dates (prior to 2000) can be found [here](#).
- The reporting dates table shows that several dams stop counting fish around November 15th each year. After a dam stops counting fish for the season, only the total number of fish are shown on this report.
- These data are updated periodically throughout the day. The FPC data retrieving robot searches the web for updated data every 30 minutes in the AM, and every hour in the PM.
- The last column " Source " shows where the data was imported from: NWACE is imported from the COE's Daily Fish Reports; USACE is from [US Army Corps of Engineers](#) fish count pages; CHPUD is from [Chelan PUD](#); GCPUD is from [Grant PUD](#) and DGPUD is from [Douglas PUD](#) and DART is from the [University of Washington's Data Access in Real Time](#). WFA is imported from [ODFW's Willamette Falls](#) website.
- Some of the sites are several days behind in reporting, but is reported by the COE as zero, so where zeros appear across all rows, the data should be considered as "not yet reported".
- Video counts can cause a delay in posting the data to the web, because the staff at the projects have to review the tapes.

2017-18 Adult Salmon Dam Count Monitoring Dates

Dam	Video Monitoring Dates		Direct Monitoring Dates
	Day	Night	
Bonneville Dam	March 1 - March 31, 2017 December 1, 2017 - February 28, 2018	May 15 - September 30, 2016	April 1 to November 30, 2017
The Dalles Dam	March 1 - March 31 December 1, 2017 - February 28, 2018	June 15 - September 30, 2017	April 1 to October 31, 2017
John Day Dam		June 15 - September 30, 2017	April 1 to October 31, 2017
McNary Dam	March 1 - March 31 November 1, 2017 - February 28, 2018	June 15 - September 30, 2017	April 1 to October 31, 2017
Ice Harbor Dam			April 1 to October 31, 2017
Lower Monumental Dam			April 1 - October 31, 2017
Little Goose Dam			April 1 to October 31, 2017
Lower Granite Dam	March 1 - March 31, 2017 November 1 - December 30, 2017	June 1 - September 30, 2017	April 1 - October 31, 2017
Priest Rapids Dam	April 15 - November 15, 2017 (24 hr)		
Wanapum Dam	April 15 - November 15, 2017 (24 hr)		
Rock Island Dam	April 14 - November 15, 2017 (24 hr)		
Rocky Reach Dam	April 14 - November 15, 2017 (24 hr)		
Wells Dam	May 1 - November 15, 2017 (24 hr)		
Willamette Falls	Count year round (24 hr)		

2017-2018 Columbia and Snake River Fishway Outages

Dam	Dates Fishways are Closed
Bonneville Dam	Bradford Island Fishway: December 1, 2017-February 28, 2018. Cascades Island Fishway: Not Dewatering. Washington Shore Fishway: Not Dewatering.
The Dalles Dam	East Fish Fishway: December 1, 2017 - February 28, 2018. North Fish Fishway: January 16, 2018 – January 30, 2018.
John Day Dam	North Fish Fishway: December 5, 2017 – December 17, 2017. South Fish Fishway: January 9, 2018 - February 28, 2018.
McNary Dam	Washington Shore Fishway: January 1, 2018 – January 31, 2018. Oregon Shore Fishway: February 1, 2018 - February 27, 2018.
Ice Harbor Dam	North Shore Fishway: February 4, 2018 - February 28, 2018. South Shore Fishway: January 1, 2018 - February 3, 2018.
Lower Monumental Dam	North Shore Fishway: January 1, 2018—January 31, 2018. South Shore Fishway: February 1, 2018 - February 28, 2018.
Little Goose Dam	January 2, 2018 - February 28, 2018.
Lower Granite Dam	January 1, 2018 – February 28, 2018.
Priest Rapids Dam	Left Bank Fishway: TBD Right Bank Fishway: TBD
Wanapum Dam	Right Bank Fishway: TBD Left Bank Fishway: TBD
Rock Island Dam	Right Bank Fishway: December 4, 2017 to January 5, 2018. Left Bank Fishway: December 18, 2017 to February 2, 2018. Middle Fishway: January 8, 2017 to TBD.

Rocky Reach Dam ●
Wells Dam ●

December 11, 2017 to February 2, 2018.
West Ladder: TBD
East Ladder: TBD

- Data source: Corp of Engineers, Dewatering Plans and Schedules. Available online at: <http://www.nwd-wc.usace.army.mil/tmt/documents/FPOM/2010/Plans%20lists%20charts/>

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YEAR-TO-DATE ADULT RETURN COMPARISON REPORT

[[FPC Home](#)] [[Adult Salmon Home](#)]

Dam	End Date	Spring Chinook						Summer Chinook						Fall Chinook					
		2017		2016		10-yr Avg		2017		2016		10-yr Avg		2017		2016		10-yr Avg	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	02/14	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TDA	02/14	9	0			4	0	0	0			0	0	0	0			0	0
JDA																			
MCN	02/12	1	0			6	0	0	0			0	0	0	0			0	0
IHR																			
LMN																			
LGS																			
LGR																			
PRD																			
WAN																			
RIS																			
RRH																			
WEL																			
WFA	02/15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Dam	End Date	Coho						Sockeye			Steelhead						Lamprey			Shad		
		2017		2016		10-yr Avg		2017	2016	10-yr Avg	2017	2016	10 Year	2017	2016	10 Year	2017	2016	10 Year	2017	2016	10 Year
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Adult	Adult	Adult	Adult	Unclipped	Unclipped	Unclipped							
BON	02/14	1	-1	0	0	0	0	0	0	0	511	122	487	217	58	180	1	0	0	0	0	0
TDA	02/14	4	0			0	0	0	0	0	36		25	7		13	0		0	0	0	
JDA																						
MCN	02/12	0	0			0	0	0	0	0	182		156	78		55	0		0	0	0	
IHR																						
LMN																						
LGS																						
LGR																						
PRD																						
WAN																						
RIS																						
RRH																						
WEL																						
WFA	02/15	0	2	0	0	0	0	0	0	0	469	147	1286	469	147	0	0	0	0	0	0	0

NOTES:

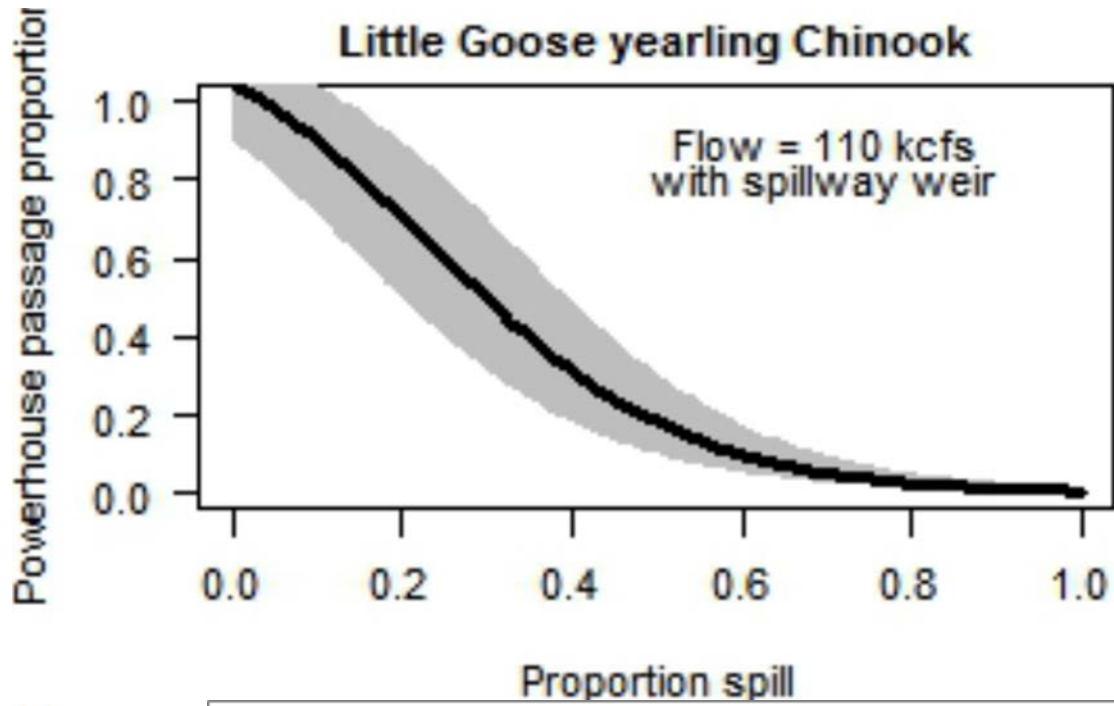
- Since the year 2006, Priest Rapids Dam jack counts have included mini jacks.
- BON=Bonneville, TDA=The Dalles, JDA=John Day, MCN=McNary, LMN=Lower Monumental, LGS=Little Goose, LGR=Lower Granite, PRD=Priest Rapids, RIS=Rock Island, RRH=Rocky Reach, WEL=Wells, WFA Willamette Falls Dam
- This report is based on historic dam counting dates. In January and February, Willamette Falls Dam is the only project that appears on the report because historically it collected data during this time period.
- End Date is the last day of data we have for that site - the 2014 and 10 year average are also run to this end date.
- PRD is not posting wild steelhead numbers.
- These numbers were collected from USACE, Grant PUD, Douglas PUD, Chelan PUD, ODFW and DART.
- Shad data are not available at WEL, WFA, RIS, and RRH.
- Wild steelhead numbers are included in the total. Wild Steelhead are defined as unclipped fish.
- Historic counts (pre-1996) were obtained from CRITFC and compiled by the FPC.
- Historic counts 1997 to present were obtained from the Corps of Engineers.

Page design last updated on: March 9, 2017

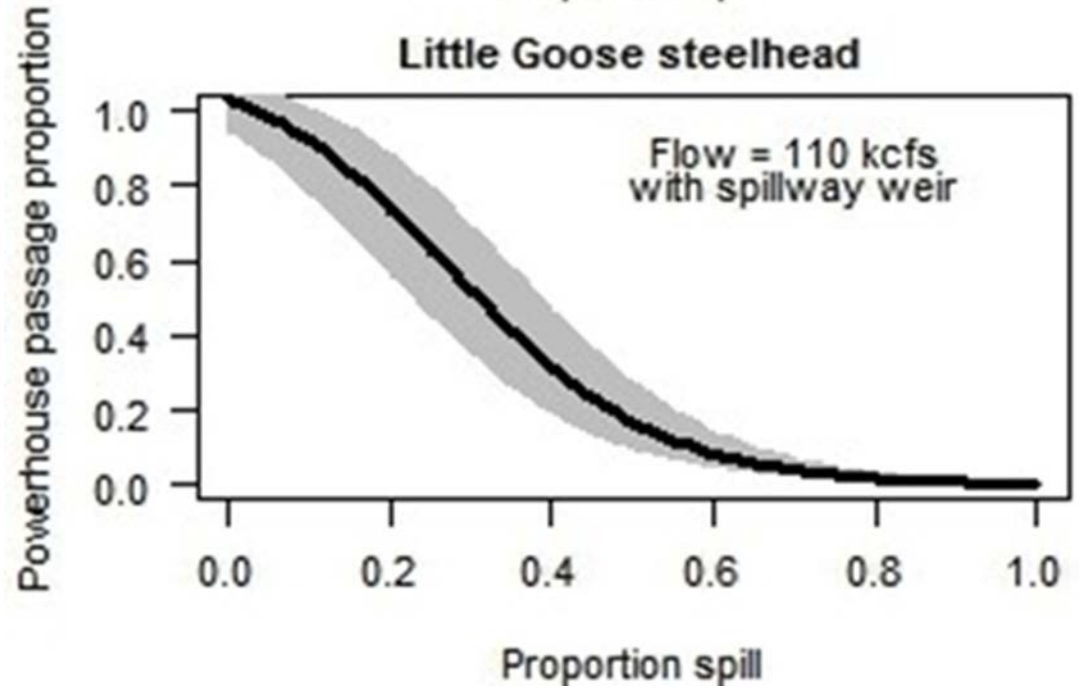
This website designed for 1024 x 768 or higher resolution. Questions and comments to: webmaster@fpc.org

[[Home](#)] [[Adult](#)] [[Smolt](#)] [[Spawning](#)] [[River](#)] [[Hatchery](#)] [[Survival](#)] [[Travel times](#)] [[Documents](#)]

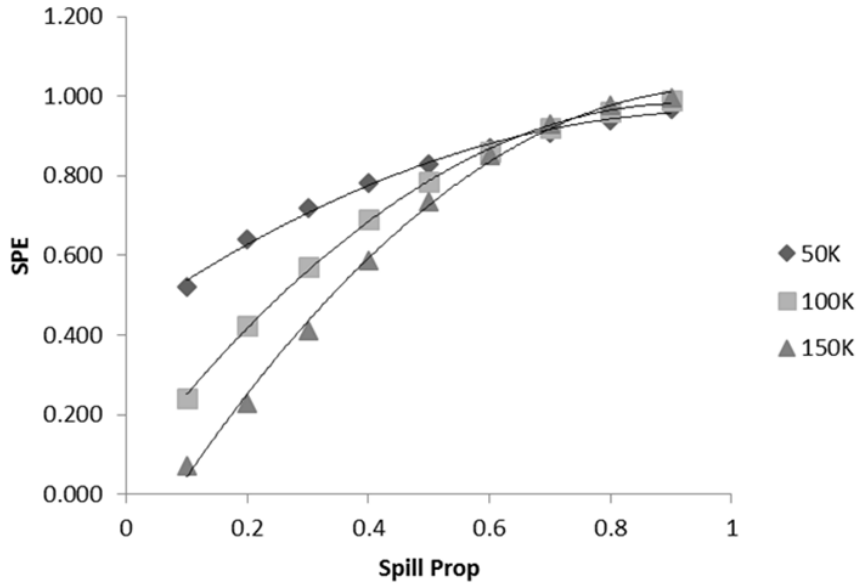
Little Goose yearling Chinook



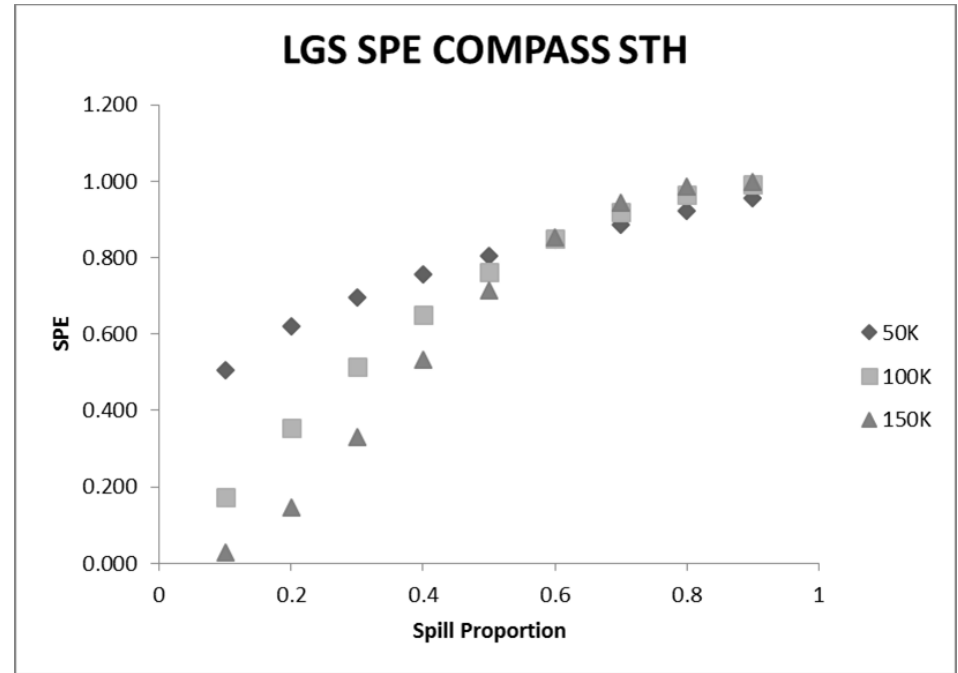
Little Goose steelhead



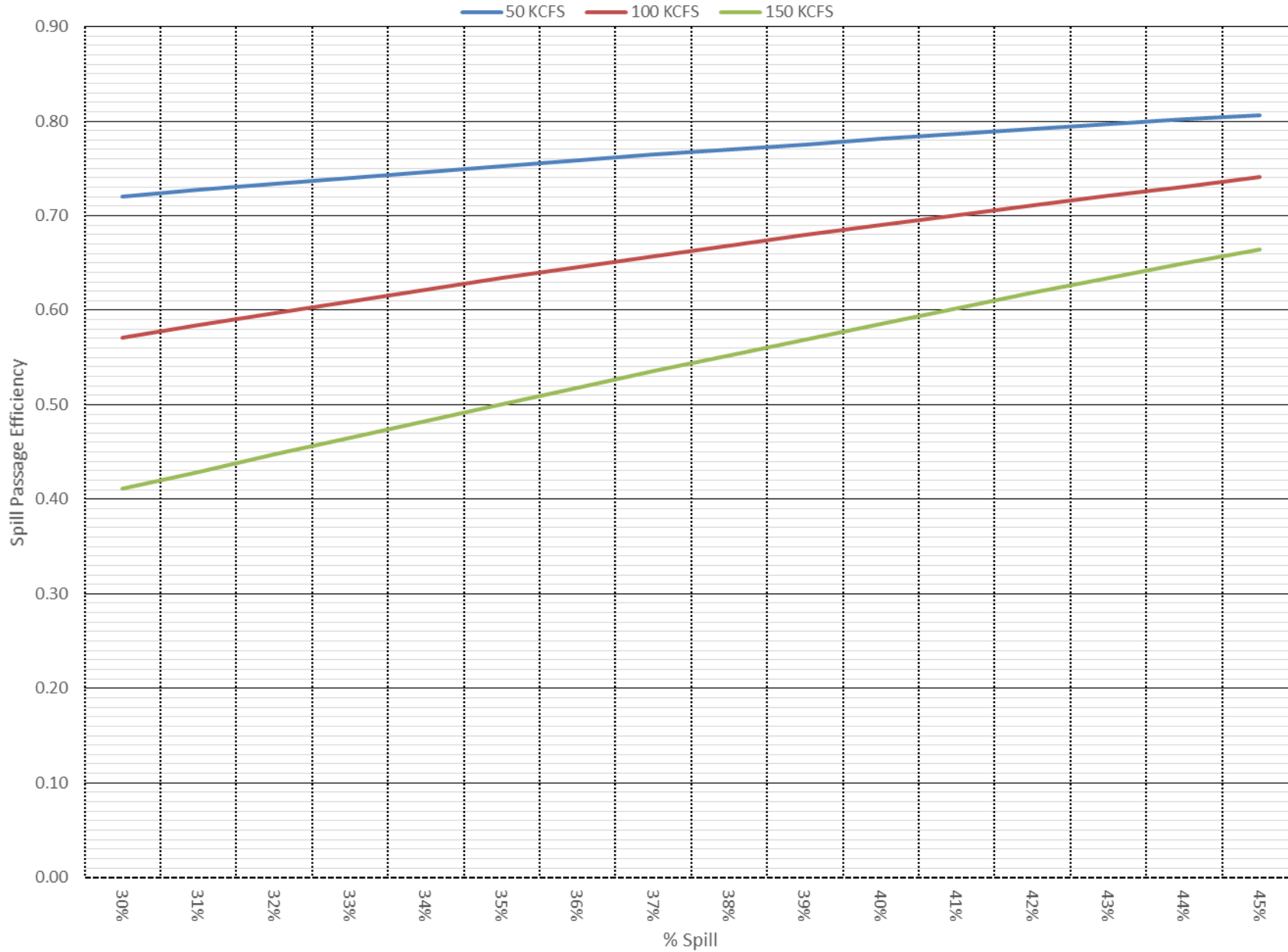
LGS SPE COMPASS CH1



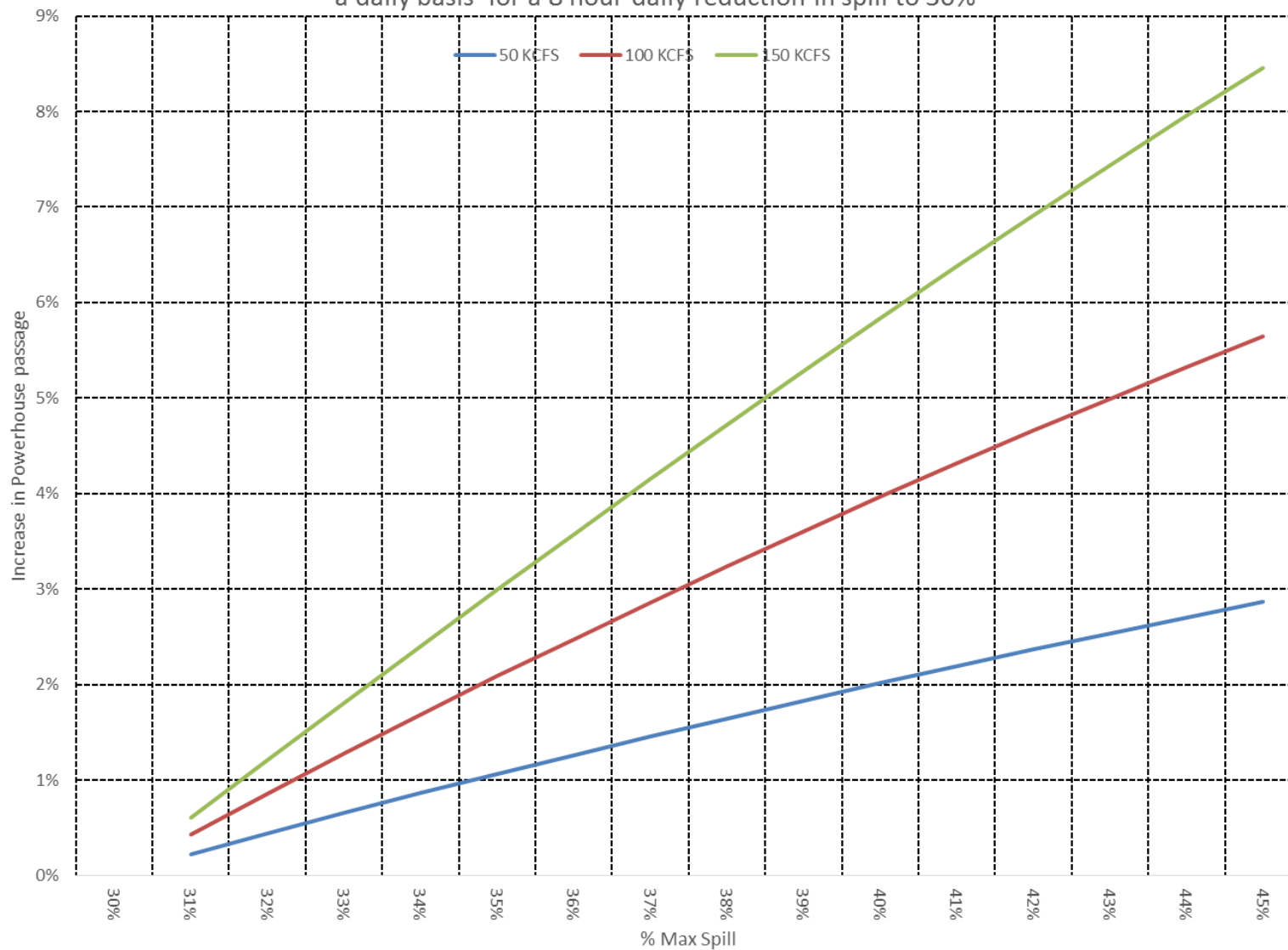
LGS SPE COMPASS STH



Changes in Spill Passage efficiency of juvenile Chinook at Little Goose Dam



Changes in proportion of juvenile Chinook passing through at Little Goose Dam powerhouse on a daily basis for a 8 hour daily reduction in spill to 30%



Changes in proportion of entire juvenile Chinook run passing through at Little Goose Dam powerhouse on from a 1 day- 8 hour reduction in spill to 30% (assuming 10% of run passes on that day)

