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Fish Passage Center

Weekly Report #17–21

July 28, 2017

This Week's Highlights

Water Supply

Precipitation throughout the Columbia Basin has varied between 1% and 44% of average at individual sub-basins over July. Precipitation above The Dalles has been 15% of average over July. Over the 2017 water year, precipitation has ranged between 104% and 132% of average.

Table 1. Summary of July precipitation and cumulative October through July precipitation with respect to average (1971-2000), at select locations within the Columbia and Snake River Basins.

Location	Water Year 2017 July 1-26, 2017		Water Year 2017 October 1, 2016 to July 26, 2017	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	0.27	15	37.3	111
Snake River Above Ice Harbor	0.16	22	24.7	120
Columbia Above The Dalles	0.16	15	28.2	112
Kootenai	0.32	17	38.0	113
Clark Fork	0.25	20	25.6	104
Flathead	0.07	5	38.3	118
Pend Oreille River Basin above Waneta Dam	0.14	10	33.4	113
Salmon River Basin	0.21	20	33.0	124
Upper Snake Tributaries	0.48	44	28.9	121
Clearwater	0.06	5	40.9	109
Willamette River above Portland	0.01	1	82.6	132

Table 2 displays the July 27th ESP runoff volume forecasts for multiple reservoirs along with the June COE forecasts at Libby and Dworshak. The July 27th ESP forecast at The Dalles between April and August is 109,540 Kaf (125% of average).

Table 2. July ESP Runoff Volume Forecasts for various reservoirs within the Columbia and Snake River Basins.

Location	July 27, 2017 5-day QPF ESP	
	% Average (1981-2010)	Runoff Volume (Kaf)
The Dalles (Apr-Aug)	125	109,540
Grand Coulee (Apr-Aug)	116	65,743
Libby Res. Inflow, MT (Apr-Aug)	120 129*	7,049 7,594*
Hungry Horse Res. Inflow, MT (Apr-Aug)	108	2,091
Lower Granite Res. Inflow (Apr- July)	144	28,621
Brownlee Res. Inflow (Apr-July)	182	9,975
Dworshak Res. Inflow (Apr-July)	119 116*	2,884 2,838*

* Denotes COE June Forecast

Grand Coulee Reservoir is at 1,284.9 feet (7-27-17) and has drafted 3.3 feet over the last week. Outflows at Grand Coulee have ranged between 106.9 Kcfs and 122.3 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2,448.6 feet (7-27-17) and has refilled 0.4 feet over the past week. Daily average outflows at Libby Dam have been 9.0 Kcfs over the last week.

Hungry Horse is currently at an elevation of 3,555.7 feet (7-27-17) and has held steady last week. Outflows at Hungry Horse have been 2.0 Kcfs over the last week.

Dworshak is currently at an elevation of 1,576.5 feet (7-27-17) and has drafted 6.5 feet over the last week. Dworshak outflows over the last week have been 11.0 to 11.2 Kcfs.

The Brownlee Reservoir was at an elevation of 2,061.7 feet on July 27, 2017, and has drafted 0.9 feet last week. Outflows at Hells Canyon have ranged between 14.0 and 22.2 Kcfs over the last four days.

The Biological Opinion flow period began on April 3rd and ended on June 20th in the lower Snake River (Lower Granite). According to the April Final Water Supply Forecast (April 5th, 2017), the flow objective this spring was 100 Kcfs at Lower Granite. Flows at Lower Granite Dam averaged 140.5 Kcfs over the spring season.

The Summer Flow period began on June 21st at Lower Granite Dam, the flow objective this year is 55 Kcfs. Over the summer period, flows have averaged 65.2 Kcfs and 40.8 Kcfs over the last week.
Based on the April Final Water Supply Forecast, the Spring Biological Opinion Flow Objectives were 260 Kcfs at McNary Dam (began April 10th and ended June 30) and 135 Kcfs at Priest Rapids Dam (began April 10th). Over the spring season, flows at McNary Dam have been 378.4 Kcfs and Priest Rapids Dam flows were 237.4 Kcfs.

The Summer Flow period began on July1st at McNary Dam, the flow objective this year is 200 Kcfs. Over the summer period, flows have averaged 198.9 Kcfs and 162.5 Kcfs over the last week.

Spill

Flows in the Snake River decreased slightly over the past week. Decreases in flows on the Columbia River were a bit more pronounced this week than those in the Snake River. Dworshak Dam is currently in its summer draft operation, with an average discharge volume of 11.1 Kcfs and an average spill volume of 6.7 Kcfs over the last week. Dworshak operations are currently to discharge cool water targeting tailrace gas levels no greater than 121% with the objective of reducing temperatures at the Lower Granite Dam tailrace. However, due to the limited powerhouse capacity at Dworshak this year, total outflows are limited to approximately 11.0 Kcfs (6.0-6.8 Kcfs spill) in order to not exceed the 121% TDG criteria. Hells Canyon Complex flows have remained steady this week, with outflows at Hells Canyon Dam ranging from 14.6 to 17.2 Kcfs over the last four days. Current outflow projections show flow in the Snake River and in the middle Columbia continuing to decrease as seasonal runoff declines.

The 2017 summer spill for fish passage began on June 21st and will continue through August 31st. Summer spill for fish passage at the Snake River projects is to occur at the following amounts described in the 2017 Fish Operations Plan (FOP).

Project	Spill Level Day/Night
Lower Granite	18 Kcfs/18 Kcfs
Little Goose	30%/30%
Lower Monumental	17Kcfs/17Kcfs
Ice Harbor	June 21-July 13: 30%/30% vs. 45 Kcfs/Gas Cap July 13-August 31: 45 Kcfs/Gas Cap

Spill at Lower Granite Dam was maintained at the target 18 Kcfs over the past week. Spill this week continued to occur through the traditional spillbays, with no spill through the Removable Spillway Weir. This operation was coordinated through TMT on July 12th, in an effort to reduce temperatures in the Lower Granite tailrace. Since this operation began on the afternoon of July 12th, temperatures in the Lower Granite tailrace have ranged from 67.9°F to 68.8°F. Spill operations at Little Goose Dam were modified on July 19th, when spill through the Temporary Spillway Weir was terminated. This modified operation was also coordinated through TMT on July 12th, with the goal of reducing temperatures below Little Goose Dam. The Biological Opinion spill for Little Goose Dam of 30% of flow was met over the past week. Spill at Lower Monumental Dam met the target 17 Kcfs over the past week. Finally, at Ice Harbor, the spill operation for the remainder of the season is 45 Kcfs/gas cap. At current flows, spill to these levels is not always possible. Instead, spill volumes are often limited to flows minus minimum generation requirements.

Summer spill for fish passage began on June 16th at the middle Columbia River projects. Spill for fish passage at the lower Columbia River projects at the following amounts described in the 2017 Fish Operations Plan.

Project	Spill Level Day/Night
McNary	June 16-Aug 31: 50%/50%
John Day	June 16-July 20: 30%/30% and 40%/40% July 20-August 31: 30%/30%
The Dalles	40%/40%
Bonneville	June 16 -Aug 31: 85Kcfs/121Kcfs and 95 Kcfs/95 Kcfs

The spring spill period ended on June 15th according to the COE's Fish Operation Plan. The original period for the spring spill to end in the Middle Columbia River was June 30th. Accommodations were made in past years to initiate summer spill earlier for testing purposes. This was done to assure adequate numbers of test fish were present to conduct the "performance tests". Since 2014 the earlier June 15th date has been included in the FOP as part of the roll-over operations associated with the FOP. The earlier start date for summer spill is also included in the 2014 Supplemental Biological Opinion.

At McNary Dam, spill averaged 50% of daily average flow over the past week. The spill operation at John Day Dam is 30%/30% for the remainder of the season. This spill operation was met over the past week. Spill at The Dalles Dam was 40% of average daily flow over the past week. Finally, at Bonneville Dam, the FOP spill levels of 85 Kcfs/121 Kcfs or 95 Kcfs/95 Kcfs were met over the last week.

At spill levels of 6.6 to 6.8 Kcfs over the last week, tailrace TDG levels at Dworshak Dam ranged from 119.0% to 119.6%. TDG supersaturation at the Lower Granite Dam forebay monitor has ranged between 102.8% and 104.9% over the past week. Over the past week, the tailwater TDG supersaturation (average of 12 highest hourly levels in a calendar day) was below 120% at all the Snake and Mid-Columbia river projects. Similar to the federal hydrosystem, TDG supersaturation levels at the Upper Columbia River projects have been below 120% at the tailrace monitors.

Note: The State of Oregon TDG waiver only requires compliance with 120% TDG in the tailrace, while the State of Washington requires compliance with both a 115% TDG forebay requirement and a 120% tailrace TDG requirement. The State of Oregon and the State of Washington also use different methodologies to estimate the 12-hour average TDG. For Oregon, the 12-hour average is based on the 12 highest hourly TDG measurements in a single calendar day (not necessarily consecutive). For Washington, the 12-hour average is based on 12-hour rolling averages. The highest of the rolling averages is what is reported as the 12-hour average for a given day. The location of a TDG monitor will dictate which of these methodologies is used for compliance monitoring. The Washington methodology will apply to all the lower Snake River projects, as well as the middle Columbia River forebay monitors. On any given day the compliance of the tailrace monitors at the middle Columbia River projects will be determined using either the Washington or Oregon methodology, whichever is the most restrictive, and spill will be decreased if needed.

Gas bubble trauma monitoring in smolts took place over the past week at Lower Granite, Little Goose, Lower Monumental, Bonneville, McNary, and Rock Island Dams. No fish were observed with signs of GBT this week at Lower Granite, Little Goose, Lower Monumental, McNary, and Bonneville dams. It is worth noting that the GBT sample at Lower Granite on July 27th is the final sample from this site for this year. This is because the juvenile bypass system at this project is going to be taken out of service next week in order to allow for construction on the bypass system and juvenile fish facility. In addition, GBT sampling at Bonneville and McNary dams has been reduced from twice per week to once per week. This is due to the increased temperatures in the river and generally low TDG levels at these projects. GBT exams at MCN will now occur on Mondays or Tuesdays while exams at BON will occur on Saturdays or Sundays.

Two gas bubble trauma samples were conducted at Rock Island Dam this week. In each of these two exams (July 25th and July 27th), 3% of fish were observed with signs of GBT. All signs of GBT in these two exams were Rank 1 level in the fins. The action criteria for interruption of the voluntary spill for fish passage program is defined as either 15 percent of examined fish showing signs of gas bubble trauma in their non-paired fins, or five percent of the fish examined show signs of gas bubble trauma in their non-paired fins where more than 25 percent of the surface area of the fin is occluded by gas bubbles, corresponding to ranks greater than 2. The observed signs of GBT are presently below the action criteria that would be in place during the voluntary spill for fish passage program.

Temperature

Forebay temperatures are now being reported for Lower Granite, Ice Harbor, McNary and Bonneville dams. Over the past week, forebay water temperatures at three of these projects were above the 68°F temperature standard. The one exception to this was Lower Granite Dam, where the daily average temperature in the forebay was slightly below the 68°F standard over the last week (range: 67.5-67.9°F). In addition, the forebay water temperatures at all four of these projects are above their respective ten-year averages for this time. At Lower Granite, the daily average temperature in the Lower Granite forebay on July 27th was 67.6°F, which is about 1.9 degrees warmer than the ten-year average for this date. The forebay temperature at Ice Harbor Dam has exceeded the 68°F standard since July 9th. The daily average temperature in the Ice Harbor forebay was 71.3°F on July 27th, which is about 1.9°F warmer than the ten-year average for this date. The forebay temperatures at McNary and Bonneville dams have exceeded the 68°F standard since July 12th. The July 27th daily average forebay temperatures at these two projects were 69.9°F and 70.8°F, respectively. These forebay temperatures are about 1.7-1.8 degrees warmer than their respective ten-year averages.

Smolt Monitoring

Sampling for the Smolt Monitoring Program (SMP) is underway at all bypass facilities. This week's samples at the bypass facilities were dominated by subyearling Chinook. Passage of spring migrants (i.e., yearling Chinook, coho, sockeye, and steelhead) remained low at all bypass facilities this week. Passage of subyearling Chinook decreased at nearly all bypass facilities, except McNary and Little Goose dams.

Sampling for the SMP at Bonneville Dam (BON) is now under the high temperature sampling protocol. Under this protocol, sampling at BON occurs every-other-day (24-hour sample) until temperatures in the BON forebay drop below 69.5° F. This week's samples at Bonneville Dam (BON) were again dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook at BON was approximately 37,000 per day, which is a decrease over last week's daily average passage index of about 63,000. Very few spring migrants were collected in this week's samples at BON. In addition, no Pacific lamprey juveniles were encountered in this week's samples.

Similar to last year, sampling at John Day Dam (JDA) occurs every-other-day this year. However, the SMP at JDA is no operating under the high temperature sampling protocol. Under this protocol, sampling at JDA switches to a condition only sample twice per week. This condition only sample will be process on Tuesday's and Friday's and will consist of a sample of approximately six hours. Because these are not 24-hour samples, it is not appropriate to compare this week's passage numbers to previous weeks. The high temperature sampling protocol will remain in place until temperatures in the JDA forebay drop below 69.5° F. This week's samples at JDA were again dominated by subyearling Chinook. No spring migrants were encountered at JDA this week. Finally, pacific lamprey macropthalmia were encountered in two of this week's three samples. No ammocoetes were encountered in this week's samples.

Sampling at McNary Dam (MCN) is also every-other-day. The MCN juvenile fish facility has been operating under the high temperature sampling protocol since about July 12th. Under this protocol, sampling at MCN remains every-other-day (24-hour sample) but the target sample size is reduced to 100 fish per day. This protocol will remain in place until temperatures in the McNary Forebay drop below 68.0°F. This week's samples were again dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 58,500 per day, which is an increase over last week's daily average passage index of about 52,600 per day. The only spring migrants that were encountered in this week's samples were sockeye. Finally, only Pacific lamprey macropthalmia were encountered in this week's samples. Macropthalmia were encountered in two of this week's three samples (July 22nd and 24th).

This week's samples at Lower Granite Dam (LGR) were again dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 5,700 per day, which is a decrease from last week's daily average passage index of about 7,700 per day. Passage of spring migrants remained low this week. Pacific lamprey ammocoetes were encountered if six of this week's samples while no macropthalmia were encountered this week. This week's total sample for Pacific lamprey ammocoetes at LGR was 15 fish. Finally, sampling at LGR is expected

to end next week. This is earlier than past years and is due to construction activities to upgrade the juvenile bypass system and juvenile fish facility for next season.

Similar to recent years, sampling at Little Goose Dam (LGS) was every-other-day until the start of transportation, at which time sampling went to every day. This week's samples at LGS were again dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 5,850 per day, which is an increase from last week's daily average passage index of about 3,200 per day. Passage of spring migrants remained low this week. Finally, Pacific lamprey ammocoetes were encountered in five of this week's samples, with a daily average collection of about 15 fish. No Pacific lamprey macropthalmia were encountered in this week's samples at LGS.

Similar to recent years, sampling at Lower Monumental Dam (LMN) was every-third-day from April 1st to April 16th, every-other-day from April 16th until transportation began, at which time sampling switched to every day. This week's samples at LMN were again dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 1,100 per day, which is a decrease from last week's daily average passage index of about 4,750. Passage of spring migrants remained low this week. Finally, Pacific lamprey ammocoetes were encountered in two of this week's samples while no macropthalmia were encountered this week.

This week's collections at Rock Island Dam (RIS) were again dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 475 per day, which is a decrease from last week's daily average passage index of about 675 per day. Passage of spring migrants remained low this week. Finally, only one Pacific lamprey macropthalmia was encountered this week (July 22nd). No ammocoetes were encountered this week.

Hatchery Release

Effective 2017, the FPC has reorganized our hatchery release zones in an effort to more closely match the geographical regions used by NOAA in their ESU designations. The new river zones are: 1) Lower Columbia, 2) Middle Columbia, 3) Upper Columbia, and 4) Snake River. In addition, the FPC now provides a summary of hatchery releases below Bonneville Dam (i.e., Lower Columbia River Zone) in the weekly report.

Snake River Zone: The Snake River Zone encompasses the Snake River and its tributaries from its confluence with the Columbia River to Hells Canyon Dam. No new releases were scheduled for this zone this week and no new releases are scheduled over the next two weeks.

Upper Columbia Zone: The Upper Columbia Zone encompasses the area of the Columbia River and its tributaries from Priest Rapids Dam to Chief Joseph Dam. No new releases were scheduled for this zone this week and no new releases are scheduled over the next two weeks.

Middle Columbia Zone: The Middle Columbia Zone is defined as the Columbia River and its tributaries from Bonneville Dam to Priest Rapids Dam (excluding the Snake River). No new releases were schedule for this zone this week and no new releases are scheduled over the next two weeks.

Lower Columbia Zone: The Lower Columbia Zone is defined as the Columbia River and its tributaries below Bonneville Dam. Approximately 1.0 million subyearling fall Chinook smolts were scheduled to be released into Young's Bay this week. This is the only release that was scheduled for this zone this week. No new releases are scheduled for this zone over the next two weeks.

Adult Passage

Daily passage numbers at Bonneville Dam ranged between 417 and 594 adult summer Chinook in the last week. The 2017 summer Chinook count of 86,445 is about 74% of the 2016 count and 90.7% of the 10-year average. The 2017 summer Chinook jack count of 10,448 has 75 fewer fish than the 2016 count and about 48.6% of the 10-year average count. At Willamette Falls, 34,071 adult spring Chinook have been counted so far this year. In 2016, 30,067 adult spring Chinook were counted at Willamette Falls. This year's count is about 1.13 times greater than the 2016, while having 132 fewer fish than the 10-year average count of 34,203. As of July 27th, a total of 54,665 adult summer Chinook have been counted at McNary Dam and 8,404 have been counted at Lower Granite Dam. The 2017 McNary Dam adult summer Chinook count is about 69.6% of the 2016 count and 84.6% of the 10-year average count. The 2017 Lower Granite Dam adult summer Chinook count has 2,052 fewer fish than the 2016 count and 7,763 fewer fish than the 10-year average count.

The 2017 Bonneville Dam adult steelhead count of 18,365 is about 34.6% of the 2016 count of 52,998 and 21.9% of the 10-year average count of 83,857. The 2017 Bonneville Dam adult unclipped steelhead count of 9,269 is about 43.8% of the 2016 count of 21,146 and 23.9% of the 10-year average count of 38,697. Daily adult steelhead counts at Lower Granite Dam ranged from 13 to 25 adults per day last week. This year's Lower Granite steelhead count of 7,540 has 15 fewer fish than the 2016 count of 7,525 and is 63.8% of the 10-year average count of 11,803. The 2017 Lower Granite Dam adult unclipped steelhead count of 3,199 has 1,029 fewer fish than the 2016 count of 4,228 and 1,521 fewer fish than the 10-year average count of 4,720. At Willamette Falls, the 2017 count for steelhead was 2,657 as of July 26th. This year's steelhead count is about 10% of the 2016 count of 26,454 and 12.2% of the 10-year average count of 21,703.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 65 and 138 last week. The 2017 adult sockeye count at Bonneville Dam of 87,209 is about 25.6% of the 2016 count and 27.7% of the 10-year average count. The 2017 adult sockeye count at McNary Dam of 57,731 is about 22.2% of the 2016 count and 25.7% of the 10-year average count. The Lower Granite Dam 2017 adult sockeye count of 225 has 546 fewer fish than the 2016 count of 771 and 761 fewer fish than the 10-year average count of 986. As of July 27th at Bonneville Dam, the adult shad count was 3,089,868. This year's shad count is about 1.7 times greater than the 2016 count of 1,761,183 and 1.5 times greater than the 10-year average count of 2,041,654. A total of 68,823 lampreys have been counted at Bonneville Dam so far this year. The Bonneville 2017 lamprey count is about 2.1 times greater than the 2016 count of 33,347 and 4.2 times greater than the 10-year average count of 16,490.

Hatchery Releases Last Two Weeks

Hatchery Release Summary
From: 7/15/2017 to 07/28/17

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CH0	FA	2017	1,000,000	07-28-17	07-28-17	Youngs Bay	Youngs River	LCOL
Oregon Dept. of Fish and Wildlife Total					**1,000,000**					
Grand Total					**1,000,000**					

Hatchery Releases Next Two Weeks

Hatchery Release Summary
From: 7/29/2017 to 8/11/2017

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone

No Releases Scheduled

CH = Chinook, ST = Steelhead, CO = Coho, SO = Sockeye, CT = Cutthroat Trout, CM = Chum

Daily Average Flow and Spill (in Kcfs) at Mid-Columbia Projects

	Grand Coulee		Chief Joseph		Wells		Rocky Reach		Rock Island		Wanapum		Priest Rapids	
Date	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
07/14/2017	140.4	0.1	133.1	0.0	124.6	12.5	118.0	12.3	122.7	28.2	143.8	19.3	142.2	25.9
07/15/2017	112.3	0.1	114.9	0.0	124.3	10.5	124.4	12.3	132.2	25.6	142.7	19.3	137.9	25.6
07/16/2017	99.0	0.1	103.2	0.0	108.0	9.8	106.0	9.7	110.9	21.6	128.3	18.6	122.9	24.6
07/17/2017	131.3	0.1	128.5	0.0	135.0	10.0	140.7	12.3	142.6	26.8	151.3	18.9	148.3	24.1
07/18/2017	131.5	0.1	121.9	0.0	130.1	10.0	128.5	12.3	133.1	26.8	146.4	18.7	143.9	21.2
07/19/2017	103.8	0.1	116.7	0.0	124.5	10.0	122.1	12.3	127.0	23.6	143.8	18.4	138.4	19.3
07/20/2017	98.0	0.1	94.7	0.0	111.1	8.6	108.1	12.0	110.2	22.8	131.2	15.6	126.3	19.0
07/21/2017	106.9	0.1	98.1	0.0	98.6	8.4	101.5	12.9	100.4	20.2	118.5	16.3	111.9	19.9
07/22/2017	122.3	0.1	114.7	0.0	112.9	8.6	111.2	10.5	113.4	20.4	120.0	16.8	111.7	20.9
07/23/2017	100.7	0.1	108.6	0.0	115.0	8.7	109.2	9.1	114.9	19.7	109.7	17.6	99.6	23.6
07/24/2017	110.1	0.1	106.4	0.0	122.4	10.0	119.8	10.8	126.4	23.7	128.1	18.8	118.3	25.8
07/25/2017	106.6	0.1	105.4	0.0	110.4	8.5	109.8	9.0	114.4	22.1	126.0	13.7	124.9	24.4
07/26/2017	114.2	0.1	115.5	0.0	106.8	9.9	105.2	9.1	106.7	21.8	119.6	18.1	113.2	23.8
07/27/2017	105.2	0.1	108.8	0.0	119.6	11.1	114.9	9.1	116.4	21.6	102.5	19.1	90.4	26.6

Daily Average Flow and Spill (in Kcfs) at Snake Basin Projects

	Dworshak		Brownlee	Hells Canyon	Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
Date	Flow	Spill	Inflow	Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
07/14/2017	10.8	6.5	---	19.0	50.6	18.1	50.6	15.0	51.2	16.9	54.5	43.9
07/15/2017	11.0	6.7	---	17.3	49.9	18.2	47.5	14.1	47.8	16.7	49.9	39.3
07/16/2017	11.0	6.7	---	18.0	47.1	18.0	45.5	13.6	44.5	16.9	46.0	35.7
07/17/2017	11.0	6.6	---	15.1	48.4	18.1	45.2	13.5	45.7	16.5	47.6	37.1
07/18/2017	10.9	6.6	---	19.9	43.5	18.1	42.5	12.6	42.9	16.9	45.7	35.7
07/19/2017	10.9	6.6	---	19.4	47.9	18.2	44.6	13.3	45.2	16.7	46.2	36.0
07/20/2017	10.9	6.6	---	18.5	47.2	18.1	45.8	13.7	46.1	16.9	49.9	38.1
07/21/2017	11.2	6.8	---	15.3	43.1	18.1	40.6	12.3	40.2	17.0	42.2	32.2
07/22/2017	11.1	6.7	---	14.6	42.1	18.0	40.8	12.2	41.4	17.1	42.7	32.8
07/23/2017	11.2	6.8	---	15.6	39.3	18.1	35.8	10.7	34.6	16.9	34.9	25.0
07/24/2017	11.2	6.8	---	16.4	40.0	18.2	39.9	11.9	39.7	17.1	41.2	31.1
07/25/2017	11.1	6.7	---	16.7	41.6	18.1	40.8	12.2	40.2	16.7	42.3	32.1
07/26/2017	11.1	6.7	---	16.4	41.6	18.2	39.1	11.6	38.3	17.1	38.9	28.8
07/27/2017	11.0	6.6	---	17.2	38.0	18.1	35.8	10.7	36.6	16.7	38.5	28.6

Daily Average Flow and Spill (in Kcfs) at Lower Columbia Projects

	McNary		John Day		The Dalles		Bonneville			
Date	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	PH1	PH2
07/14/2017	225.2	112.9	209.8	66.4	196.5	78.4	205.3	100.2	9.9	82.7
07/15/2017	190.6	95.7	180.6	72.2	168.6	67.7	188.5	95.7	1.2	79.2
07/16/2017	180.3	90.5	183.3	70.7	169.9	68.0	185.0	90.6	0.9	81.1
07/17/2017	192.3	96.2	176.7	52.7	162.1	64.7	180.2	95.0	1.3	71.4
07/18/2017	212.6	106.5	193.4	61.4	181.2	72.7	190.3	100.5	1.1	76.3
07/19/2017	199.5	99.9	195.9	78.2	184.6	73.8	196.5	96.2	1.0	86.9
07/20/2017	186.0	93.2	181.3	69.2	167.4	66.6	181.5	90.0	0.9	78.2
07/21/2017	177.0	88.5	173.3	52.0	159.9	63.5	175.2	94.8	0.8	67.2
07/22/2017	161.2	80.8	154.1	46.4	144.7	57.9	158.3	100.4	0.9	44.5
07/23/2017	149.7	75.2	137.8	41.4	131.0	52.4	146.1	96.2	0.9	36.6
07/24/2017	164.8	82.7	156.8	47.2	145.3	58.1	154.1	90.9	0.9	49.9
07/25/2017	170.8	85.9	154.3	46.1	141.2	56.4	157.4	95.1	0.8	49.1
07/26/2017	163.7	82.1	149.0	44.8	139.9	55.5	159.8	100.0	0.9	46.5
07/27/2017	150.3	75.5	143.0	43.0	129.8	51.8	145.4	95.2	0.9	36.9

Gas Bubble Trauma Monitoring Results from Representative Sites on the Snake River and Columbia River

Site	Date	Species	Number of Fish	Number w/ GBT signs	Number w/ Fin Signs	% Fin GBT	% Severe Fin GBT	Number of Fish with Fin GBT Listed by Highest Rank: Rank 1	Rank 2	Rank 3	Rank 4
Lower Granite Dam											
	07/20/17	Chinook + Steelhead	106	1	1	0.94%	0.00%	1	0	0	0
	07/27/17	Chinook + Steelhead	33*	0	0			0	0	0	0
Little Goose Dam											
	07/17/17	Chinook + Steelhead	56*	0	0			0	0	0	0
	07/24/17	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
Lower Monumental Dam											
	07/19/17	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/25/17	Chinook + Steelhead	61*	0	0			0	0	0	0
	07/26/17	Chinook + Steelhead	39*	0	0			0	0	0	0
McNary Dam											
	07/17/17	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/19/17	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/23/17	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/25/17	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
Bonneville Dam											
	07/15/17	Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
	07/18/17	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/22/17	Chinook + Steelhead	81*	0	0			0	0	0	0

Total Dissolved Gas Saturation (%) - Average of 12 Highest Hours, 24 h Average and 24 h High

Total Dissolved Gas Saturation Data at Upper Columbia River Sites

	Hungry H. Dnst				Boundary				Grand Coulee				Grand C. Tlwr				Chief Joseph			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
7/14	---	---	---	0	---	---	---	0	113.5	113.9	114.2	24	112.7	112.9	113.2	24	113.0	113.5	113.9	24
7/15	---	---	---	0	---	---	---	0	113.4	113.7	113.9	24	112.9	113.5	114.3	24	113.2	113.8	114.0	24
7/16	---	---	---	0	---	---	---	0	112.8	113.0	113.5	24	112.6	113.4	114.1	24	112.9	113.2	113.4	24
7/17	---	---	---	0	---	---	---	0	112.9	113.0	113.2	24	112.3	112.7	113.2	24	112.3	112.7	113.2	24
7/18	---	---	---	0	---	---	---	0	112.8	112.9	113.2	24	112.1	112.6	112.8	24	113.1	113.9	114.4	24
7/19	---	---	---	0	---	---	---	0	112.8	113.0	113.1	24	111.7	112.3	113.1	24	113.2	113.5	113.9	24
7/20	---	---	---	0	---	---	---	0	112.8	113.1	113.4	24	111.9	112.5	113.5	24	112.4	112.7	112.9	24
7/21	---	---	---	0	---	---	---	0	111.9	112.0	112.4	24	111.1	111.8	113.0	24	111.6	112.0	112.3	24
7/22	---	---	---	0	---	---	---	0	111.8	112.1	112.5	24	110.7	111.3	112.7	24	112.1	112.6	113.1	24
7/23	---	---	---	0	---	---	---	0	112.5	112.6	112.8	24	111.4	112.4	113.6	24	113.1	113.7	114.2	24
7/24	---	---	---	0	---	---	---	0	111.8	112.0	112.3	24	111.1	111.5	112.2	24	111.8	112.1	112.5	24
7/25	---	---	---	0	---	---	---	0	111.5	111.6	111.7	24	110.7	111.3	112.6	24	111.0	111.7	112.1	24
7/26	---	---	---	0	---	---	---	0	111.4	111.6	112.0	24	110.0	110.8	112.0	24	111.7	112.2	112.7	24
7/27	---	---	---	0	---	---	---	0	111.1	111.3	111.7	23	110.1	110.7	111.6	23	111.8	112.3	112.6	23

Total Dissolved Gas Saturation Data at Mid Columbia River Sites

	Chief J. Dnst				Wells				Wells Dwnstrm				Rocky Reach				Rocky R. Tlwr			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
7/14	112.1	112.7	113.1	24	112.1	112.7	113.2	24	116.8	117.2	117.4	24	113.7	114.0	114.3	24	115.6	116.5	117.1	24
7/15	112.2	113.0	113.4	24	112.6	113.3	114.0	24	117.0	117.3	117.4	24	113.1	113.3	113.9	24	115.7	116.2	117.0	24
7/16	111.7	112.1	112.4	24	110.5	110.5	111.0	3	116.7	116.7	116.8	3	112.4	112.7	112.9	24	114.5	115.3	115.8	22
7/17	111.4	112.0	112.4	24	---	---	---	0	---	---	---	0	112.0	112.2	112.4	24	115.3	115.7	116.2	23
7/18	111.9	112.7	113.2	24	---	---	---	0	---	---	---	0	112.7	113.2	113.6	24	115.4	115.8	116.4	23
7/19	112.0	112.6	113.3	24	---	---	---	0	---	---	---	0	113.3	113.6	113.7	23	115.6	115.9	116.6	21
7/20	111.4	112.0	112.4	24	111.8	111.8	112.5	8	113.7	113.7	114.0	8	112.7	113.2	113.7	24	115.0	115.3	115.7	24
7/21	110.7	111.1	111.4	24	111.3	112.0	112.3	24	113.5	113.7	113.8	24	111.6	111.8	112.0	24	113.5	114.3	115.2	22
7/22	111.2	111.7	112.0	24	111.8	112.5	113.0	24	113.6	113.9	114.0	24	111.3	111.6	112.0	24	113.8	115.0	116.1	22
7/23	112.3	112.9	113.4	24	112.7	113.4	113.8	24	114.2	114.6	114.8	24	112.4	112.9	113.2	24	114.5	115.5	116.2	23
7/24	111.1	111.7	112.1	24	112.2	112.9	113.5	24	114.0	114.2	114.4	24	112.4	112.7	113.0	23	115.1	116.0	116.3	23
7/25	110.4	111.0	111.2	24	112.0	112.8	113.4	24	113.7	113.7	114.3	13	112.5	112.9	113.3	24	114.3	115.1	115.6	21
7/26	110.8	111.3	111.6	23	111.8	112.6	113.1	24	---	---	---	0	113.1	113.5	113.8	24	114.2	115.2	115.7	23
7/27	111.3	111.6	112.0	23	111.9	112.4	112.9	23	---	---	---	0	113.0	113.2	113.4	23	114.4	115.3	115.7	21

Total Dissolved Gas Saturation at Mid Columbia River Sites

	Rock Island				Rock I. Tlwr				Wanapum				Wanapum Tlwr				Priest Rapids			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
7/14	113.2	113.7	114.2	24	117.3	117.7	118.1	24	113.1	114.6	115.4	24	112.9	113.5	113.9	24	110.7	111.3	112.6	24
7/15	112.7	113.0	113.4	24	116.7	117.1	117.8	24	112.5	112.9	114.0	24	113.1	113.3	113.6	24	110.5	111.2	111.9	24
7/16	111.5	112.1	112.3	23	115.7	116.1	116.5	21	110.0	110.4	111.0	24	110.8	111.2	112.0	24	109.1	109.5	109.9	24
7/17	111.7	112.5	113.0	24	115.9	116.7	117.1	21	111.6	113.9	115.0	24	110.9	111.6	111.9	24	108.9	109.9	110.7	24
7/18	112.2	113.0	113.7	23	114.8	116.6	117.3	23	113.4	114.4	115.8	24	111.9	112.5	112.7	24	110.5	111.5	112.1	24
7/19	112.8	113.4	113.9	22	116.0	116.6	117.2	20	111.5	112.1	112.5	24	111.6	112.1	112.4	24	110.4	110.8	111.3	24
7/20	111.5	112.3	112.7	24	115.5	116.1	116.2	22	109.5	110.1	111.5	24	109.9	110.3	111.7	24	108.2	108.7	108.9	24
7/21	111.3	111.8	112.3	23	114.9	115.4	115.8	22	108.5	108.9	109.9	24	108.8	109.0	109.2	24	106.5	107.0	107.4	24
7/22	111.2	112.0	112.5	23	114.5	115.0	115.5	21	110.0	111.3	112.2	24	109.9	110.7	111.1	24	107.3	108.8	109.6	24
7/23	111.9	112.6	113.2	23	115.0	115.6	115.9	23	110.7	111.6	111.9	24	111.1	111.8	112.3	24	109.1	109.8	110.9	24
7/24	111.9	112.8	113.6	23	115.4	116.4	117.1	21	110.1	112.2	112.8	24	110.9	111.5	111.8	24	108.4	109.0	109.3	24
7/25	112.2	112.8	113.3	22	115.3	116.2	116.7	20	112.2	113.1	114.2	24	111.7	112.0	112.2	24	110.3	110.8	111.3	24
7/26	112.4	113.2	113.7	24	115.6	116.2	116.4	22	111.9	112.6	113.4	24	111.4	111.8	112.1	24	110.2	110.6	110.9	24
7/27	112.1	112.7	113.2	23	115.4	115.8	116.0	21	110.0	110.3	110.9	24	111.0	111.3	111.6	24	109.0	109.8	110.6	24

Total Dissolved Gas Saturation (%) - Average of 12 Highest Hours, 24 h Average and 24 h High

Total Dissolved Gas Saturation Data at Lower Columbia and Snake River Sites

	Priest R. Dnst				Pasco				Dworshak				Clrwtr-Peck				Anatone			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
7/14	---	---	---	0	---	---	---	0	118.8	119.3	119.7	24	115.3	116.7	117.8	24	103.6	105.5	108.0	24
7/15	---	---	---	0	---	---	---	0	119.2	119.6	119.9	24	115.5	116.6	117.7	24	103.1	104.6	107.7	24
7/16	---	---	---	0	---	---	---	0	119.0	119.4	119.8	23	115.5	116.8	117.7	24	103.0	105.0	108.2	24
7/17	---	---	---	0	---	---	---	0	119.1	119.6	120.1	24	115.4	116.7	117.7	24	103.5	106.0	109.9	24
7/18	---	---	---	0	---	---	---	0	119.3	119.7	120.1	24	115.5	116.9	117.9	24	103.0	104.9	109.7	21
7/19	---	---	---	0	---	---	---	0	119.5	119.9	120.2	24	115.7	117.1	118.1	24	103.1	104.6	106.6	23
7/20	---	---	---	0	---	---	---	0	119.1	119.4	119.7	24	115.6	116.9	117.9	24	103.1	104.6	106.5	24
7/21	---	---	---	0	---	---	---	0	119.0	119.3	119.7	24	115.6	116.9	118.0	24	103.3	105.3	108.2	24
7/22	---	---	---	0	---	---	---	0	118.7	119.0	119.2	24	115.6	116.8	117.8	24	103.2	105.6	108.7	24
7/23	---	---	---	0	---	---	---	0	119.3	119.5	119.7	24	116.2	117.4	118.5	24	103.3	105.7	108.7	24
7/24	---	---	---	0	---	---	---	0	119.4	119.6	119.8	24	116.3	117.3	118.1	24	111.9	113.5	114.3	24
7/25	---	---	---	0	---	---	---	0	119.3	119.6	119.9	24	116.0	117.1	118.0	24	112.2	113.0	113.2	24
7/26	---	---	---	0	---	---	---	0	119.4	119.6	119.8	24	115.9	116.9	118.1	24	111.6	112.3	112.8	24
7/27	---	---	---	0	---	---	---	0	119.3	119.5	119.8	23	115.9	116.9	118.0	23	112.0	112.8	113.9	23

Total Dissolved Gas Saturation Data at Snake River Sites

	Clrwtr-Lewiston				Lower Granite				L. Granite Tlwr				Little Goose				L. Goose Tlwr			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
7/14	108.4	111.0	112.6	24	101.8	102.2	102.4	24	110.3	110.7	110.9	24	108.5	110.1	110.4	24	111.5	112.6	113.1	24
7/15	107.9	110.1	111.8	24	102.7	103.2	103.3	24	110.4	110.7	111.2	24	110.3	110.6	110.9	24	112.7	113.0	113.2	24
7/16	108.2	110.7	112.4	24	102.4	102.7	102.8	24	109.8	110.3	110.4	24	109.5	109.9	110.7	24	112.1	112.5	112.8	24
7/17	108.1	110.8	112.5	24	103.4	103.8	104.0	24	110.1	110.5	110.9	24	109.1	109.5	113.4	24	112.2	112.6	112.9	24
7/18	108.2	110.9	112.6	24	102.5	102.8	103.6	24	107.8	109.9	110.3	24	108.0	108.2	108.4	24	111.9	112.2	112.6	23
7/19	108.2	110.7	112.8	23	102.1	102.3	102.6	24	109.6	110.2	110.4	24	107.0	107.2	107.8	24	110.3	111.0	111.3	24
7/20	108.3	110.6	112.5	24	102.3	102.6	102.7	24	108.5	109.8	110.0	24	106.6	106.9	107.3	24	108.8	109.3	109.8	24
7/21	108.2	110.8	112.6	24	103.1	103.5	103.8	24	107.5	109.6	110.3	24	106.6	106.8	107.3	24	108.6	109.0	109.3	24
7/22	108.4	111.1	112.9	24	102.7	102.9	103.4	24	107.6	110.0	110.4	24	105.9	106.3	106.6	24	108.6	108.9	109.3	20
7/23	108.9	111.6	113.2	24	103.1	103.3	103.4	24	108.0	109.3	110.6	24	106.2	106.7	107.4	24	108.6	108.7	109.4	15
7/24	108.7	111.2	113.1	24	102.7	102.9	103.3	24	107.8	109.1	110.6	24	106.2	106.5	106.9	24	108.3	108.3	108.5	5
7/25	108.4	111.1	112.9	24	102.5	102.8	103.2	24	108.6	109.9	110.6	24	106.8	107.3	108.4	24	109.6	109.6	110.0	13
7/26	108.1	110.5	112.0	24	104.1	104.9	105.3	24	109.7	112.0	112.6	24	106.8	107.1	107.4	24	109.5	110.0	110.3	24
7/27	108.2	110.6	112.6	23	104.5	104.6	104.9	23	112.1	112.4	112.6	23	108.0	108.4	108.9	23	109.4	109.7	109.9	23

Total Dissolved Gas Saturation Data at Snake and Lower Columbia River Sites

	Lower Mon.				L. Mon. Tlwr				Ice Harbor				Ice Harbor Tlwr				McNary-Oregon			
	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#	24 h	12 h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
7/14	109.8	110.2	110.9	24	115.6	116.2	117.0	24	111.5	111.9	112.2	24	113.9	114.7	115.0	24	---	---	---	0
7/15	110.1	110.2	110.4	24	115.7	116.2	116.6	24	111.9	112.1	112.3	24	113.3	114.0	114.7	24	---	---	---	0
7/16	109.8	110.3	110.8	24	116.1	116.6	117.0	24	111.9	112.2	112.5	24	112.8	113.3	113.7	24	---	---	---	0
7/17	110.7	110.9	111.1	24	116.0	116.4	117.2	24	112.6	112.8	113.1	24	112.7	113.3	113.6	24	---	---	---	0
7/18	110.2	110.4	110.8	24	116.1	116.5	117.1	24	112.8	112.9	113.1	24	113.2	114.0	114.5	24	---	---	---	0
7/19	110.1	110.7	111.2	24	115.8	116.2	116.4	24	112.7	112.9	113.1	24	112.8	113.4	113.6	24	---	---	---	0
7/20	109.8	110.1	110.6	24	115.7	116.0	116.4	24	112.5	112.6	112.8	24	113.0	114.0	114.9	24	---	---	---	0
7/21	108.7	108.9	109.2	24	115.9	116.3	116.9	24	111.6	111.8	112.2	24	112.9	113.5	114.4	24	---	---	---	0
7/22	107.5	107.8	108.2	24	115.7	116.0	116.4	24	110.6	110.9	111.4	24	112.9	113.8	114.6	24	---	---	---	0
7/23	106.8	106.9	107.1	24	115.6	116.0	116.1	24	110.9	111.2	111.4	24	113.1	113.8	114.6	24	---	---	---	0
7/24	107.1	107.2	107.3	24	115.7	116.0	116.6	24	110.8	111.1	111.4	24	112.7	113.4	114.1	24	---	---	---	0
7/25	107.1	107.3	107.5	24	115.3	115.9	116.3	24	111.9	112.3	112.6	24	113.4	114.4	115.3	24	---	---	---	0
7/26	106.5	106.7	107.2	24	115.5	115.8	116.2	24	112.9	113.2	113.6	24	112.9	113.6	114.8	24	---	---	---	0
7/27	105.6	106.0	106.2	23	115.2	115.6	115.9	23	112.6	112.8	113.2	23	113.5	114.2	114.7	23	---	---	---	0

Total Dissolved Gas Saturation (%) - Average of 12 Highest Hours, 24 h Average and 24 h High

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

	McNary-Wash				McNary Tlwr				John Day				John Day Tlwr				The Dalles			
	24 h	12 h		#	24 h	12 h		#	24h	12h		#	24h	12h		#	24h	12h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	AVG	High	hr
7/14	109.2	109.5	110.2	24	116.7	118.0	119.2	24	104.4	104.7	105.1	24	113.0	113.4	113.5	24	106.7	107.3	107.8	24
7/15	110.1	110.4	110.5	24	115.6	116.0	116.4	24	103.5	103.8	104.4	24	112.3	112.6	113.2	24	106.8	107.3	108.0	24
7/16	109.6	109.9	110.1	24	114.9	115.5	115.7	24	102.7	103.0	103.4	24	111.8	112.2	112.4	24	106.5	107.1	107.5	24
7/17	110.0	110.3	110.6	24	115.9	116.2	116.5	24	103.4	104.1	104.7	24	112.9	113.4	113.7	24	107.4	107.7	108.1	24
7/18	110.6	111.4	112.8	24	116.3	116.6	116.7	24	104.2	104.5	104.9	24	113.4	113.6	113.8	24	107.6	107.7	108.3	24
7/19	110.9	111.3	112.0	24	115.9	116.3	116.8	24	104.5	105.4	105.9	24	112.9	113.2	113.6	24	107.0	107.6	107.8	24
7/20	109.4	109.6	110.0	24	115.0	115.3	115.5	24	104.5	104.7	104.8	24	113.2	113.6	114.2	24	107.3	107.6	108.0	24
7/21	107.9	108.2	108.7	24	115.0	115.2	115.5	24	104.5	104.9	105.2	24	113.8	114.4	114.9	24	107.5	108.0	108.3	24
7/22	107.8	108.2	108.5	24	114.1	114.7	115.1	24	105.2	105.8	106.2	24	114.0	114.6	115.2	24	107.1	107.3	107.8	24
7/23	109.0	109.8	110.6	24	114.0	114.3	114.6	24	106.4	106.7	107.0	24	114.0	114.3	114.5	24	108.5	108.9	109.0	24
7/24	110.1	111.4	112.6	24	115.1	116.0	116.8	24	106.0	106.5	107.2	24	113.6	114.1	114.5	24	107.2	107.6	108.2	24
7/25	110.2	111.1	112.7	24	114.9	115.7	116.5	24	106.1	106.4	106.7	24	113.4	114.1	114.7	24	108.9	109.2	109.5	24
7/26	109.9	110.3	111.5	24	114.3	115.0	115.8	24	105.8	106.1	106.8	24	113.2	114.0	114.7	24	107.9	108.1	108.3	24
7/27	109.4	109.7	109.8	23	114.0	114.4	115.2	23	105.4	105.9	106.4	23	113.5	113.9	114.2	23	106.2	106.5	106.9	23

Total Dissolved Gas Saturation Data at Lower Columbia River Sites

	The Dalles Dnst				Bonneville				Warrendale				Camas\Washougal				Cascade Island			
	24 h	12 h		#	24 h	12 h		#	24h	12h		#	24h	12h		#	24h	12h		#
Date	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr
7/14	112.0	112.9	113.5	24	108.0	108.5	108.8	24	113.2	114.0	115.6	24	111.9	114.3	116.3	24	116.1	116.3	116.6	24
7/15	111.6	111.7	112.2	24	107.9	108.3	108.5	24	108.2	111.6	113.2	24	110.6	111.6	112.3	24	115.4	115.6	116.1	24
7/16	111.4	111.8	112.0	24	106.5	106.9	107.2	24	109.6	112.0	113.2	24	109.8	111.0	111.9	24	114.2	114.7	116.1	24
7/17	111.8	112.5	112.9	24	107.1	107.6	108.2	24	112.1	113.7	114.5	24	111.4	114.3	116.4	24	114.4	115.1	116.4	24
7/18	112.4	113.2	113.7	24	108.7	109.4	109.6	24	115.5	116.4	117.5	24	111.9	113.8	115.6	24	115.6	115.8	116.0	24
7/19	112.2	112.6	113.0	24	108.2	108.4	108.5	24	114.5	115.0	115.3	24	111.1	112.7	113.8	24	115.9	116.3	116.8	24
7/20	111.9	112.4	112.8	24	107.0	107.4	107.8	24	113.8	114.3	114.5	24	110.3	111.6	112.6	24	114.9	115.4	117.0	24
7/21	112.3	112.9	113.3	24	107.9	108.3	108.5	24	115.6	116.4	117.0	24	111.9	114.1	115.6	24	115.1	115.7	117.0	24
7/22	111.7	112.3	112.6	24	109.0	109.8	110.1	24	117.3	118.4	118.7	24	113.7	116.0	117.8	24	116.8	117.0	117.3	24
7/23	112.4	113.1	113.5	24	109.5	109.8	110.0	24	116.5	117.1	117.8	24	114.8	115.4	115.9	24	117.0	117.1	117.2	24
7/24	111.7	112.3	112.8	24	108.3	108.9	109.5	24	116.4	117.5	118.1	24	114.7	116.5	117.5	24	115.0	115.8	116.9	24
7/25	112.3	113.0	113.6	24	109.1	110.0	110.6	24	116.7	117.3	117.7	24	114.5	116.0	117.1	24	115.1	115.7	116.9	24
7/26	112.3	113.1	113.4	24	109.0	109.3	109.5	24	116.5	117.2	117.7	24	114.3	115.6	116.5	24	116.9	117.0	117.1	24
7/27	111.6	112.0	112.5	23	107.1	107.4	107.8	23	115.8	116.5	116.9	23	112.7	114.1	115.1	23	116.8	116.9	117.0	23

Two-Week Summary of Passage Indices

Source: Fish Passage Center Updated: 7/28/2017 13:03

Two-Week Summary of Passage Indices

* One or more of the sites on this date had an incomplete or biased sample.
See Sampling Comments: http://www.fpc.org/currentDaily/smpcomments.htm
For clip information see: http://www.fpc.org/CurrentDaily/catch.htm
For sockeye and yearling chinook (Snake only) race information see: http://www.fpc.org/smoltqueries/currentsmpsubmitdata.asp

				COMBINED YEARLING CHINOOK									
		WTB	IMN	GRN	LEW	LGR	LGS	LMN	RIS	MCN	JDA	BO2
Date		(Coll)	(Coll)	(Coll)	(Coll)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)
07/14/2017		---	---	---	---	0	0	90	0	0	---	0
07/15/2017		---	---	---	---	0	0	93	0	---	0	0
07/16/2017		---	---	---	---	0	0	64	0	0	---	0
07/17/2017		---	---	---	---	41	0	32	0	---	0	0
07/18/2017		---	---	---	---	0	0	132	0	0	---	0
07/19/2017		---	---	---	---	0	0	32	0	---	0	0
07/20/2017		---	---	---	---	0	0	31	0	0	---	0
07/21/2017		---	---	---	---	0	0	35	0	---	0	0
07/22/2017		---	---	---	---	0	0	0	0	0	---	0
07/23/2017		---	---	---	---	0	0	36	0	---	0	0
07/24/2017		---	---	---	---	0	0	19	0	0	---	---
07/25/2017	*	---	---	---	---	0	0	18	0	---	0	0
07/26/2017		---	---	---	---	0	0	0	0	0	---	---
07/27/2017		---	---	---	---	0	0	0	0	---	---	0
07/28/2017	*	---	---	---	---	0	0	---	---	0	0	---
Total:		**0**	**0**	**0**	**0**	**41**	**0**	**582**	**0**	**0**	**0**	**0**
# Days:		**0**	**0**	**0**	**0**	**15**	**15**	**14**	**14**	**8**	**7**	**12**
Average:		**0**	**0**	**0**	**0**	**3**	**0**	**42**	**0**	**0**	**0**	**0**
YTD		**33,704**	**22,233**	**21,106**	**8**	**3,998,337**	**2,400,545**	**2,885,775**	**50,596**	**1,583,272**	**1,720,241**	**1,947,910**

				COMBINED SUBYEARLING CHINOOK									
		WTB	IMN	GRN	LEW	LGR	LGS	LMN	RIS	MCN	JDA	BO2
Date		(Coll)	(Coll)	(Coll)	(Coll)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)
07/14/2017		---	---	---	---	5,964	2,617	7,956	704	75,053	---	109,492
07/15/2017		---	---	---	---	8,260	3,398	5,768	704	---	46,497	53,061
07/16/2017		---	---	---	---	8,569	4,217	3,343	693	51,450	---	64,439
07/17/2017		---	---	---	---	6,579	2,555	3,083	663	---	29,676	68,458
07/18/2017		---	---	---	---	10,316	2,705	3,695	661	38,385	---	68,032
07/19/2017		---	---	---	---	7,603	2,522	5,817	701	---	30,755	38,440
07/20/2017		---	---	---	---	6,845	4,473	3,509	587	45,421	---	41,558
07/21/2017		---	---	---	---	7,691	3,743	2,150	428	---	20,149	51,750
07/22/2017		---	---	---	---	6,878	2,961	763	578	71,639	---	53,193
07/23/2017		---	---	---	---	3,744	8,471	1,405	472	---	7,635	18,349
07/24/2017		---	---	---	---	6,095	5,948	972	495	26,040	---	---
07/25/2017	*	---	---	---	---	5,980	8,680	984	372	---	1,237	25,164
07/26/2017		---	---	---	---	3,743	7,490	898	466	77,850	---	---
07/27/2017		---	---	---	---	5,518	3,679	354	501	---	---	36,413
07/28/2017	*	---	---	---	---	3,698	2,801	---	---	31,486	2,068	---
Total:		**0**	**0**	**0**	**0**	**97,483**	**66,260**	**40,697**	**8,025**	**417,324**	**138,017**	**628,349**
# Days:		**0**	**0**	**0**	**0**	**15**	**15**	**14**	**14**	**8**	**7**	**12**
Average:		**0**	**0**	**0**	**0**	**6,499**	**4,417**	**2,907**	**573**	**52,166**	**19,717**	**52,362**
YTD		**0**	**11**	**40**	**0**	**1,011,935**	**1,047,010**	**652,634**	**67,751**	**2,390,123**	**1,064,959**	**3,980,401**

Two-Week Summary of Passage Indices

				COMBINED COHO								
		WTB	IMN	GRN	LEW	LGR	LGS	LMN	RIS	MCN	JDA	BO2
Date		(Coll)	(Coll)	(Coll)	(Coll)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)
07/14/2017		---	---	---	---	0	0	0	3	0	---	0
07/15/2017		---	---	---	---	0	0	0	1	---	0	0
07/16/2017		---	---	---	---	0	0	0	4	0	---	0
07/17/2017		---	---	---	---	0	0	0	1	---	0	0
07/18/2017		---	---	---	---	0	0	0	3	0	---	0
07/19/2017		---	---	---	---	0	0	0	1	---	0	0
07/20/2017		---	---	---	---	0	0	0	1	0	---	0
07/21/2017		---	---	---	---	0	0	0	0	---	0	0
07/22/2017		---	---	---	---	0	0	0	1	0	---	0
07/23/2017		---	---	---	---	0	0	0	0	---	0	16
07/24/2017		---	---	---	---	0	0	0	0	0	---	---
07/25/2017	*	---	---	---	---	0	0	0	0	---	0	0
07/26/2017		---	---	---	---	0	0	0	0	0	---	---
07/27/2017		---	---	---	---	0	0	0	0	---	---	0
07/28/2017	*	---	---	---	---	0	0	---	---	0	0	---
Total:		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**0**	**16**
# Days:		**0**	**0**	**0**	**0**	**15**	**15**	**14**	**14**	**8**	**7**	**12**
Average:		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
YTD		**0**	**0**	**2,232**	**0**	**128,502**	**86,636**	**69,601**	**35,298**	**86,630**	**96,620**	**356,042**

				COMBINED STEELHEAD								
		WTB	IMN	GRN	LEW	LGR	LGS	LMN	RIS	MCN	JDA	BO2
Date		(Coll)	(Coll)	(Coll)	(Coll)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)
07/14/2017		---	---	---	---	5	0	0	9	0	---	0
07/15/2017		---	---	---	---	39	0	31	4	---	0	0
07/16/2017		---	---	---	---	40	0	0	7	0	---	0
07/17/2017		---	---	---	---	0	14	0	5	---	0	0
07/18/2017		---	---	---	---	83	16	0	6	0	---	0
07/19/2017		---	---	---	---	83	0	0	3	---	0	0
07/20/2017		---	---	---	---	0	7	0	7	0	---	0
07/21/2017		---	---	---	---	0	0	0	3	---	0	0
07/22/2017		---	---	---	---	0	0	0	0	0	---	0
07/23/2017		---	---	---	---	0	11	0	0	---	0	0
07/24/2017		---	---	---	---	38	0	0	3	0	---	---
07/25/2017	*	---	---	---	---	36	0	0	1	---	0	0
07/26/2017		---	---	---	---	36	0	0	1	0	---	---
07/27/2017		---	---	---	---	0	29	18	0	---	---	0
07/28/2017	*	---	---	---	---	0	0	---	---	0	0	---
Total:		**0**	**0**	**0**	**0**	**360**	**77**	**49**	**49**	**0**	**0**	**0**
# Days:		**0**	**0**	**0**	**0**	**15**	**15**	**14**	**14**	**8**	**7**	**12**
Average:		**0**	**0**	**0**	**0**	**24**	**5**	**4**	**4**	**0**	**0**	**0**
YTD		**7,117**	**15,916**	**7,614**	**1**	**4,065,200**	**1,853,095**	**2,517,507**	**32,130**	**442,839**	**1,317,075**	**264,513**

Two-Week Summary of Passage Indices

					COMBINED SOCKEYE						
		WTB	IMN	GRN	LEW	LGR	LGS	LMN	RIS	MCN	JDA	BO2
Date		(Coll)	(Coll)	(Coll)	(Coll)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)
07/14/2017		---	---	---	---	0	14	0	2	0	---	0
07/15/2017		---	---	---	---	39	11	0	0	---	0	0
07/16/2017		---	---	---	---	40	7	0	5	0	---	0
07/17/2017		---	---	---	---	41	0	0	4	---	0	0
07/18/2017		---	---	---	---	83	0	0	4	0	---	0
07/19/2017		---	---	---	---	42	0	0	1	---	76	0
07/20/2017		---	---	---	---	41	0	0	0	0	---	0
07/21/2017		---	---	---	---	0	34	0	5	---	0	0
07/22/2017		---	---	---	---	0	0	0	0	206	---	182
07/23/2017		---	---	---	---	0	0	0	0	---	0	0
07/24/2017		---	---	---	---	0	0	0	0	0	---	---
07/25/2017	*	---	---	---	---	0	1	0	3	---	0	58
07/26/2017		---	---	---	---	36	1	0	4	207	---	---
07/27/2017		---	---	---	---	0	0	0	1	---	---	0
07/28/2017	*	---	---	---	---	0	0	---	---	0	0	---
Total:		**0**	**0**	**0**	**0**	**322**	**68**	**0**	**29**	**413**	**76**	**240**
# Days:		**0**	**0**	**0**	**0**	**15**	**15**	**14**	**14**	**8**	**7**	**12**
Average:		**0**	**0**	**0**	**0**	**21**	**5**	**0**	**2**	**52**	**11**	**20**
YTD		**6**	**0**	**0**	**0**	**61,191**	**24,457**	**34,028**	**11,163**	**156,287**	**117,048**	**145,210**

					COMBINED LAMPREY JUVENILES						
		WTB	IMN	GRN	LEW	LGR†	LGS	LMN	RIS	MCN	JDA	BO2
Date		(Coll)	(Coll)	(Coll)	(Coll)	(Samp)	(Coll)	(Coll)	(Coll)	(Coll)	(Coll)	(Coll)
07/14/2017		---	---	---	---	2	70	20	0	0	---	0
07/15/2017		---	---	---	---	3	32	20	0	---	188	0
07/16/2017		---	---	---	---	1	10	0	0	400	---	0
07/17/2017		---	---	---	---	1	20	0	1	---	63	0
07/18/2017		---	---	---	---	3	60	0	1	0	---	0
07/19/2017		---	---	---	---	0	16	0	1	---	250	0
07/20/2017		---	---	---	---	0	8	0	0	0	---	0
07/21/2017		---	---	---	---	2	16	0	0	---	150	0
07/22/2017		---	---	---	---	3	8	0	1	100	---	0
07/23/2017		---	---	---	---	4	24	20	0	---	160	0
07/24/2017		---	---	---	---	0	30	0	0	0	---	---
07/25/2017	*	---	---	---	---	1	0	10	0	---	0	0
07/26/2017		---	---	---	---	4	30	0	0	100	---	---
07/27/2017		---	---	---	---	1	0	0	0	---	---	0
07/28/2017	*	---	---	---	---	0	10	---	---	200	0	---
Total:		**0**	**0**	**0**	**0**	**25**	**334**	**70**	**4**	**800**	**811**	**0**
# Days:		**0**	**0**	**0**	**0**	**15**	**15**	**14**	**14**	**8**	**7**	**12**
Average:		**0**	**0**	**0**	**0**	**2**	**22**	**5**	**0**	**100**	**116**	**0**
YTD		**0**	**3**	**4**	**0**	**287**	**7,045**	**2,980**	**57**	**32,805**	**62,483**	**42,204**

Two-Week Summary of Passage Indices

* See sampling comments http://www.fpc.org/currentDaily/smpcomments.htm

Smolt indices, clipped & unclipped or combined, are presented in the following order: yearling chinook (chinook 1's,) subyearling chinook (chinook 0's), steelhead, coho, sockeye, and lamprey juveniles.

Three classes of fish counts are shown in these tables:
Sample counts (Samp) are provided for juvenile lamprey at LGR. See note below for details †.
Collection counts (Coll), which account for sample rates but are not adjusted for flow;
Passage indices (INDEX), which are collection counts divided by the proportion of water passing through the sampled powerhouse.
Passage indices are not population estimates, but are used to adjust collection counts for daily fluctuations in the site's or project's operations.

The classes of counts presented in the report are defined below for each site. Most samples occur over a 24-hr period that spans two calendar days. In this report, the date shown corresponds with the sample end date.

Combined lamprey juvenile collection counts are provided for all sites. Combined lamprey juveniles is a combination of pacific lamprey ammocoetes, brook lamprey ammocoetes, unknown lamprey ammocoetes, pacific lamprey macropthalmia, and unidentified lamprey species.

† In 2013 it was confirmed that juvenile lamprey can escape the sample tank at LGR which would lead to unreliable estimates of collection. Therefore, only sample counts are provided in this report.

Definitions for Smolt Index Counts

WTB (Collection) = Salmon River Trap at Whitebird : Collection Counts
IMN (Collection) = Imnaha River Trap : Collection Counts
GRN (Collection) = Grande Ronde River Trap : Collection Counts
LEW (Collection) = Snake River Trap at Lewiston : Collection Counts
LGR (Index) = Lower Granite Dam Bypass Collection System : Passage Index Counts
  Passage Index = Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill)}
LGS (Index) = Little Goose Bypass Collection System : Passage Index Counts
  Passage Index = Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill)}
LMN (Index) = Lower Monumental Dam Bypass Collection System : Passage Index Counts
  Passage Index = Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill)}
RIS (Index) = Rock Island Dam Second Powerhouse Bypass Trap : Passage Index Counts
  Passage Index = Collection Counts / {Powerhouse 2 Flow / (Powerhouse 1 & 2 Flow + Spill)}
MCN (Index) = McNary Dam Bypass Collection System : Passage Index Counts
  Passage Index = Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill)}
JDA (Index) = John Day Dam Bypass Collection System : Passage Index Counts
  Passage Index = Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill)}
BO2 (Index) = Bonneville Dam Second Powerhouse Bypass Collection System : Passage Index Counts
  Passage Index = Collection Counts / {Powerhouse 2 Flow / (Powerhouse 1 & 2 Flow + Spill)}

JDA and BO2 data collected for the FPC by Pacific States Marine Fisheries Commission.
RIS data collected for the FPC by Chelan Co. PUD.
LGR, LMN, and MCN data collected for the FPC by Washington Dept. of Fish and Wildlife.
LGS and GRN data collected for the FPC by Oregon Dept. of Fish and Wildlife.
IMN data collected for the FPC by the Nez Perce Tribe.
Fall (post SMP season) trapping at the Imnaha River Fish Trap (IMN) is funded by the Lower Snake River Compensation Program (LSRCP)
WTB and LEW data collected for the FPC by Idaho Dept. of Fish and Game.

Two Week Transportation Summary

Source: Fish Passage Center Updated: 7/28/17 1:06 PM

07/14/17 TO 07/28/17

		Species				
Site	Data	**CH0**	**CH1**	ST	SO	**Grand Total**
LGR	Sum of NumberCollected	57,722	25	213	195	58,155
	Sum of NumberBarged	37,410	23	188	163	37,784
	Sum of NumberBypassed	17,950	0	20	25	17,995
	Sum of Numbertrucked	0	0	0	0	0
	Sum of SampleMorts	44	0	0	0	44
	Sum of FacilityMorts	424	2	5	7	438
	Sum of ResearchMorts	0	0	0	0	0
	Sum of TotalProjectMorts	468	2	5	7	482
LGS	Sum of NumberCollected	46,194		54	49	46,297
	Sum of NumberBarged	27,217		41	20	27,278
	Sum of NumberBypassed	16,786		12	22	16,820
	Sum of Numbertrucked	0		0	0	0
	Sum of SampleMorts	44		0	2	46
	Sum of FacilityMorts	251		1	5	257
	Sum of ResearchMorts	0		0	0	0
	Sum of TotalProjectMorts	295		1	7	303
LMN	Sum of NumberCollected	25,320	360	30		25,710
	Sum of NumberBarged	20,336	288	29		20,653
	Sum of NumberBypassed	4,916	69	0		4,985
	Sum of Numbertrucked	0	0	0		0
	Sum of SampleMorts	13	0	0		13
	Sum of FacilityMorts	55	3	1		59
	Sum of ResearchMorts	0	0	0		0
	Sum of TotalProjectMorts	68	3	1		72
Total Sum of NumberCollected		129,236	385	297	244	130,162
Total Sum of NumberBarged		84,963	311	258	183	85,715
Total Sum of NumberBypassed		39,652	69	32	47	39,800
Total Sum of Numbertrucked		0	0	0	0	0
Total Sum of SampleMorts		101	0	0	2	103
Total Sum of FacilityMorts		730	5	7	12	754
Total Sum of ResearchMorts		0	0	0	0	0
Total Sum of TotalProjectMorts		831	5	7	14	857

YTD Transportation Summary

Source: Fish Passage Center Updated: 7/28/17 1:06 PM

TO: 07/28/17

		Species					
Site	Data	**CH0**	**CH1**	CO	SO	ST	**Grand Total**
LGR	Sum of NumberCollected	623,667	2,362,698	74,225	35,589	2,329,514	5,425,693
	Sum of NumberBarged	594,483	978,688	63,247	19,699	949,358	2,605,475
	Sum of NumberBypassed	21,922	1,381,285	10,900	15,670	1,379,888	2,809,665
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	242	90	5	11	53	401
	Sum of FacilityMorts	5,114	2,609	73	209	193	8,198
	Sum of ResearchMorts	12	26	0	0	22	60
	Sum of TotalProjectMorts	5,368	2,725	78	220	268	8,659
LGS	Sum of NumberCollected	605,698	1,337,946	43,198	13,718	1,065,018	3,065,578
	Sum of NumberBarged	583,741	495,706	39,956	10,026	313,227	1,442,656
	Sum of NumberBypassed	17,361	837,161	3,201	3,318	751,538	1,612,579
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	108	29	1	10	10	158
	Sum of FacilityMorts	2,592	5,050	40	364	243	8,289
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	2,700	5,079	41	374	253	8,447
LMN	Sum of NumberCollected	328,953	1,459,182	33,440	17,200	1,293,660	3,132,435
	Sum of NumberBarged	338,034	931,878	32,959	12,568	710,510	2,025,949
	Sum of NumberBypassed	5,516	489,562	800	4,597	560,085	1,060,560
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	48	37	2	5	31	123
	Sum of FacilityMorts	302	1,089	39	120	387	1,937
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	350	1,126	41	125	418	2,060
Total Sum of NumberCollected		1,558,318	5,159,826	150,863	66,507	4,688,192	11,623,706
Total Sum of NumberBarged		1,516,258	2,406,272	136,162	42,293	1,973,095	6,074,080
Total Sum of NumberBypassed		44,799	2,708,008	14,901	23,585	2,691,511	5,482,804
Total Sum of NumberTrucked		0	0	0	0	0	0
Total Sum of SampleMorts		398	156	8	26	94	682
Total Sum of FacilityMorts		8,008	8,748	152	693	823	18,424
Total Sum of ResearchMorts		12	26	0	0	22	60
Total Sum of TotalProjectMorts		8,418	8,930	160	719	939	19,166

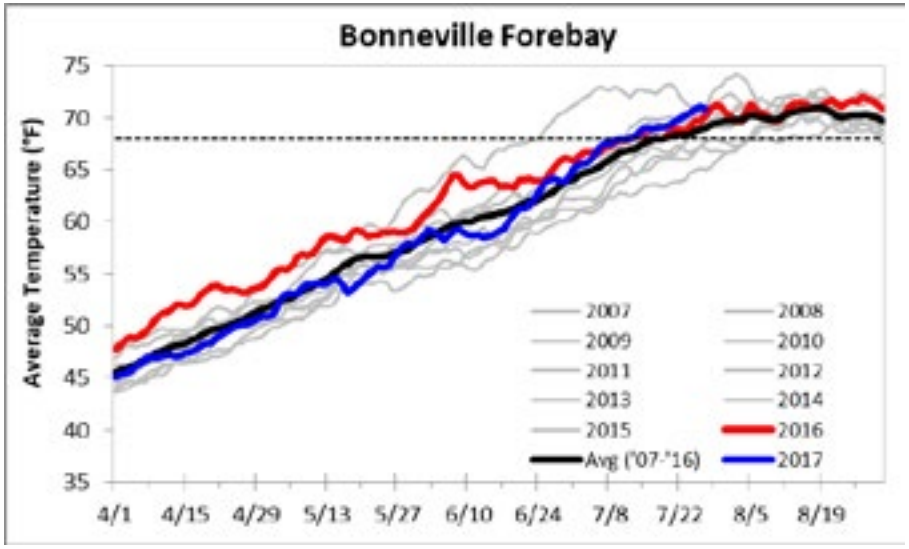
Cumulative Adult Passage at Mainstem Dams Through: 07/27

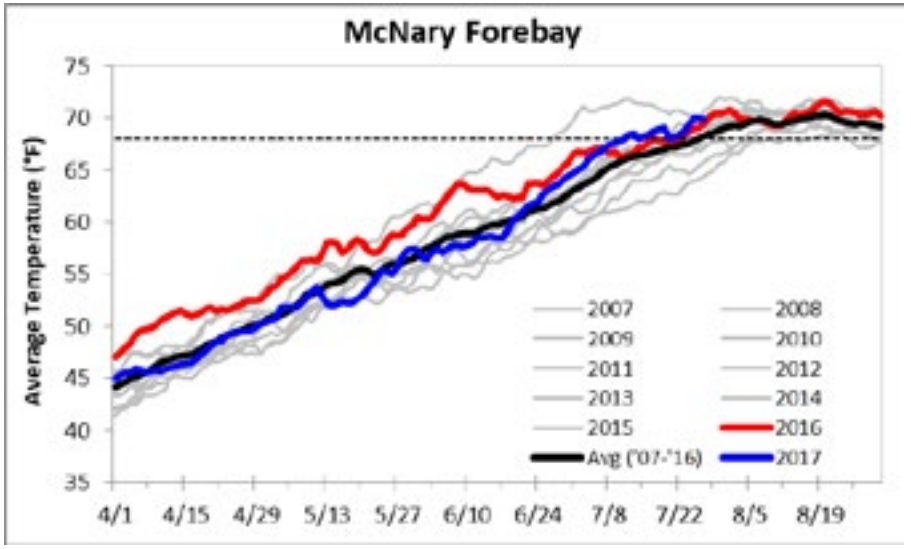
		Spring Chinook						Summer Chinook						Fall Chinook					
		2017		2016		10-Yr Avg.		2017		2016		10-Yr Avg.		2017		2016		10-Yr Avg.	
dam	enddate	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	07/27	83624	18110	137215	11145	150783	25708	86445	10448	116769	10523	95285	21499	0	0	0	0	0	0
TDA	07/27	58308	12497	105504	9999	118766	22002	67361	8991	91820	8287	78459	16913	0	0	0	0	0	0
JDA	07/27	46675	12475	93659	8262	103450	20515	58791	7018	86556	7250	69705	16185	0	0	0	0	0	0
MCN	07/27	44292	7020	87191	7374	93925	16835	54655	4321	78545	5998	64633	12056	0	0	0	0	0	0
IHR	07/27	28306	6949	67484	5029	68114	11248	8937	2033	12624	1399	18121	4745	0	0	0	0	0	0
LMN	07/27	28545	8270	66115	6266	68087	10905	7866	3270	11041	2148	19094	5608	0	0	0	0	0	0
LGS	07/27	26598	8335	62597	6365	63765	12007	8773	3641	10956	1804	18135	6119	0	0	0	0	0	0
LGR	07/27	27357	8256	62050	5480	62403	13092	8404	3494	10456	1878	16167	6493	0	0	0	0	0	0
PRD	07/26	7268	783	16843	1003	17901	1826	48929	1271	72605	3998	50165	1938	0	0	0	0	0	0
WAN	07/26	6612	484	17164	919	17602	2161	45443	1036	70801	3239	47374	1591	0	0	0	0	0	0
RIS	07/26	8080	564	18646	715	18006	2748	50396	830	68468	2211	46671	3677	0	0	0	0	0	0
RRH	07/26	5864	406	9449	351	7849	1209	36498	541	47003	1529	34181	2359	0	0	0	0	0	0
WEL	07/26	6589	820	11789	833	8215	1601	23305	548	32413	1424	23986	1886	0	0	0	0	0	0
WFA	07/26	34071	2417	30067	2112	34203	1411	0	0	0	0	0	0	0	0	0	0	0	0

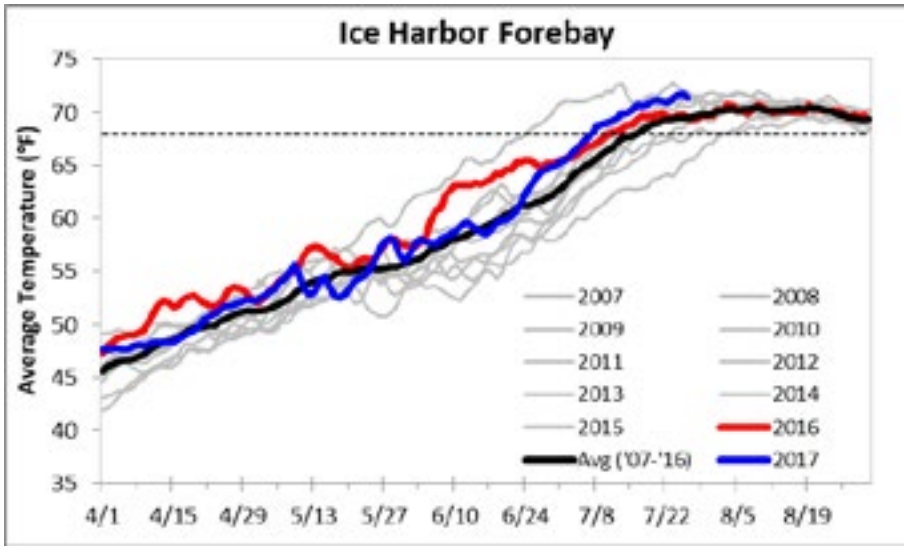
		Coho						Sockeye			Steelhead						Lamprey		
		2017		2016		10-Yr Avg.				10-Yr			10-Yr	Unclipped	Unclipped	10-Yr			10-Yr
DAM	ENDDATE	Adult	Jack	Adult	Jack	Adult	Jack	2017	2016	Avg.	2017	2016	Avg.	2017	2016	Avg.	2017	2016	Avg.
BON	07/27	0	0	0	0	0	0	87209	340697	314601	18365	52998	83857	9269	21146	38697	68823	33347	16490
TDA	07/27	0	0	0	0	0	0	63602	286756	267991	5238	18979	45352	2768	9021	21927	22975	6452	3993
JDA	07/27	0	0	0	0	0	1	65591	287889	258854	3269	11585	33516	2205	6177	15155	16093	5340	2722
MCN	07/27	0	0	0	0	1	0	57731	260119	224767	4039	9555	23784	1694	4790	9351	1204	661	419
IHR	07/27	0	0	0	0	0	0	384	882	898	1856	5873	14102	933	2696	4223	641	481	121
LMN	07/27	0	0	0	0	0	0	343	991	1062	2141	5463	15536	1121	3011	5357	171	93	19
LGS	07/27	0	0	0	0	0	0	283	909	978	1788	5980	8658	846	3364	3937	289	76	10
LGR	07/27	0	0	0	0	0	0	225	771	986	7540	7525	11803	3199	4228	4720	139	32	0
PRD	07/26	0	0	0	1	0	0	66119	308802	262328	322	1421	1856	0	0	0	7311	2306	779
WAN	07/26	0	0	0	0	0	0	75077	318811	231115	277	1322	1831	0	0	0	4021	916	335
RIS	07/26	0	0	0	0	0	0	71437	305215	251620	259	885	1224	146	417	644	1107	214	72
RRH	07/26	0	0	0	0	0	0	45050	230828	209186	199	588	985	66	240	502	578	124	46
WEL	07/26	0	0	0	0	0	0	39820	209297	194213	158	411	412	107	170	218	12	1	0
WFA	07/26	0	0	0	0	0	0	0	0	0	2657	26454	21703	0	0	0	0	0	0

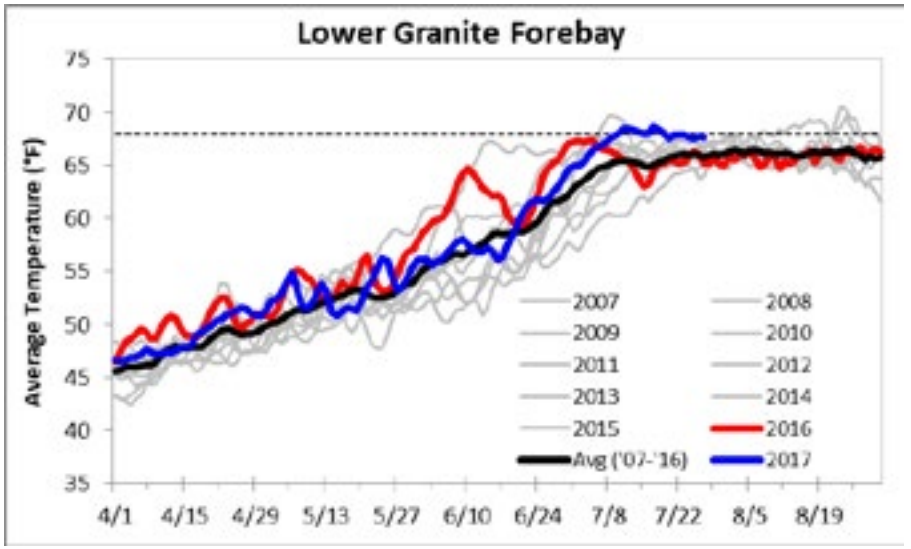
PRD does not post wild steelhead numbers.
These numbers were collected from USACE, Grant PUD, Douglas PUD, Chelan PUD, ODFW and DART.
Wild steelhead numbers are included in the total. Wild Steelhead are defined as unclipped fish.
Historic counts (pre-1996) were obtained from CRITFC and compiled by the FPC.
Historic counts 1997 to present were obtained from the Corps of Engineers.

Page last updated on: 07/28/17


Bonneville Forebay
Average Temperature (°F)
75
70
65
60
55
50
45
40
35
4/1
4/15
4/29
5/13
5/27
6/10
6/24
7/8
7/22
8/5
8/19
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Avg ('07-'16)
2017


McNary Forebay
Average Temperature (°F)
75
70
65
60
55
50
45
40
35
4/1
4/15
4/29
5/13
5/27
6/10
6/24
7/8
7/22
8/5
8/19
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Avg ('07-'16)
2017


Ice Harbor Forebay
Average Temperature (°F)
75
70
65
60
55
50
45
40
35
4/1
4/15
4/29
5/13
5/27
6/10
6/24
7/8
7/22
8/5
8/19
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Avg ('07-'16)
2017


Lower Granite Forebay
Average Temperature (°F)
75
70
65
60
55
50
45
40
35
4/1
4/15
4/29
5/13
5/27
6/10
6/24
7/8
7/22
8/5
8/19
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Avg ('07-'16)
2017