



Fish Passage Center

Weekly Report #18-26

August 31, 2018

This Week's Highlights

Water Supply

Precipitation throughout the Columbia Basin has varied between 17% and 102% of average at individual sub-basins over August. Precipitation above The Dalles has been 43% of average over August. Over the 2018 water year, precipitation has ranged between 85% and 108% of average.

Table 1. Summary of August precipitation and cumulative October through August precipitation with respect to average (1981-2010), at select locations within the Columbia and Snake River Basins.

Location	Water Year 2018		Water Year 2018	
	August 1-29, 2018		October 1, 2017 to August 29, 2018	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	0.74	43	33.9	95
Snake River Above Ice Harbor	0.38	56	19.5	90
Columbia Above The Dalles	0.44	43	23.7	91
Kootenai	0.61	33	32.9	92
Clark Fork	0.77	52	28.0	106
Flathead	0.58	39	34.6	102
Pend Oreille River Basin above Waneta Dam	0.63	46	31.3	100
Salmon River Basin	0.56	54	25.9	94
Upper Snake Tributaries	0.90	72	23.8	93
Clearwater	1.28	102	42.4	108
Willamette River above Portland	0.14	17	54.4	85

Grand Coulee Reservoir is at 1279.5 feet (8-30-18) and has drafted 2.1 feet over the last week. Outflows at Grand Coulee have ranged between 88.6 Kcfs and 111.8 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2444.1 feet (8-30-18) and has drafted 1.0 foot 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 3554.2 feet (8-30-18) and has drafted 0.8 feet last week. Outflows at Hungry Horse have been 2.3-2.5 Kcfs over the last week.

Dworshak is currently at an elevation of 1535.8 feet (8-30-18) and has drafted 5.6 feet last week. Dworshak outflows have been 7.5 Kcfs.

The Brownlee Reservoir was at an elevation of 2051.4 feet on August 30th, 2018 and has drafted 3.6 feet. Outflows at Hells Canyon have ranged between 9.1 and 17.2 Kcfs over the last four days.

The Biological Opinion flow period began on April 3rd in the lower Snake River (Lower Granite). According to the April Final Water Supply Forecast (April 4th, 2018), the flow objective this spring was 100 Kcfs at Lower Granite. Flows at Lower Granite Dam have averaged 111.3 Kcfs over the spring season. The summer biological flow period began on June 21st, 2018 at Lower Granite (Flow Objective = 53.3 Kcfs), flows have averaged 37.6 Kcfs over the summer period and 27.8 Kcfs last week.

Based on the April Final Water Supply Forecast, the Spring Biological Opinion Flow Objective is 260 Kcfs at McNary Dam and 135 Kcfs at Priest Rapids Dam. Flows at McNary averaged 343 Kcfs over the spring season; at Priest Rapids flows averaged 229.6 Kcfs over the spring season. The summer flow period began on July 1, 2018 at McNary Dam, with a flow objective of 200 Kcfs. McNary flows have averaged 162.7 Kcfs over the summer period and 143.3 Kcfs last week.

Spill

Flows in the Lower Snake River this week were similar to the previous week. Daily average flows at Lower Granite Dam ranged from 25.1 to 31.5 Kcfs this week. Flows in the mid-and Upper Columbia River this week were also similar to the previous week. Daily average flows at McNary and Rock Island dams ranged from 126.9 to 168.2 Kcfs and 77.7 to 110.7 Kcfs this week, respectively. Current forecasts show flows in the 23.0 to 31.0 Kcfs range at Lower Granite Dam and 95.0 to 130.0 Kcfs at McNary Dam over the next week.

Dworshak continued its summer draft operation this week, with daily average discharge averaging 7.6 Kcfs this week. Hells Canyon Complex flows this week were similar to the previous week, with daily average outflows at Hells Canyon Dam ranging from 10.1 to 13.6 Kcfs over the last week. The daily average temperature in the Lower Granite tailrace remained below 68 °F all of this week.

The 2018 spill for fish passage program at the lower Snake River and Mid-Columbia FCRPS projects began just after midnight on April 3rd and April 10th, respectively. Spring spill operations at these projects ran through June 15th in the Mid-Columbia and June 20th in the Snake River. According to the Fish Operations Plan, summer spill operations began at 0001 on June 16th at the Mid-Columbia River sites and 0001 on June 21st at the Snake River sites. These summer spill operations will run through August 31st at all eight FCRPS projects. A summary of summer spill operations is provided in Table 2.

Table 2. Summer spill operations at FCRPS projects.

Project	Summer Spill Level (Day/Night)
Lower Granite	18 Kcfs/18 Kcfs
Little Goose	30%/30%
Lower Monumental	17 Kcfs/17 Kcfs
Ice Harbor	Jun. 21-Jul. 13: 45 Kcfs/Gas Cap or 30%/30% Jul. 13-Aug. 31: 45 Kcfs/Gas Cap
McNary	50%/50%
John Day	Jun. 16-Jul. 20: 30%/30% or 40%/40% Jul. 20-Aug. 31: 30%/30%
The Dalles	40%/40%
Bonneville	95 Kcfs/95 Kcfs or 85 Kcfs/121 Kcfs

The summer spill operation for Lower Granite Dam (LGR) is 18 Kcfs, 24-hours per day. The summer spill volume at LGR was generally met this week.

There were several days this week when flows were sufficiently low that 18 Kcfs spill was not possible. Spill during these times was all flows in excess of powerhouse minimum requirements. There were no exceedences in total dissolved gas (TDG) waiver limits in the LGR tailrace or the Little Goose (LGS) forebay this week. The RSW at LGR has been closed since the afternoon of August 8th. Flows at LGS have been sufficiently low this week to warrant a set spill volume operation. This set spill volume has ranged from 7 Kcfs to ~10.6 Kcfs, depending on daily average flows from the previous day. There were no exceedences in TDG waiver limits in the LGS tailrace or Lower Monumental (LMN) forebay. The RSW at LGS has been closed since the afternoon of August 3rd. The summer spill operation for LMN is 17 Kcfs, 24-hours per day. Summer spill volumes at LMN were generally met this week. There were several days this week when flows were sufficiently low that 17 Kcfs spill was not possible. Spill during these times was all flows in excess of powerhouse minimum requirements. There were no exceedences in TDG waiver limits in the LMN tailrace or the Ice Harbor (IHR) forebay this week. The RSW at LMN has been closed since the afternoon of August 8th. The summer spill operation for IHR is 45 Kcfs during the day and gas cap spill at night for the remainder of the season. Summer spill volumes at IHR were met this week. However, due to low flows, the 45 Kcfs daytime spill and nighttime spill to the gas cap was not possible. Instead, spill during these periods was all flows in excess of powerhouse minimum requirements. There were no exceedences in TDG waiver limits in the IHR tailrace or the McNary (MCN) forebay this week. The RSW at IHR continued to operate this week. Voluntary spill at the Snake River facilities will be terminated after today, August 31st.

The summer spill operations at McNary (MCN), John Day (JDA), and The Dalles (TDA) dams are 50%, 30%, and 40% of instantaneous flows, respectively. These summer spill operations were met at all three projects this week and there were generally no exceedences of TDG waiver limits in their respective tailraces or downstream forebays. The one exception to this was The Dalles tailrace monitor on August 28th and 29th. The 12-hour average TDG on these two days was 120% and 121%, respectively. However, it appears that there may have been a malfunction in the gauge, as reading from 10:00 August 28th to 10:00 August

29th were anomalous, when compared to the hours immediately before and after these times. The summer spill operation at BON alternates between 95 Kcfs (24-hours) and 85 Kcfs during the day and 121 Kcfs at night. These two “treatments” will alternate in 2-day blocks through the end of the summer spill season. This summer spill operation has been met this week. It is worth noting that there were several periods this week when flows were sufficiently low that these spill levels were not possible. During these times, spill was all flows in excess of powerhouse minimum requirements. Total dissolved gas in the BON tailrace (at Cascades Island) has remained below the 120% waiver limit. Voluntary spill at the Mid-Columbia facilities will be terminated after today, August 31st.

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

Due to decreasing fish numbers and an inability to reach sample size requirements, Gas Bubble Trauma (GBT) monitoring in smolts did not occur this week.

Temperature

Forebay temperatures are now being reported for Lower Granite, Ice Harbor, McNary and Bonneville dams. Currently, forebay temperatures at Bonneville, and McNary dams are approximately 1 to 2 °F below their

respective 10-year averages for this time of year. The daily average temperature for August 30th was 69.5 °F at Bonneville and 67.5 °F at McNary. The current 10-year averages for these two projects are 70.2 °F and 69.4 °F, respectively. At 68.8 °F, the forebay temperature at Ice Harbor Dam is approximately 0.5 °F below the current 10-year average (69.4 °F) for August 30th. Finally, the daily average temperature in the Lower Granite forebay was 66.7 °F on August 30th. This is approximately 1 °F above the current 10-year average of 65.8 °F for this site.

Smolt Monitoring

Smolt Monitoring Program (SMP) activities continued at all bypass facilities this week. This week’s samples were dominated by subyearling Chinook at all seven SMP bypass facilities. When compared to last week, passage of subyearling Chinook decreased at nearly all SMP bypass facilities this week. The one exception was Rock Island Dam, where passage of subyearling Chinook this week was similar to last week. Sampling at Rock Island will be terminated for the season after today’s sample.

Sampling at Bonneville Dam (BON) transitioned from the high temperature protocol to normal sampling protocol after the sample on August 27th. Every day sampling will continue for the remainder of this season, unless temperatures exceed 70 °F. This week’s samples at BON were dominated by subyearling Chinook. This week’s daily average passage index for subyearling Chinook was about 180 per day, which is a decrease from last week’s daily average passage index of nearly 800 per day. The only spring migrants that were encountered this week were coho, which were only encountered once (August 29th). No lamprey juveniles were encountered in this week’s samples.

Sampling at John Day Dam (JDA) remained in the high temperature protocol this week, where sampling is reduced to a 6-hour sample, twice per week, for condition only. The condition only samples occur on Monday and Thursday and data from these samples are transmitted to FPC on Tuesday and Friday of each week. As of August 30th, daily average temperatures in the John Day forebay are below 69.5 °F. This means that normal sampling (i.e., 24-hour sample every-other-day) will resume. However, due to a staffing issue with the COE, normal sampling will not resume until Saturday, September 1st. Data from this sample will

be submitted to the FPC on Sunday, September 2nd. The only salmonids that were encountered in the two samples from this week were subyearling Chinook. No lamprey juveniles were encountered at JDA this week.

McNary (MCN) has been operating under the high temperature sampling protocol since mid-July. However, as of August 28th, daily average temperatures in the MCN forebay are below 68 °F. Therefore, MCN is no longer operating under the high temperature sampling protocol. Subyearling Chinook dominated this week's samples at MCN. This week's daily average passage index for subyearling Chinook was about 250 per day, which is a slight decrease from last week's daily average passage index of about 320 per day. No other salmonids were encountered in this week's samples. Pacific lamprey macrophthalmia were encountered in all three of this week's samples but no ammocoetes were encountered this week. This week's daily average collection for lamprey macrophthalmia was about 20 per day.

Since the transition from barging to trucking, samples from Lower Granite Dam (LGR) may be held for up to 48-hours before being enumerated. Therefore, data from LGR may be delayed for 1-2 days over the remainder of the season. To date, the FPC has data from LGR through the sample on August 30th. Subyearling Chinook continued to dominate the samples at LGR this week. This week's daily average passage index for subyearling Chinook was about 560 per day, which is a decrease from last week's daily average passage index of about 840 per day. Very few spring migrants were encountered in this week's samples. Pacific lamprey macrophthalmia were encountered in only one of this week's samples (August 29th) while Pacific lamprey ammocoetes were encountered in four of this week's samples.

Subyearling Chinook continued to dominate the samples at Little Goose Dam (LGS) this week. This week's daily average passage index for subyearling Chinook was about 110 per day, which is a decrease from last week's daily average passage index of about 360 per day. Very few spring migrants were encountered in this week's samples. Pacific lamprey macrophthalmia were encountered in five of this week's samples and ammocoetes were encountered in three of this week's samples.

Similar to LGR, samples from Lower Monumental Dam (LMN) are held for up to 48-hours before

being enumerated, due to the transition to trucking. Therefore, data from LMN may be delayed for 1-2 days over the remainder of the season. To date, the FPC has data from LGR through the sample on August 30th. This week's samples at LMN were dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 25 per day, which is a decrease from last week's daily average passage index of nearly 60 per day. No spring migrants were encountered in this week's samples. Finally, Pacific lamprey macrophthalmia were encountered in two of this week's samples while Pacific lamprey ammocoetes were encountered in four of this week's samples.

Subyearling Chinook continued to dominate the samples at Rock Island Dam (RIS). This week's daily average passage index for subyearling Chinook was about 10 per day, which is similar to last week's daily average passage index. The only spring migrants that were encountered this week were steelhead, which were encountered only once (August 24th). Pacific lamprey macrophthalmia were only encountered in one of this week's samples (August 29th) while no ammocoetes were encountered this week. Sampling at RIS will be terminated for the season after today's sample.

Hatchery Releases

FPC has not received all data from some hatcheries as of 08/31/18, therefore, this hatchery release schedule represents the most up to date accounting that are available, but should not be considered a finalized record of hatchery releases.

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. In the past week there were no scheduled releases into this zone, nor are there any scheduled for the next two.

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. In the past week there were no scheduled releases into this zone, nor are there any scheduled for the next two.

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). In the past week there were no scheduled releases into this zone, nor are there any scheduled for the next two.

Lower Columbia Zone:

The Lower Columbia Zone is defined as the Columbia River and its tributaries below Bonneville Dam. In the past week there were no scheduled releases into this zone, nor are there any scheduled for the next two.

Adult Passage

Adult Passage Daily passage numbers at Bonneville Dam ranged between 2,931 and 7,842 adult Chinook in the last week. The 2018 Bonneville Dam adult fall Chinook count of 44,860 is about 93% of the 2017 count and 49% of the 10-year average. At Willamette Falls, 268 adult fall Chinook have been counted so far this year. In 2017, 23 adult fall Chinook were counted at Willamette Falls. As of August 30th, a total of 7,681 adult fall Chinook have been counted at McNary Dam and 811 have been counted at Lower Granite Dam. The 2018 McNary Dam adult fall Chinook count is about 1.6 times greater than the 2017 count, while being 55.7% of the 10-year average count.

The 2018 Bonneville Dam adult steelhead count of 62,605 is about 82.8% the 2017 count of 75,544 and about 27.7% of the 10-year average count of 225,925. The 2018 Bonneville Dam adult unclipped steelhead count of 24,511 is about 92.7% of the 2017 count of 26,443 and about 28.9% of the 10-year average count of 84,586. Daily adult steelhead counts at Lower Granite Dam ranged from 19 to 38 adults per day last week. This year's Lower Granite steelhead count of 6,392 is about 79.9% of the 2017 count of 8,001 and about 32.9% of the 10-year average count of 19,418. The 2018 Lower Granite Dam adult unclipped steelhead count of 2,242 is about 64.1% of the 2017 count of 3,496 and 27.9% of the 10-year average count of 8,030. At Willamette Falls, the 2018 count for steelhead was 10,583 as of August 28th. This year's steelhead count is about 3.9 times greater than the 2017 count of 2,703 while being 51.3% of the 10-year average count of 20,603.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 1 and 5 last week. The 2018 adult sockeye count at Bonneville Dam of 193,812 is about 2.2 times greater than the 2017 count, while being 60.2% of the 10-year average count. The

2018 adult sockeye count at McNary Dam of 155,461 is about 2.7 times greater than the 2017 count, while being 67.5% of the 10-year average count. The Lower Granite Dam 2018 adult sockeye count of 272 has 45 more fish than the 2017 count of 227 and 805 fewer fish than the 10-year average count of 1,077. The 2018 Bonneville Dam adult coho count of 5,352 has 2,807 more fish than the 2017 count and 1,984 fewer fish than the 10-year average count.

As of August 30th at Bonneville Dam, the adult shad count was 6,059,893. This year's shad count is about 1.9 times greater than the 2017 count of 3,135,333 and 2.9 times greater than the 10-year average count of 2,101,606. A total of 42,614 lampreys have been counted at Bonneville Dam so far this year. The Bonneville 2018 lamprey count is about 52.6% of the 2017 count of 81,077, while being about 1.5 times greater than the 10-year average count of 29,348.

Hatchery Releases Last Two Weeks

Hatchery Release Summary

From: **8/17/2018** to **8/31/2018**

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
No Planned Releases										
Grand Total					0					

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

Hatchery Releases Next Two Weeks

Hatchery Release Summary

From: **9/1/2018** to **9/14/2018**

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
No Planned Releases										
Grand Total					0					

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

Date	Grand Coulee		Chief Joseph		Wells		Rocky Reach		Rock Island		Wanapum		Priest Rapids	
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
08/17/2018	87.8	0.1	93.5	0.0	90.6	15.0	81.6	0.0	84.0	0.6	75.5	7.3	75.0	19.8
08/18/2018	99.0	0.1	97.6	0.0	97.3	14.4	98.6	0.0	100.2	0.0	95.0	1.7	89.3	6.5
08/19/2018	94.0	0.1	91.3	0.0	96.3	20.6	91.2	0.5	93.8	0.3	86.9	2.9	83.9	2.7
08/20/2018	100.3	0.1	100.4	0.0	100.2	3.8	103.2	2.2	108.2	0.0	123.1	11.4	121.4	21.7
08/21/2018	113.4	0.1	108.8	0.0	111.2	0.0	111.8	0.0	115.1	0.0	126.2	1.9	119.7	1.7
08/22/2018	113.3	0.1	113.8	0.0	113.7	10.8	105.2	0.0	108.2	0.0	121.9	1.3	118.9	1.3
08/23/2018	110.6	0.1	111.2	0.0	113.3	4.8	109.2	0.0	113.4	0.0	116.6	1.6	113.3	1.5
08/24/2018	110.8	0.1	111.2	0.0	112.0	3.5	107.0	0.0	109.9	0.0	107.6	2.0	102.0	1.7
08/25/2018	91.1	0.1	90.3	0.0	99.3	0.0	100.5	0.0	106.8	0.0	132.5	1.6	127.5	1.7
08/26/2018	75.0	0.1	72.4	0.0	76.7	0.0	74.9	0.0	77.7	0.0	83.4	1.2	80.4	1.7
08/27/2018	111.8	0.1	109.4	0.0	101.0	5.6	96.4	0.0	97.6	0.0	108.0	1.1	104.7	1.7
08/28/2018	103.5	0.1	104.9	39.7	104.4	3.4	106.5	0.0	110.7	0.7	125.7	1.2	119.5	1.7
08/29/2018	88.6	0.1	85.5	0.0	91.5	0.0	85.7	0.0	90.1	0.0	101.1	0.7	100.8	1.7
08/30/2018	90.0	0.1	92.0	0.0	87.9	0.8	84.0	0.0	87.7	0.0	68.9	1.0	66.4	1.7

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

Date	Dworshak		Brownlee Inflow	Hells Canyon Outflow		Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill		Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
08/17/2018	7.5	0.0	---	---	26.9	14.1	25.7	8.6	23.4	9.9	24.6	15.2	
08/18/2018	7.5	0.0	---	---	26.4	13.6	25.4	8.6	23.6	10.1	27.9	17.9	
08/19/2018	7.5	0.0	---	---	24.7	12.0	24.0	8.6	22.0	8.7	26.1	16.2	
08/20/2018	7.5	0.0	---	---	25.2	12.5	22.0	8.7	20.2	6.9	23.8	14.0	
08/21/2018	7.6	0.0	---	---	26.0	13.2	23.7	7.1	22.7	9.3	26.1	16.2	
08/22/2018	7.6	0.0	---	---	27.7	14.5	27.8	7.0	27.2	11.4	29.7	19.7	
08/23/2018	7.6	0.0	---	---	26.7	13.6	25.6	8.7	22.9	9.5	28.7	18.6	
08/24/2018	7.6	0.0	---	---	26.2	12.6	23.7	8.6	21.8	8.4	24.3	14.4	
08/25/2018	7.6	0.0	---	---	27.6	15.5	26.0	8.6	25.4	12.1	29.9	19.9	
08/26/2018	7.6	0.0	---	---	28.6	20.2	27.4	8.7	26.6	13.1	29.5	19.5	
08/27/2018	7.6	0.0	---	---	25.1	12.1	25.2	8.6	23.5	10.3	26.7	16.9	
08/28/2018	7.6	0.0	---	---	26.1	13.3	23.6	8.7	22.5	9.1	27.7	17.7	
08/29/2018	7.6	0.0	---	---	31.5	17.9	30.0	7.0	28.1	14.8	31.5	21.3	
08/30/2018	7.6	0.0	---	---	29.7	15.5	28.5	10.1	26.9	13.6	31.3	21.2	

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

Date	McNary		John Day		The Dalles		Bonneville		PH1	PH2
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill		
08/17/2018	122.5	61.4	118.3	35.5	107.1	42.7	121.0	77.7	0.0	30.9
08/18/2018	117.0	58.7	107.2	32.1	100.2	39.8	119.0	76.0	0.0	30.6
08/19/2018	120.8	60.6	106.5	31.8	96.8	38.4	112.4	69.5	0.0	30.5
08/20/2018	136.2	68.2	130.0	39.1	123.6	49.4	125.9	80.0	0.0	33.5
08/21/2018	145.7	72.9	143.5	43.2	132.9	53.5	145.1	92.0	0.0	40.7
08/22/2018	168.7	84.3	154.3	46.3	141.9	56.9	156.6	97.9	0.0	46.4
08/23/2018	152.9	76.6	137.1	41.0	123.1	49.1	140.7	96.8	0.2	31.4
08/24/2018	128.4	64.4	123.5	37.1	116.4	46.3	139.3	95.3	0.0	31.6
08/25/2018	168.2	84.2	148.8	44.5	137.5	54.8	137.9	93.3	0.0	32.3
08/26/2018	149.8	75.2	153.4	45.9	141.7	56.6	161.5	96.0	0.0	53.2
08/27/2018	126.9	63.7	126.4	38.2	116.7	46.6	132.2	88.4	0.0	31.3
08/28/2018	137.2	68.9	125.1	37.5	114.8	45.9	126.2	82.9	0.0	30.9
08/29/2018	159.4	80.1	140.4	43.4	130.2	52.0	143.6	90.3	0.0	40.9
08/30/2018	133.3	67.0	129.3	38.8	121.2	48.3	138.2	94.9	0.0	30.9

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

Total Dissolved Gas Data at Upper Columbia Sites

Date	Hungry H. Dnst				Boundary				Grand Coulee				Grand C. Tlwr				Chief Joseph				Chief J. Dnst				Date
	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	
08/17									106.5	106.8	106.7	24	106.1	106.9	108.2	24	105.9	106.4	106.5	24	105.6	105.9	106.0	24	08/17
08/18									105.9	106.5	106.5	24	105.5	106.1	106.9	24	105.2	105.8	105.7	24	105.0	105.5	105.4	24	08/18
08/19									106.3	106.5	106.6	24	105.7	106.4	107.5	24	105.2	105.3	105.5	24	105.1	105.1	105.5	24	08/19
08/20									106.1	106.5	106.6	24	105.5	106.2	107.1	24	104.9	105.1	105.3	18	104.9	105.2	105.5	24	08/20
08/21									105.5	106.0	106.2	24	105.0	105.5	106.0	24	104.5	104.9	105.3	22	104.3	104.6	104.7	24	08/21
08/22									106.3	106.6	106.9	24	105.3	105.7	107.2	24	105.4	106.0	106.5	24	105.0	105.5	105.8	24	08/22
08/23									106.5	106.7	107.1	24	105.7	106.0	106.6	24	105.6	106.0	106.3	23	105.3	105.7	106.1	24	08/23
08/24									106.3	106.8	106.8	24	105.3	105.8	106.4	24	104.6	105.7	105.2	24	104.4	105.5	105.1	24	08/24
08/25									105.7	106.3	106.1	24	105.3	105.8	106.4	24	104.1	104.7	104.4	17	103.7	104.4	104.5	24	08/25
08/26									105.7	106.1	106.2	24	106.0	106.5	107.0	24	103.9	104.1	104.1	18	103.6	103.9	104.3	24	08/26
08/27									105.6	106.1	108.1	24	104.7	106.3	105.7	24	103.4	103.9	103.7	17	103.2	103.7	103.9	24	08/27
08/28									104.9	105.4	105.5	24	104.2	104.8	105.7	24	103.9	104.1	104.4	15	103.2	103.7	104.1	24	08/28
08/29									104.1	104.9	106.0	24	105.2	106.2	107.1	24	105.1	105.5	105.7	19	104.5	105.0	105.5	24	08/29
08/30									105.8	106.0	106.2	23	105.3	105.7	106.3	23	104.4	105.4	104.9	23	103.9	104.7	104.6	23	08/30

Total Dissolved Gas Data at Upper Columbia Sites

Date	Wells				Wells Dwnstrm				Rocky Reach				Rocky R. Tlwr				Rock Island				Rock I. Tlwr				Date
	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	
08/17	105.9	106.8	106.8	24	109.5	111.1	115.4	24	107.4	107.8	107.7	24	106.7	107.7	107.8	23	106.1	107.0	107.0	24	106.3	107.0	107.6	23	08/17
08/18	105.5	106.1	106.8	24	110.3	112.3	115.7	24	107.2	107.4	107.8	24	106.6	107.1	108.0	23	106.0	106.5	107.0	23	106.1	106.5	107.1	23	08/18
08/19	104.9	105.7	105.4	24	110.7	112.3	118.8	24	107.7	108.2	109.7	24	107.3	107.6	109.2	24	106.3	106.7	106.8	24	106.4	106.8	107.0	23	08/19
08/20	104.4	105.0	104.9	24	106.1	112.5	114.5	24	109.1	109.4	110.3	24	109.1	109.8	113.5	23	107.8	108.8	110.1	24	107.7	108.6	109.8	23	08/20
08/21	104.3	104.9	105.3	19	102.6	107.2	109.0	24	109.5	110.5	111.7	24	109.3	110.2	111.2	23	107.9	108.8	110.2	23	107.8	108.7	109.7	21	08/21
08/22	105.1	105.6	105.7	24	107.5	110.4	113.1	24	107.2	110.2	108.2	24	107.4	110.2	108.9	22	108.5	109.9	110.5	22	108.8	110.2	110.6	22	08/22
08/23	105.1	105.5	105.6	24	106.5	111.3	112.9	24	105.8	107.5	107.1	24	106.2	107.9	107.5	24	105.8	107.0	106.3	24	106.1	107.3	106.6	21	08/23
08/24	104.3	105.2	105.0	23	105.7	107.5	111.5	23	106.5	107.7	108.4	24	106.9	107.8	108.5	19	104.0	105.4	105.9	23	104.3	105.7	105.4	19	08/24
08/25	103.7	104.4	104.2	24	104.2	106.6	108.5	24	104.9	107.4	105.7	24	105.2	107.8	106.5	22	104.9	105.9	106.3	24	105.3	106.1	106.4	22	08/25
08/26	103.2	103.7	103.5	24	103.4	103.9	103.9	24	104.4	105.2	105.1	23	104.8	106.1	106.5	20	103.9	104.2	104.6	23	104.0	104.4	104.7	20	08/26
08/27	102.7	103.3	103.1	24	104.6	106.5	109.9	24	104.6	105.1	105.5	24	104.8	105.4	105.8	21	103.5	104.1	104.7	22	103.6	104.4	104.7	20	08/27
08/28	103.2	103.8	104.3	24	104.5	106.3	112.1	24	103.4	104.3	105.1	22	103.8	104.5	105.8	21	103.0	104.2	103.9	22	103.5	104.3	104.6	21	08/28
08/29	103.7	104.4	105.1	24	104.4	106.8	109.2	24	105.2	105.3	105.6	24	105.6	105.8	106.5	23	104.0	105.1	105.5	23	104.1	105.2	105.5	20	08/29
08/30	103.7	104.2	104.6	22	103.9	104.5	104.6	22	104.0	105.1	105.0	22	104.3	105.5	105.4	19	104.0	105.3	105.3	21	104.3	105.4	105.4	18	08/30

FISH PASSAGE CENTER

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

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Total Dissolved Gas Data at Upper and Mid-Columbia Sites

Wanapum				Wanapum Tlwr				Priest Rapids				Priest R. Dnstr				Pasco				Date	
Date	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	Date
08/17	107.7	112.2	109.2	24	107.5	110.7	111.6	24	109.2	111.5	111.3	24	111.6	112.5	114.2	24					08/17
08/18	107.2	109.0	110.3	24	104.1	105.8	106.3	24	106.7	108.3	108.2	24	109.7	111.5	113.0	24					08/18
08/19	107.0	108.5	109.2	24	104.3	105.5	106.9	24	105.6	106.9	106.6	24	106.5	107.6	108.0	24					08/19
08/20	105.7	107.6	107.5	24	106.6	109.2	121.2	24	105.9	107.3	109.7	24	110.3	111.8	114.9	10					08/20
08/21	105.6	107.0	108.4	24	104.1	104.9	105.1	24	105.2	107.4	105.7	24	105.8	108.6	107.0	24					08/21
08/22	106.3	106.9	107.4	24	105.0	105.5	106.1	24	106.0	107.0	107.7	24	106.3	106.7	107.1	24					08/22
08/23	105.9	106.8	106.5	24	104.7	105.3	105.6	24	106.3	107.1	106.9	24	106.1	106.6	106.7	24					08/23
08/24	103.7	105.6	106.4	24	102.9	104.7	104.4	24	104.2	106.0	105.0	24	103.9	105.9	104.5	24					08/24
08/25	104.1	104.9	105.1	24	103.3	103.9	104.0	24	103.7	104.9	105.3	18	103.5	103.9	104.2	24					08/25
08/26	102.1	103.9	103.2	24	101.3	103.2	102.9	24				0	103.1	103.9	103.6	24					08/26
08/27	101.6	102.6	103.6	24	100.8	101.4	102.0	24				0	102.1	103.1	102.7	24					08/27
08/28	103.0	104.3	105.0	24	102.4	103.1	103.4	24				0	102.6	103.5	103.9	24					08/28
08/29	104.0	105.0	106.9	24	102.4	103.2	103.7	24				0	104.6	105.2	105.5	24					08/29
08/30	101.5	104.0	103.7	24	100.9	102.0	102.5	24				0	103.7	105.0	104.2	24					08/30

Total Dissolved Gas Data at Snake and Clearwater Sites

Dworshak				Clrwr Peck				Anatone				Clrwr-Lewiston				Lower Granite				Lower G. Tlwr				Date	
Date	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	Date
08/17	102.0	102.4	102.7	24	102.6	103.8	105.1	24	101.1	102.3	103.6	24	103.0	104.9	106.4	24	100.8	101.3	101.3	24	109.5	113.6	110.9	24	08/17
08/18	101.7	102.0	102.4	24	102.7	104.0	105.2	24	101.2	102.5	103.8	24	103.1	105.1	106.6	24	100.9	101.0	101.1	24	109.5	109.7	110.2	24	08/18
08/19	102.1	102.6	103.0	24	103.0	104.5	105.7	24	101.6	103.1	104.6	24	103.4	105.5	107.1	24	100.7	101.1	101.4	24	108.3	109.6	109.6	24	08/19
08/20	101.9	102.5	102.5	24	102.4	104.1	104.0	24	100.7	102.7	102.3	24	102.3	105.1	105.0	24	100.9	101.2	101.5	24	107.0	108.1	108.7	24	08/20
08/21	101.8	102.1	102.5	24	102.5	103.8	104.9	24	101.0	102.4	103.6	24	102.9	105.0	106.6	24	100.6	101.0	101.1	24	108.4	108.9	109.3	24	08/21
08/22	102.1	102.6	103.0	24	102.8	104.1	105.3	24	101.9	103.2	104.5	24	103.1	105.0	106.5	24	101.9	102.7	103.6	24	109.7	111.0	112.4	24	08/22
08/23	102.3	102.6	103.0	24	102.8	103.9	105.2	24	101.5	102.8	103.9	24	102.8	104.6	105.9	24	101.2	102.5	101.7	24	108.7	110.0	109.4	24	08/23
08/24	102.2	102.5	102.9	24	102.6	103.8	104.9	24	101.0	102.3	103.1	24	102.6	104.4	105.7	24	99.9	101.1	100.2	24	108.4	108.9	109.8	24	08/24
08/25	102.0	102.4	102.7	24	102.2	103.5	104.6	24	101.1	102.3	103.3	24	102.4	104.1	105.5	24	100.1	100.4	100.9	24	108.2	108.7	109.2	24	08/25
08/26	101.9	102.2	102.2	24	101.6	103.0	102.3	24	100.6	101.9	101.3	24	101.2	103.8	102.1	24	100.9	101.0	101.2	24	112.6	115.4	116.2	24	08/26
08/27	101.8	102.1	102.4	24	101.7	102.3	103.2	24	100.1	100.8	100.8	24	101.0	101.6	102.5	24	100.0	100.9	100.8	24	108.3	110.2	108.6	24	08/27
08/28	101.5	101.8	102.2	24	101.8	102.9	104.0	24	101.3	102.7	103.9	24	102.4	104.4	106.0	24	99.6	100.1	100.7	24	109.2	109.4	111.2	24	08/28
08/29	102.2	102.7	103.1	24	102.4	103.7	104.8	24	102.1	103.3	104.6	24	102.8	104.7	106.2	24	99.6	100.0	100.2	24	112.4	112.8	113.1	24	08/29
08/30	102.0	102.5	102.5	23	102.0	103.3	103.6	23	101.4	103.0	102.8	23	102.1	104.3	104.6	23	98.3	99.8	99.2	23	110.5	112.6	112.3	23	08/30

FISH PASSAGE CENTER

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

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Total Dissolved Gas Data at Lower Snake Sites

Little Goose				L. Goose Tlwr				Lower Mon.				Lwr. Mon. Tlwr				Ice Harbor				Tlwtr Ice Harbor				Date	
Date	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	Date
08/17	106.0	106.1	106.9	24	107.7	108.7	108.3	24	107.7	108.0	108.5	24	117.6	124.5	139.3	24	109.6	110.7	110.7	24	110.2	112.3	112.2	24	08/17
08/18	106.8	107.4	107.8	24	108.1	108.7	109.1	24	107.7	108.1	108.3	24	111.6	112.4	112.9	24	109.7	110.2	110.5	24	109.6	110.3	110.9	24	08/18
08/19	107.3	107.6	108.2	24	107.8	108.6	108.7	24	108.2	108.4	108.6	24	110.4	111.5	112.7	24	110.2	110.3	110.7	24	108.5	109.7	110.5	24	08/19
08/20	107.9	108.5	109.0	24	107.3	108.2	107.8	24	106.8	108.1	109.0	24	109.1	110.0	110.0	24	110.4	110.6	110.9	24	107.0	107.7	108.5	24	08/20
08/21	108.1	108.4	109.1	24	107.5	107.9	108.3	24	108.6	109.2	110.5	24	110.8	111.9	112.6	24	110.2	110.7	111.6	24	107.8	109.1	110.1	24	08/21
08/22	109.0	109.1	109.5	24	107.7	108.6	108.9	24	107.5	108.0	108.1	24	112.4	113.0	115.5	24	109.7	110.1	110.2	24	109.0	110.2	113.2	24	08/22
08/23	108.0	109.0	108.9	24	108.6	109.3	112.0	24	107.0	107.2	107.3	24	111.5	113.9	115.4	24	109.1	109.9	110.3	24	123.5	136.6	139.7	24	08/23
08/24	106.3	107.5	107.7	24	108.4	109.3	109.2	24	106.5	107.0	106.9	24	109.6	110.5	112.2	24	107.6	108.5	108.2	24	119.9	139.8	140.3	24	08/24
08/25	105.6	106.1	106.2	24	108.4	108.7	109.1	24	107.0	107.0	107.2	24	112.8	113.3	113.8	24	107.2	107.5	107.6	24	110.6	112.1	113.4	24	08/25
08/26	105.3	105.5	105.6	24	108.2	108.5	108.7	24	107.1	107.2	107.4	24	113.2	114.0	115.5	24	107.1	107.3	107.7	24	110.6	112.6	114.5	24	08/26
08/27	104.2	105.4	105.6	24	108.1	108.5	108.7	24	106.0	107.2	107.1	24	111.6	113.7	113.4	24	106.9	107.2	107.5	24	109.5	112.5	113.6	24	08/27
08/28	104.1	104.3	104.6	24	108.6	109.3	109.6	24	105.4	105.8	106.3	24	110.7	111.3	111.8	24	106.5	106.8	107.3	24	108.7	109.8	110.6	24	08/28
08/29	104.8	105.2	105.7	24	107.7	109.1	108.4	24	105.8	106.2	106.4	24	113.7	115.9	116.5	24	107.0	107.1	107.7	24	110.7	112.6	114.2	24	08/29
08/30	103.1	105.2	104.4	23	108.2	108.9	109.2	23	105.3	106.2	106.1	23	113.3	115.4	114.8	23	106.9	107.2	107.7	23	110.6	113.4	113.4	23	08/30

Total Dissolved Gas Data at Mid-Columbia Sites

McNary-Wash.				Tlwtr McNary				John Day				Tlwtr John Day				The Dalles				Dnstr T. Dalles				Date	
Date	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	Date
08/17	106.7	107.0	107.5	24	114.0	114.6	114.7	24	104.5	105.8	105.2	24	112.3	113.9	112.8	24	105.2	105.8	105.9	12	111.0	112.9	111.8	24	08/17
08/18	106.8	107.0	107.5	24	113.9	114.5	115.0	24	103.9	104.4	105.2	24	111.8	112.3	112.6	24	104.2	105.1	105.2	24	110.4	111.0	111.0	24	08/18
08/19	106.8	107.1	107.8	24	114.0	114.6	115.2	24	105.0	105.7	106.7	24	112.3	112.8	113.1	24	107.3	108.9	109.7	24	111.5	112.3	112.5	24	08/19
08/20	106.3	106.7	107.5	24	113.6	114.3	114.1	24	106.4	106.8	108.1	24	113.5	114.3	115.1	24	108.8	109.3	109.7	24	113.0	113.7	114.1	24	08/20
08/21	105.3	106.4	107.6	24	113.4	114.0	114.8	24	106.9	107.2	107.8	24	113.5	114.1	114.5	24	108.6	109.3	109.4	24	113.3	114.1	114.6	24	08/21
08/22	105.8	106.6	106.5	24	115.3	116.3	116.5	24	106.6	107.4	107.2	24	113.8	114.5	115.3	24	109.6	110.2	110.6	24	113.9	114.8	115.3	24	08/22
08/23	104.7	105.8	105.7	24	114.0	115.7	114.7	24	105.2	106.6	106.3	24	113.3	114.2	113.7	24	107.3	109.8	108.6	24	112.5	114.6	113.3	24	08/23
08/24	103.6	104.2	104.3	24	113.4	114.1	114.2	24	103.3	104.9	104.2	24	111.9	113.2	112.4	24	103.7	106.2	104.4	24	110.0	112.0	110.6	24	08/24
08/25	103.1	103.8	103.9	24	114.6	115.4	115.9	24	102.5	103.0	103.1	24	112.5	113.1	113.7	24	103.5	104.0	104.4	24	110.2	110.7	111.2	24	08/25
08/26	101.8	102.6	102.6	24	113.8	115.3	114.2	24	102.3	102.7	102.5	24	113.2	113.6	114.0	24	104.7	104.8	105.0	24	110.8	111.0	111.3	24	08/26
08/27	100.8	101.5	101.4	24	113.9	114.1	114.6	24	102.1	102.4	102.9	24	111.9	112.7	112.4	24	104.6	104.8	105.2	24	110.9	111.2	111.8	24	08/27
08/28	101.4	101.6	102.2	24	113.8	114.1	114.6	24	102.1	102.4	102.7	24	111.3	112.1	113.1	24	106.9	107.9	108.2	24	116.2	119.8	120.7	24	08/28
08/29	102.6	103.0	103.6	24	113.7	114.0	114.6	24	102.4	102.6	102.9	24	112.9	113.5	114.1	24	108.1	108.8	109.3	24	116.1	120.7	122.5	24	08/29
08/30	102.8	103.1	103.6	23	113.1	113.6	113.8	23	101.7	102.4	102.1	23	113.1	114.2	115.5	23	105.9	108.2	106.6	23	111.5	113.1	112.4	23	08/30

FISH PASSAGE CENTER

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Total Dissolved Gas Data at Mid-Columbia Sites

Date	Bonneville				Warrendale				Camas\Washug.				Cascade Isld.				Date
	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	
08/17	105.1	108.7	107.5	24	115.8	116.8	116.8	24	113.0	114.7	115.3	24	113.9	117.0	117.0	24	08/17
08/18	104.1	104.5	104.9	24	116.1	116.7	117.4	24	113.7	115.2	115.7	24	113.6	113.8	113.9	24	08/18
08/19	105.1	105.7	105.9	24	116.6	116.9	117.9	24	115.1	115.9	116.7	24	113.4	113.6	113.6	24	08/19
08/20	106.1	107.0	107.8	24	116.7	117.0	117.5	24	114.8	116.0	116.1	24	114.9	116.6	117.2	24	08/20
08/21	106.9	107.4	108.2	24	115.6	117.0	116.7	24	113.1	115.7	115.5	24	115.5	117.1	117.9	24	08/21
08/22	109.7	110.9	111.6	24	117.6	118.2	119.1	24	113.4	115.8	118.2	24	115.8	116.9	117.8	24	08/22
08/23	108.7	111.1	110.7	24	116.6	116.9	117.3	24	112.2	116.1	114.3	24	117.2	117.3	117.5	24	08/23
08/24	104.6	108.0	107.2	24	116.0	116.5	116.6	24	112.2	113.0	114.2	24	116.9	117.1	117.1	24	08/24
08/25	103.5	104.0	103.9	24	115.4	116.3	116.1	24	113.0	113.9	114.4	24	115.1	116.9	117.3	24	08/25
08/26	103.3	103.6	103.8	24	114.9	116.6	117.7	24	112.6	114.0	114.2	24	115.4	116.3	117.1	24	08/26
08/27	104.3	104.9	105.4	24	116.1	116.2	116.5	24	111.1	113.3	114.8	24	116.0	117.0	117.3	24	08/27
08/28	106.0	106.6	107.1	24	116.5	117.0	117.8	24	113.5	114.4	114.7	24	114.4	115.9	117.7	24	08/28
08/29	108.8	109.9	110.3	24	116.7	117.0	117.4	24	122.5	132.2	159.5	23	116.4	116.8	117.9	24	08/29
08/30	107.8	109.9	109.5	23	117.1	117.4	118.1	23	129.3	154.6	158.2	23	116.9	117.1	119.0	22	08/30

Hours used in calculating values:

24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
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FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

Date 8/31/2018 7:17:03 AM

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COMBINED YEARLING CHINOOK

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (Index)	LGS (Index)	LMN (Index)	RIS (Index)	MCN (Index)	JDA (Index)	BO2 (Index)
08/17/2018					0	0	0	0	0	0	0
08/18/2018					0	0	0	0			
08/19/2018					0	0	0	0	0		0
08/20/2018					0	0	0	0			
08/21/2018					0	0	0	0	0	0	0
08/22/2018					0	0	0	0			
08/23/2018					0	0	0	0	0		0
08/24/2018					0	0	0	0		0	
08/25/2018					0	0	0	0	0		0
08/26/2018					0	0	0	0			
08/27/2018					0	0	0	0	0		0
08/28/2018					2	0	0	0		0	0
08/29/2018					0	0	0	0	0		0
08/30/2018					0	0	0	0			0
08/31/2018											
Total:	0	0	0	0	2	0	0	0	0	0	0
# Days:	0	0	0	0	14	14	14	14	7	4	9
Average:	0	0	0	0	0	0	0	0	0	0	0
YTD:	23,452	41,212	21,824	12,792	4,639,019	2,838,053	2,045,317	49,702	1,494,206	1,257,455	1,890,717

Number of hours sampled:

- No data available or no sample conducted

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

Date 8/31/2018 7:17:03 AM

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COMBINED SUBYEARLING CHINOOK

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (Index)	LGS (Index)	LMN (Index)	RIS (Index)	MCN (Index)	JDA (Index)	BO2 (Index)
08/17/2018					1,334	288	85	16	258	80	611
08/18/2018					578	348	59	15			
08/19/2018					484	704	63	10	117		974
08/20/2018					327	505	42	6			
08/21/2018					819	161	46	11	290	20	768
08/22/2018					1,119	219	68	13			
08/23/2018					1,192	282	43	14	626		773
08/24/2018					843	238	34	13		34	
08/25/2018					530	98	0	9	317		166
08/26/2018					495	73	23	10			
08/27/2018					722	43	6	9	183		223
08/28/2018					608	37	19	10		112	78
08/29/2018					460	111	21	12	241		122
08/30/2018					273	186	23	3			294
08/31/2018											
Total:	0	0	0	0	9,784	3,293	532	151	2,032	246	4,009
# Days:	0	0	0	0	14	14	14	14	7	4	9
Average:	0	0	0	0	699	235	38	11	290	62	445
YTD:	0	6	89	192	874,056	939,233	507,997	36,284	2,288,250	1,067,999	2,879,538

Number of hours sampled:

- No data available or no sample conducted

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

Date 8/31/2018 7:17:03 AM

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COMBINED COHO

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (Index)	LGS (Index)	LMN (Index)	RIS (Index)	MCN (Index)	JDA (Index)	BO2 (Index)
08/17/2018					0	0	0	0	0	0	0
08/18/2018					0	0	0	0			
08/19/2018					0	2	0	0	0		0
08/20/2018					0	0	0	0			
08/21/2018					0	0	0	0	0	0	0
08/22/2018					0	1	0	0			
08/23/2018					0	0	0	0	0		0
08/24/2018					0	0	0	0		0	
08/25/2018					2	0	0	0	0		0
08/26/2018					3	0	0	0			
08/27/2018					3	0	0	0	0		0
08/28/2018					2	0	0	0		0	0
08/29/2018					0	0	0	0	0		15
08/30/2018					0	0	0	0			0
08/31/2018											
Total:	0	0	0	0	10	3	0	0	0	0	15
# Days:	0	0	0	0	14	14	14	14	7	4	9
Average:	0	0	0	0	1	0	0	0	0	0	2
YTD:	0	0	1,224	1,365	262,530	215,275	42,479	44,218	226,511	120,100	477,479

Number of hours sampled:

- No data available or no sample conducted

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

Date 8/31/2018 7:17:03 AM

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COMBINED STEELHEAD

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (Index)	LGS (Index)	LMN (Index)	RIS (Index)	MCN (Index)	JDA (Index)	BO2 (Index)
08/17/2018					0	2	0	0	0	0	0
08/18/2018					2	0	0	0			
08/19/2018					0	0	2	1	0		0
08/20/2018					0	3	3	0			
08/21/2018					0	0	0	0	0	0	0
08/22/2018					0	1	2	0			
08/23/2018					0	0	0	0	0		0
08/24/2018					0	2	0	1		0	
08/25/2018					0	2	0	0	0		0
08/26/2018					0	0	0	0			
08/27/2018					0	0	0	0	0		0
08/28/2018					2	0	0	0		0	0
08/29/2018					0	0	0	0	0		0
08/30/2018					0	0	0	0			0
08/31/2018											
Total:	0	0	0	0	4	10	7	2	0	0	0
# Days:	0	0	0	0	14	14	14	14	7	4	9
Average:	0	0	0	0	0	1	1	0	0	0	0
YTD:	723	27,446	3,888	5,328	3,924,762	3,004,340	1,942,821	24,917	240,968	681,274	356,557

Number of hours sampled:

- No data available or no sample conducted

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

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COMBINED SOCKEYE

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (Index)	LGS (Index)	LMN (Index)	RIS (Index)	MCN (Index)	JDA (Index)	BO2 (Index)
08/17/2018					0	0	0	1	0	0	0
08/18/2018					0	0	0	0			
08/19/2018					0	2	0	0	0		0
08/20/2018					0	0	0	0			
08/21/2018					0	0	0	0	0	0	0
08/22/2018					0	0	0	0			
08/23/2018					0	0	0	1	0		0
08/24/2018					0	0	0	0		0	
08/25/2018					0	0	0	0	0		0
08/26/2018					0	0	0	0			
08/27/2018					0	0	0	0	0		0
08/28/2018					0	0	0	0		0	0
08/29/2018					0	2	0	1	0		0
08/30/2018					0	0	0	0			0
08/31/2018											
Total:	0	0	0	0	0	4	0	3	0	0	0
# Days:	0	0	0	0	0	0	0	0	0	0	0
Average:	0	0	0	0	0	0	0	0	0	0	0
YTD:	0	0	4	115	260,629	120,863	58,625	76,238	1,527,709	383,716	741,292

Number of hours sampled:

- No data available or no sample conducted

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

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COMBINED LAMPREY JUVENILES

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR* (Sample)	LGS (Coll)	LMN (Coll)	RIS (Coll)	MCN (Coll)	JDA (Coll)	BO2 (Coll)
08/17/2018					1	3	1	0	24	0	0
08/18/2018					1	12	0	1			
08/19/2018					2	6	1	0	20		0
08/20/2018					0	9	1	0			
08/21/2018					0	4	1	0	16	0	0
08/22/2018					0	9	0	0			
08/23/2018					0	2	2	0	24		0
08/24/2018					0	0	1	0		0	
08/25/2018					3	2	0	0	12		0
08/26/2018					1	4	0	0			
08/27/2018					16	6	4	0	8		0
08/28/2018					0	2	0	0		0	0
08/29/2018					10	4	1	0	4		0
08/30/2018					0	3	26	0			0
08/31/2018											
Total:	0	0	0	0	34	66	38	1	108	0	0
# Days:	0	0	0	0	15	21	15	14	7	4	9
Average:	0	0	0	0	2	3	3	0	15	0	0
YTD:		1	3		524	35,963	56,850	371	219,334	227,728	27,305

- No data available or no sample conducted

- 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.

Number of hours sampled:

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

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Smolt Monitoring Program Sites and Agency Collaborations:

- 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
- LGS (Index) - Little Goose Bypass Collection System : Passage Index Counts
- LMN (Index) - Lower Monumental Dam Bypass Collection System : Passage Index Counts
- RIS (Index) - Rock Island Dam Second Powerhouse Bypass Trap : Passage Index Counts
- MCN (Index) - McNary Dam Bypass Collection System : Passage Index Counts
- JDA (Index) - John Day Dam Bypass Collection System : Passage Index Counts
- BO2 (Index) - Bonneville Dam Second Powerhouse Bypass Collection System : Passage Index Counts

- No data available or no sample conducted

Number of hours sampled:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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Important Information About this Report:

- For clip information see: <http://www.fpc.org/currentdaily/smpcomments.htm>
- 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. Equations for passage index are provided below for each site.
 LGR, LGS, LMN, MCN, JDA (Index) = Lower Granite Dam Bypass Collection System : Passage Index Counts $\text{Passage Index} = \text{Collection Counts} / (\text{Powerhouse Flow} / (\text{Powerhouse Flow} + \text{Spill}))$
 RIS, BO2 (Index) = Rock Island Dam Second Powerhouse Bypass Trap : Passage Index Counts $\text{Passage Index} = \text{Collection Counts} / (\text{Powerhouse 2 Flow} / (\text{Powerhouse 1 \& 2 Flow} + \text{Spill}))$
- 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 macrophthalmia, and unidentified lamprey species.
- 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.

FISH PASSAGE CENTER

Two Week Transportation Summary Report

8/17/2018 12:00:00 AM TO 8/31/2018 12:00:00 AM

Date 8/31/2018 7:17:39 AM

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Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	4,327	1	4	0	2	4,336
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	0	0	0	0	1	2
Sum of Number Trucked	4,301	1	4	0	0	4,306
Sum of Sample Morts	24	0	0	0	1	26
Sum of Facility Morts	2	0	0	0	0	2
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	26	0	0	0	1	28

Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	2,160	0	2	2	6	2,176
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	2,131	0	2	1	6	2,146
Sum of Sample Morts	23	0	0	0	0	23
Sum of Facility Morts	6	0	0	1	0	7
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	29	0	0	1	0	30

FISH PASSAGE CENTER

Two Week Transportation Summary Report

8/17/2018 12:00:00 AM TO 8/31/2018 12:00:00 AM

Date 8/31/2018 7:17:39 AM

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Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	299	0	0	0	4	307
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	239	0	0	0	4	247
Sum of Number Trucked	78	0	0	0	0	78
Sum of Sample Morts	5	0	0	0	0	5
Sum of Facility Morts	0	0	0	0	0	0
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	5	0	0	0	0	5

Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	6,786	1	6	2	12	6,819
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	239	0	0	0	5	249
Sum of Number Trucked	6,510	1	6	1	6	6,530
Sum of Sample Morts	52	0	0	0	1	54
Sum of Facility Morts	8	0	0	1	0	9
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	60	0	0	1	1	63

FISH PASSAGE CENTER

YTD Transportation Summary Report

Date 8/31/2018 7:17:16 AM

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Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	529673	3041146	182824	188701	2522942	8988228
Sum of Number Barged	508800	2429169	179217	184065	1811318	6923887
Sum of Number Bypassed	14636	610813	3539	4465	711354	2056161
Sum of Number Trucked	5037	1	4	0	0	5042
Sum of Sample Morts	239	58	0	9	45	396
Sum of Facility Morts	936	1063	64	162	190	2605
Sum of Reseach Morts	25	42	0	0	35	137
Sum of Total Project Mort	1200	1163	64	171	270	3138

Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	566837	1857033	137102	74671	1969535	6574713
Sum of Number Barged	559195	1546147	136377	66134	1357466	5022785
Sum of Number Bypassed	854	306206	407	7716	611659	1538501
Sum of Number Trucked	2602	0	2	1	6	2617
Sum of Sample Morts	165	41	4	13	14	251
Sum of Facility Morts	4021	4639	312	807	390	10559
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	4186	4680	316	820	404	10810

FISH PASSAGE CENTER

YTD Transportation Summary Report

Date 8/31/2018 7:17:16 AM

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Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	305153	1218103	24944	35305	1178568	3940641
Sum of Number Barged	304570	1018208	24840	33659	926249	3233775
Sum of Number Bypassed	239	199433	100	1598	252171	705712
Sum of Number Trucked	129	0	0	0	0	129
Sum of Sample Morts	19	7	0	3	7	43
Sum of Facility Morts	219	455	4	45	141	1005
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	238	462	4	48	148	1048

Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	1401663	6116282	344870	298677	5671045	19503582
Sum of Number Barged	1372565	4993524	340434	283858	4095033	15180447
Sum of Number Bypassed	15729	1116452	4046	13779	1575184	4300374
Sum of Number Trucked	7768	1	6	1	6	7788
Sum of Sample Morts	423	106	4	25	66	690
Sum of Facility Morts	5176	6157	380	1014	721	14169
Sum of Reseach Morts	25	42	0	0	35	137
Sum of Total Project Mort	5624	6305	384	1039	822	14996

Cumulative Adult Passage at Mainstem Dams Through: 08/30

dam	enddate	Spring Chinook						Summer Chinook						Fall Chinook					
		2018		2017		10-Yr Avg.		2018		2017		10-Yr Avg.		2018		2017		10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	08/30	87894	6456	83624	18110	152393	25835	61057	4349	88044	10648	101791	21805	44860	5734	48173	7303	91420	13765
TDA	08/30	57935	4793	58310	12497	119227	21697	49296	3787	69246	9277	84539	17568	18985	2171	16386	2168	38528	7536
JDA	08/30	50572	5053	46675	12475	103731	20380	42835	4293	60416	7363	75555	16777	11804	1521	7871	1138	22447	5130
MCN	08/30	44427	3472	44292	7020	94405	16297	42649	2513	57279	4705	71705	12468	7681	825	4793	495	13782	2662
IHR	08/30	32600	2197	28306	6949	68113	11204	6046	521	9284	2087	19109	4826	2176	172	1515	139	4036	850
LMN	08/29	35398	3020	28545	8270	68100	11017	6091	716	8216	3388	19658	6010	1465	190	1049	133	2688	626
LGS	08/30	31834	2486	26598	8335	63992	12109	7458	589	9086	3754	19425	6430	1190	106	913	126	2401	410
LGR	08/30	31161	2948	27357	8256	62850	13009	7304	819	8952	3627	17398	6872	811	88	779	126	1547	319
PRD	08/29	7067	949	7268	783	18018	1858	40076	2269	52981	1760	60015	3091	998	364	1970	248	3674	1630
WAN	08/29	8071	964	6612	484	17542	2163	37808	1450	49392	1355	56843	2474	779	360	1476	186	2839	1227
RIS	08/29	7894	997	8080	564	18255	2598	38816	1646	56265	1333	59661	4992	600	193	1724	235	2288	1217
RRH	08/29	5919	807	5864	406	8195	1153	33110	1106	42608	1060	47856	3464	558	145	1045	132	1804	740
WEL	08/29	7500	976	6589	820	8670	1609	22163	1101	30101	1102	37754	3567	26	9	43	10	165	42
WFA	08/28	24543	1999	34482	2486	35770	1705	0	0	0	0	0	0	268	23	0	0	131	27

DAM	ENDDATE	Coho						Sockeye			Steelhead						Lamprey		
		2018		2017		10-Yr Avg.		10-Yr			10-Yr			Unclipped			10-Yr		
		Adult	Jack	Adult	Jack	Adult	Jack	2018	2017	Avg.	2018	2017	Avg.	2018	2017	Avg.	2018	2017	Avg.
BON	08/30	5352	588	2545	362	7336	684	193812	87684	321938	62605	75544	225925	24511	26443	84586	42614	81077	29348
TDA	08/30	1134	105	144	41	1230	335	152016	63978	273643	20205	17779	109311	8851	7684	45582	9959	28540	8648
JDA	08/30	361	51	50	18	677	193	168445	65910	264675	10943	7097	80088	5694	4040	32507	8011	20699	6517
MCN	08/30	45	6	4	1	175	40	155461	57968	230334	8431	7099	58547	4297	3278	23077	1393	2130	1111
IHR	08/30	0	1	1	0	0	0	658	392	959	4141	2918	32720	1705	1491	10203	901	1170	395
LMN	08/29	0	1	0	0	0	0	395	345	1118	4274	3197	31042	1919	1737	10989	386	374	117
LGS	08/30	0	0	0	0	0	0	280	285	1046	3071	2384	18930	1298	1235	7872	116	484	89
LGR	08/30	0	0	0	0	0	0	272	227	1077	6392	8001	19418	2242	3496	8030	185	314	40
PRD	08/29	11	2	0	0	18	0	189873	66668	271038	1522	1153	8227	0	0	0	10373	22553	5297
WAN	08/29	3	0	0	0	1	0	196179	76072	241632	1460	986	7588	0	0	0	7035	21058	4045
RIS	08/29	0	0	0	0	0	0	171854	73160	263855	1554	1020	6540	861	613	3107	3793	16121	2397
RRH	08/29	0	0	0	0	0	0	162556	46657	220755	1130	642	4798	577	316	2139	4060	18146	2542
WEL	08/29	0	0	0	0	0	0	153492	42263	209410	951	558	2932	490	330	1344	162	97	2
WFA	08/28	0	2	117	117	28	35	0	0	0	10583	2720	20603	2127	746	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.

