



Fish Passage Center

Weekly Report #18-17

June 29, 2018

This Week's Highlights

Water Supply

Precipitation throughout the Columbia Basin has varied between 69% and 167% of average at individual sub-basins over June. Precipitation above The Dalles has been 94% of average over June. Over the 2018 water year, precipitation has ranged between 89% and 115% of average.

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

Location	Water Year 2018 June 1-21, 2018		Water Year 2018 October 1, 2017 to June 21, 2018	
	Observed (inches)	% Average	Observed (inches)	% Average
	Columbia Above Coulee	2.02	87	31.7
Snake River Above Ice Harbor	1.42	115	19.0	96
Columbia Above The Dalles	1.41	94	22.8	98
Kootenai	1.72	69	30.6	100
Clark Fork	3.31	167	26.5	117
Flathead	1.98	77	32.8	111
Pend Oreille River Basin above Waneta Dam	2.42	108	29.8	109
Salmon River Basin	2.46	142	25.2	102
Upper Snake Tributaries	1.86	141	22.6	101
Clearwater	3.08	138	40.9	115
Willamette River above Portland	1.69	89	54.2	89

Table 2 displays the June 24th ESP runoff volume forecasts for multiple reservoirs along with the June COE forecasts at Libby and Dworshak. The June 24th ESP forecast at The Dalles between April and August is 104,373 Kaf (119% of average).

Table 2. June 24 ESP Runoff Volume Forecasts for various reservoirs within the Columbia and Snake River Basins.

Location	June 24, 2018 5-day QPF ESP	
	% Average (1981-2010)	Runoff Volume (Kaf)
The Dalles (Apr-Aug)	119	104,373
Grand Coulee (Apr-Aug)	121	68,551
Libby Res. Inflow, MT (Apr-Aug)	110 123**	6,500 7,213**
Hungry Horse Res. Inflow, MT (Apr-Aug)	148	2,857
Lower Granite Res. Inflow (Apr- July)	117	23,154
Brownlee Res. Inflow (Apr-July)	104	5,684
Dworshak Res. Inflow (Apr-July)	125 122**	3,019 2,966**

Grand Coulee Reservoir is at 1284.8 feet (6-28-18) and has held steady over the last week. Outflows at Grand Coulee have ranged between 139.7 Kcfs and 180.4 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2441.8 feet (6-28-18) and has refilled 3.5 feet over the past week. Daily average outflows at Libby Dam have been 10.0-13.0 Kcfs over the last week.

Hungry Horse is currently at an elevation of 3558.9 feet (6-28-18) and has refilled 2.1 feet last week. Outflows at Hungry Horse have been 4.0-6.6 Kcfs over the last week.

Dworshak is currently at an elevation of 1600.0 feet (6-28-18) filling 0.8 feet over last week. Dworshak outflows have been 4.0-6.0 Kcfs.

The Brownlee Reservoir was at an elevation of 2073.7 feet on June 28th, 2018 and has drafted 3.0 feet. Outflows at Hells Canyon have ranged between 9.8 and 22.0 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 64.6 Kcfs over the start of the summer period and 64.3 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 252.2 Kcfs last week and 345.5 Kcfs over the season. At Priest Rapids flows averaged 182.7 Kcfs over the last week and 230.8 Kcfs over the season.

Spill

Flows in the Lower Snake River increased from June 22nd to June 23rd but have decreased since. Daily average flows at Lower Granite Dam ranged from 57.4 to 72.2 Kcfs this week. Flows in the Mid-Columbia and Upper Columbia rivers increased for most of the last week, with a slight decrease on June 28th. Daily average flows at McNary and Rock Island dams ranged from 218.0 to 275.0 Kcfs and 155.0 to 201.8 Kcfs this week, respectively.

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. 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 3.

Table 3. 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

Summer spill in the Snake River began at 0100 on June 21st. The summer spill operation for Lower Granite Dam is 18 Kcfs, 24-hours per day. Summer spill volumes at LGR were met or exceeded this week and there were no exceedences in total dissolved gas (TDG) waiver limits in the LGR tailrace. Total dissolved gas in the Little Goose (LGS) forebay exceeded the 115% waiver limits on June 22nd and June 23rd but have been below 115% since. The summer spill operation for LGS is 30%, 24-hours per day. Summer spill volumes at LGS were met or exceeded this week. In fact, excess spill due to a line outage on June 28th resulted in a daily average spill volume of 27.3 Kcfs (47.9%). There were no exceedences in TDG waiver limits in the LGS tailrace this week. Total dissolved gas in the Lower Monumental (LMN) forebay exceeded the 115% waiver limits on June 22nd and 23rd but have been below 115% since. The summer spill operation for LMN is 17 Kcfs, 24-hours per day. Summer spill volumes at LMN were met this week and there were no exceedences in TDG waiver limits in the LMN tailrace. Total dissolved gas in the Ice Harbor (IHR) forebay exceeded the 115% waiver limits on June 22nd but have been below 115% since. The summer spill operation for IHR alternates between 30% (24-hours per day) and 45 Kcfs during the day and gas cap spill at night. These two operations will alternate in two-day blocks through July 12th. On July 13th, the operation at IHR will be 45 Kcfs during the day and gas cap spill at night. Summer spill volumes at IHR were met this week. However, due to low flows, nighttime spill to the gas cap has not been 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. Summer spill in the Mid-Columbia River began at 0100 on June 16th. Summer spill at McNary (MCN) is 50%, 24-hours per day. This summer spill operation has been met or exceeded this week. The 12-hour average TDG in the MCN tailrace exceeded the 120% waiver limit on June 24th but was below 120% all other days this week. The 115% waiver limit in the John Day (JDA) forebay was not exceeded this week. The summer spill operation at JDA alternates between 30% (24-hours) and 40% (24-hours). These two “treatments” will alternate in two-day blocks. This summer spill operation at JDA has been met or exceeded this week and there were no exceedences of TDG waivers in the JDA tailrace or The Dalles (TDA) forebay this week. The summer spill operation at TDA is 40%, 24-hours per day. This summer spill operation has generally been met this week. There were a few hours on June 24th and June 25th where 40% spill was not provided because it would have exceeded the estimated spill cap of 105 Kcfs. Instead, spill during these hours was capped at 105 Kcfs. There were no exceedences of TDG waivers in the TDA tailrace or the Bonneville (BON) forebay this week. Finally, 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. This summer spill operation has been met this week. The tailrace monitor at Cascades Island has been out of service since May 13th, likely as a result of high flows and spill volumes. The 12-hour average TDG at the Warrendale gauge has been in the 113-116% range this week.

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 (GBT) monitoring in smolts took place at Little Goose, Lower Monumental, Rock Island, McNary, and Bonneville dams this week. GBT monitoring at Lower Granite did not occur this week and will likely not occur the rest of this season. Signs of fin GBT were observed in two of the eight GBT samples conducted this week (June 22-June 28). Bonneville observed zero signs of fin GBT in their samples on June 23rd and June 26th. The sample at Rock Island on June 26th did not meet the sample size requirements. In fact, only 11 fish were examined for GBT in that sample and zero had signs of fin GBT. The sample on June 28th at Rock Island had five fish (5%) with signs of fin GBT. Of these five fish, three had Rank 1 signs, one had Rank 2 signs, and one had Rank 3 signs. Rank 3 signs are considered severe. McNary observed no signs of fin GBT in their samples on June 23rd and June 25th. Little Goose observed one fish (1.1%) with Rank 1 signs of fin GBT in their sample on June 25th. Lower Monumental observed zero fish with signs of fin GBT in their sample on June 27th. The action criteria for interruption of the voluntary spill for fish passage program is defined as either 15% of examined fish showing signs of GBT in their non-paired fins, or 5% of the fish examined showing severe signs of GBT in their non-paired fins. Severe signs of GBT are defined as more than 25% of the surface area of the fin is occluded by gas bubbles, which corresponds to a rank of 3 or 4. Neither of these action criteria were met this week.

Temperature

Forebay temperatures are now being reported for Lower Granite, Ice Harbor, McNary and Bonneville dams. Currently, forebay temperatures at Bonneville Dam are approximately 1.5 °F above the 10-year average for this time of year. The daily average temperature for June 28th at Bonneville was 64.9 °F. The current 10-year average for the Bonneville forebay at this time of year is 63.5 °F. The forebay temperature at McNary Dam is about 2.7 °F above the current 10-year average. The daily average temperature for June 28th in the McNary

forebay was 64.9 °F, whereas the 10-year average is 62.2 °F. The forebay temperature at Ice Harbor Dam is about 2.6 °F above the current 10-year average. The daily average temperature for June 28th in the Ice Harbor forebay was 64.7 °F, whereas the 10-year average is 62.0 °F. The forebay temperature at Lower Granite Dam is about 2.4 °F above the current 10-year average. The daily average temperature for June 28th in the Lower Granite forebay was 63.4 °F, whereas the 10-year average is 61.5 °F.

Smolt Monitoring

Smolt Monitoring Program (SMP) activities continued at all bypass facilities this week. Sampling also continued at the Imnaha River trap this week. This week's samples were dominated by subyearling Chinook at all seven SMP bypass facilities. Subyearling Chinook passage increased at the three Lower Columbia sites (Bonneville, John Day, and McNary) but decreased at all three Snake River sites (Lower Granite, Little Goose, and Lower Monumental) and the one Upper Columbia site (Rock Island). Passage of spring migrants (yearling Chinook, coho, sockeye, and steelhead) remained low at all bypass facilities.

This week's samples at Bonneville Dam (BON) were dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 25,800 per day, which is an increase over last week's daily average passage index of about 8,800 per day. Passage of spring migrants (yearling Chinook, coho, sockeye, and steelhead) remained low this week, with daily average passage indices of 100 or fewer per day. Pacific lamprey macrophthalmia were encountered in four of this week's samples while ammocoetes were encountered only one of this week's samples.

Similar to the last two years, sampling at John Day Dam (JDA) is every-other-day. Subyearling Chinook again dominated the samples at JDA this week. This week's daily average passage index for subyearling Chinook was about 43,800 per day, which is an increase over last week's daily average passage index of 23,250 per day. Passage of spring migrants remained low this week. This week's daily average passage indices for spring migrants were all less than about 50 per day. Pacific lamprey macrophthalmia were encountered in all three of this week's samples while no ammocoetes were encountered this week. This week's daily average collection for Pacific lamprey macrophthalmia at JDA

was about 150 per day, which is slightly higher than last week's daily average collection of about 130 per day.

Similar to John Day, sampling at McNary (MCN) is every-other-day. Subyearling Chinook dominated this week's samples at MCN. This week's daily average passage index for subyearling Chinook was nearly 106,000 per day, which is a large increase over last week's daily average passage index of about 34,000 per day. Passage of spring migrants remained low this week. In fact, no sockeye smolts were encountered in this week's samples. This week's daily average passage indices for spring migrants were all 200 per day or less. Finally, Pacific lamprey macrophthalmia were encountered in only one of this week's four samples and no ammocoetes were encountered in this week's samples.

Subyearling Chinook continued to dominate the samples at Lower Granite Dam (LGR) this week. This week's daily average passage index for subyearling Chinook was about 7,750 per day, which is a decrease from last week's daily average passage index of about 13,000 per day. Passage of spring migrants remained low this week. This week's daily average passage indices for spring migrants were all less than 150 per day. In fact, no sockeye smolts were encountered in this week's samples at LGR. Finally, no Pacific lamprey macrophthalmia were encountered this week while Pacific lamprey ammocoetes were encountered in all of this week's samples. This week's daily sample counts for Pacific ammocoetes ranged from one to thirteen.

Similar to recent years, sampling at Little Goose Dam (LGS) was every-other-day until the start of transportation (April 23rd), at which time sampling changed to every day. Subyearling Chinook continued to dominate the samples at LGS this week. This week's daily average passage index for subyearling Chinook was about 10,400 per day, which is a decrease from last week's daily average passage index of about 13,400 per day. Passage of spring migrants remained low this week. This week's daily average passage indices for spring migrants were all less than 250 per day. Finally, Pacific lamprey macrophthalmia were not encountered in this week's samples and ammocoetes were encountered in only two of this week's samples.

Sampling at Lower Monumental Dam (LMN) was every-third-day through April 14th, transitioned to every-other-day through April 23rd, and then transitioned to every day with the start of transportation.

This week's samples at LMN were dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 5,200 per day, which is a slight decrease from last week's daily average passage index of about 5,800 per day. Passage of spring migrants remained low this week. In fact, no sockeye smolts were encountered in this week's samples. This week's daily average passage indices for spring migrants were all less than 50 per day. Finally, Pacific lamprey macrophthalmia were encountered in four of this week's samples and ammocoetes were encountered in only two 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 330 per day, which is a decrease from last week's daily average passage index of about 450 per day. Passage of spring migrants was very low this week. In fact, this week's daily average passage indices for spring migrants were all less than 20 per day and no yearling Chinook were collected in this week's samples. Pacific lamprey macrophthalmia were encountered in five of this week's samples while no ammocoetes were encountered this week. When encountered, collections for Pacific macrophthalmia were very low.

The Imnaha River Trap (IMN) is located at river kilometer 7 of the Imnaha River and is operated by the Nez Perce Tribe. Sampling at the Imnaha River Trap is year round. For 2018, the FPC currently has data from IMN for the period of February 15 through June 26th. However, the FPC is currently missing data from the samples on June 21st through June 24th. Yearling Chinook and steelhead continue to be collected, although in relatively low numbers. The samples from June 25th and June 26th had a total of 18 yearling Chinook and 12 steelhead smolts.

Hatchery Releases

FPC has not received preliminary data from some hatcheries as of 06/29/18, 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 new releases in this zone.

In the next two weeks, there is one release of 2 million subyearling fall Chinook from Willard Hatchery on the Little White Salmon River scheduled to begin on July 1st, and run through the middle of the month.

Lower Columbia Zone:

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

Adult Passage

The summer Chinook count began June 1st at Bonneville Dam. Daily passage numbers at Bonneville Dam ranged between 1,436 and 1,998 adult summer Chinook in the last week. The 2018 summer Chinook count of 41,021 is about 76.6% of the 2017 count and 65.4% of the 10-year average. The 2018 summer Chinook jack count of 2,427 is about 36% of the 2017 count and 18.5% of the 10-year average count. At Willamette Falls, 20,911 adult spring Chinook have been counted so far this year. In 2017, 29,506 adult spring Chinook were counted at Willamette Falls. This year's count is about 70.9% of the 2017 count and 66.4% of the 10-year average count of 31,471. As of June 27th, a total of 22,661 adult summer Chinook have been counted at McNary Dam and 4,501 have been counted at Lower Granite Dam. The 2018 McNary Dam adult summer Chinook count is about 88.8% of the 2017 count and 70.2% the 10-year average count. The 2018 Lower Granite Dam adult summer Chinook count has 809 more fish than the 2017 count and 3,341 fewer

fish than the 10-year average count.

The 2018 Bonneville Dam adult steelhead count of 7,110 is about 1.5 times greater than the 2017 count of 4,840, while being 57.2% of the 10-year average count of 12,435. The 2018 Bonneville Dam adult wild steelhead count of 3,002 has 1,396 more fish than the 2017 count of 1,606 and 1,024 fewer fish than the 10-year average count of 4,026. This year's Lower Granite steelhead count of 4,587 is about 62.7% of the 2017 count of 7,313 and 51.9% of the 10-year average count of 8,839. The 2018 Lower Granite Dam adult wild steelhead count of 1,283 has 1,774 fewer fish than the 2017 count of 3,057 and has 2,409 fewer fish than the 10-year average count of 3,692. At Willamette Falls, the 2018 count for steelhead was 8,010 as of June 27th. This year's steelhead count is about 3.5 times greater than the 2017 count of 2,271, while being about 45.4% of the 10-year average count of 17,648.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 8,207 and 10,850 last week. The 2018 adult sockeye count at Bonneville Dam of 120,577 is about 2.4 times greater than the 2017 count, while being about 64.6% of the 10-year average count. A total of 21,995 lampreys have been counted at Bonneville Dam so far this year. The Bonneville 2018 lamprey count is about 69% of the 2017 count of 31,847, while being about 2.5 times greater than the 10-year average count of 8,651.

Hatchery Releases Last Two Weeks

Hatchery Release Summary

	From:	6/16/2018		to	06/29/18					
Agency	Hatchery	Species	Race	MiqYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
Washington Dept. of Fish and Wildlife	Priest Rapids Hatchery	CH0	FA	2018	1,000,000	06-20-18	06-20-18	Priest Rapids Hatchery	McNary Pool	MCOL
Washington Dept. of Fish and Wildlife	Ringold Springs Hatchery	CH0	FA	2018	2,500,000	06-18-18	06-18-18	Ringold Springs Hatchery	McNary Pool	MCOL
Washington Dept. of Fish and Wildlife Total					3,500,000					
Grand Total					3,500,000					

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

Hatchery Releases Next Two Weeks

Hatchery Release Summary

	From:	6/30/2018		to	7/13/2018					
Agency	Hatchery	Species	Race	MiqYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
U.S. Fish and Wildlife Service	Willard Hatchery	CH0	FA	2018	2,000,000	07-01-18	07-15-18	Willard Hatchery	Little White Salmon River	MCOL
U.S. Fish and Wildlife Service Total					2,000,000					
Washington Dept. of Fish and Wildlife	Fallert Creek Hatchery	CH0	FA	2018	3,500,000	05-01-18	07-01-18	Fallert Creek Hatchery	Kalama River	LCOL
Washington Dept. of Fish and Wildlife	Kalama Falls Hatchery	CH0	FA	2018	3,500,000	05-01-18	07-01-18	Kalama Falls Hatchery	Kalama River	LCOL
Washington Dept. of Fish and Wildlife	North Toutle Hatchery	CH0	FA	2018	830,000	06-01-18	07-01-18	Green River	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife Total					7,830,000					
Grand Total					9,830,000					

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

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
06/15/2018	153.4	0.2	149.2	0.0	161.7	16.2	165.7	30.1	173.3	31.8	178.4	47.4	175.8	56.4
06/16/2018	114.1	0.1	113.4	0.0	120.7	10.6	133.1	14.2	141.4	28.2	160.7	24.7	163.5	49.0
06/17/2018	122.0	0.1	118.7	0.0	130.5	20.7	121.1	13.4	124.8	29.9	146.6	18.6	143.0	19.7
06/18/2018	138.7	0.1	141.8	0.0	148.2	12.2	152.1	16.4	159.5	33.4	155.2	25.6	153.9	27.6
06/19/2018	124.9	0.2	129.3	0.0	141.6	14.9	142.8	16.0	149.9	33.3	157.0	19.2	153.6	19.1
06/20/2018	134.6	0.2	135.3	0.0	137.9	10.6	140.5	14.9	150.3	30.6	156.6	19.8	152.6	18.6
06/21/2018	125.8	0.2	121.5	0.0	139.0	12.3	133.4	14.6	142.8	29.8	143.0	19.9	137.9	19.6
06/22/2018	142.7	0.1	139.9	0.0	146.9	16.9	149.9	14.5	158.7	30.5	167.0	37.5	163.0	30.0
06/23/2018	139.7	0.2	139.7	0.0	148.3	14.9	142.8	12.3	155.0	26.6	155.5	31.9	150.1	21.3
06/24/2018	161.8	0.1	155.8	0.0	165.6	23.1	163.5	13.9	172.2	26.5	177.4	39.8	173.2	48.5
06/25/2018	150.6	0.1	154.9	0.0	164.7	26.2	167.7	20.1	176.5	32.8	185.7	60.4	182.8	63.4
06/26/2018	172.3	0.1	169.2	12.6	178.4	50.8	179.2	28.8	188.0	34.3	196.7	69.0	194.1	63.7
06/27/2018	180.5	0.1	184.0	24.4	192.1	48.1	197.3	47.9	201.8	44.0	207.1	81.9	206.5	87.5
06/28/2018	174.8	0.1	175.3	19.1	186.5	41.5	190.7	38.4	195.1	43.3	209.8	91.2	209.1	74.4

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

Date	Dworshak		Brownlee Inflow	Hells Canyon	Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill		Outflow	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
06/15/2018	2.2	0.0	---	---	62.1	37.1	61.5	30.3	61.6	32.3	65.6	55.5
06/16/2018	2.2	0.0	---	---	58.1	37.7	54.9	32.8	54.7	33.5	59.7	49.6
06/17/2018	2.2	0.0	---	---	55.8	39.7	52.7	32.9	50.5	34.0	53.6	43.6
06/18/2018	2.2	0.0	---	---	54.3	40.9	52.7	32.9	50.9	37.0	57.5	47.4
06/19/2018	4.3	0.0	---	---	63.1	40.9	61.6	33.0	60.7	35.9	64.4	54.2
06/20/2018	4.3	0.0	---	---	63.2	41.5	66.0	31.6	65.2	37.2	71.0	60.1
06/21/2018	4.3	0.0	---	---	67.2	19.2	67.3	20.1	65.8	16.9	70.4	21.1
06/22/2018	4.3	0.0	---	---	67.2	19.1	67.2	20.1	65.6	16.9	67.5	20.3
06/23/2018	5.9	1.6	---	---	72.2	19.2	71.4	21.4	71.3	16.6	74.3	39.4
06/24/2018	6.0	1.7	---	---	68.3	19.2	68.5	20.6	67.4	17.0	71.6	50.5
06/25/2018	4.9	0.6	---	---	63.3	18.8	62.9	18.9	62.0	16.5	63.7	30.4
06/26/2018	4.0	0.0	---	---	60.9	18.9	61.3	18.4	60.0	16.8	63.4	18.9
06/27/2018	4.5	0.3	---	---	60.6	18.8	60.1	18.1	59.2	16.5	60.7	35.6
06/28/2018	5.0	0.7	---	---	57.4	19.1	57.0	27.3	55.8	17.1	60.8	48.2

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

Date	McNary		John Day		The Dalles		Bonneville			
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	PH1	PH2
06/15/2018	235.2	180.0	233.8	140.2	214.1	105.0	229.8	120.4	7.0	90.0
06/16/2018	224.2	112.1	215.1	86.3	201.6	80.6	221.3	95.8	8.2	104.9
06/17/2018	210.1	105.1	207.3	82.8	193.5	77.6	217.3	95.4	4.1	105.4
06/18/2018	222.1	110.9	214.7	82.8	197.3	78.8	211.2	90.7	0.7	107.3
06/19/2018	224.9	112.3	226.0	67.6	209.4	83.4	225.1	95.8	6.3	110.6
06/20/2018	233.2	116.5	224.3	70.4	207.1	82.6	231.3	99.6	9.8	109.6
06/21/2018	233.7	117.0	226.1	89.9	209.1	83.5	224.2	95.2	12.2	104.4
06/22/2018	218.0	109.1	205.2	79.2	194.3	77.4	211.6	90.5	2.2	106.6
06/23/2018	240.0	120.2	233.3	70.4	216.6	86.3	236.5	95.7	8.1	120.2
06/24/2018	249.8	125.2	254.2	79.9	236.6	92.7	246.6	100.5	19.7	113.9
06/25/2018	259.0	129.8	246.5	98.3	228.9	90.3	246.5	95.0	42.9	96.1
06/26/2018	255.2	127.8	260.7	101.1	242.6	96.7	263.1	91.3	64.0	95.4
06/27/2018	275.0	165.2	266.6	110.0	248.1	98.4	264.3	96.0	64.7	91.2
06/28/2018	268.1	134.0	253.9	79.6	236.0	94.5	253.7	100.5	50.9	89.9

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										
No exams conducted										
Little Goose Dam										
	06/18/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/25/18 Chinook + Steelhead	95*	1	1			1	0	0	0
Lower Monumental Dam										
	06/20/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/27/18 Chinook + Steelhead	83*	0	0			0	0	0	0
McNary Dam										
	06/17/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/19/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/23/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/25/18 Chinook + Steelhead	100	1	0	0.00%	0.00%	0	0	0	0
Bonneville Dam										
	06/16/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	06/19/18 Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
	06/23/18 Chinook + Steelhead	60*	0	0			0	0	0	0
	06/26/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
Rock Island Dam										
	06/19/18 Chinook + Steelhead	75*	3	3			2	1	0	0
	06/21/18 Chinook + Steelhead	75*	0	0			0	0	0	0
	06/26/18 Chinook + Steelhead	11*	0	0			0	0	0	0
	06/28/18 Chinook + Steelhead	100	5	5	5.00%	1.00%	3	1	1	0

Samples marked with an asterisk indicate the sample size criteria of 100 fish was not met due to insufficient numbers of fish to sample that day. The inability to collect an adequate sample precludes the accurate estimation of the percentage of fish with GBT, and no estimate is provided.

The action criteria for interruption of the voluntary spill for fish program is defined as either 15% of examined fish showing signs of gas bubble trauma in their non-paired fins, or 5% of the fish examined showing severe signs of gas bubble trauma in their non-paired fins where severe signs constitute >25% of the surface area of the fin is occluded by gas bubbles, corresponding to ranks of 3 or 4.

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

Date 6/29/2018 8:15:10 AM

Page 1 of 4

Total Dissolved Gas Data at Upper Columbia Sites

Hungry H. Dnst		Boundary				Grand Coulee				Grand C. Tlwr				Chief Joseph				Chief J. Dnst				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
06/15									120.1	120.2	120.5	24	118.8	119.1	119.2	24	118.1	118.6	119.0	24	116.9	117.3	117.9	24	06/15
06/16									119.9	120.4	120.5	24	118.9	119.2	119.5	24	118.2	118.5	118.5	24	117.2	117.4	117.8	24	06/16
06/17									119.1	119.7	119.5	24	118.3	118.9	119.1	24	117.8	118.3	118.6	24	116.5	116.9	117.2	24	06/17
06/18									119.0	119.3	119.6	24	117.8	118.3	118.6	24	117.8	118.3	118.9	24	116.5	117.0	117.3	24	06/18
06/19									117.6	119.1	118.5	24	117.4	117.6	118.0	24	117.7	118.3	118.9	24	116.4	116.9	117.1	24	06/19
06/20									117.9	118.0	118.6	24	117.7	118.0	118.5	24	117.7	118.4	118.8	24	116.2	116.9	117.1	24	06/20
06/21									117.4	118.1	119.1	24	117.7	118.0	119.1	24	118.0	118.5	118.9	24	116.9	117.4	117.9	24	06/21
06/22									117.9	118.5	119.2	24	117.9	118.0	118.7	24	117.8	118.3	118.3	24	116.9	117.4	117.7	24	06/22
06/23									118.5	118.7	118.9	24	117.6	117.9	118.2	24	117.2	117.8	117.7	24	116.2	116.9	117.0	24	06/23
06/24									118.5	118.8	119.3	24	117.2	117.6	117.8	24	117.0	117.3	117.7	24	116.3	116.6	117.2	24	06/24
06/25									118.7	118.9	119.2	17	117.7	117.8	118.4	17	117.0	117.6	118.1	24	116.3	116.9	117.5	24	06/25
06/26									117.7	118.8	117.9	16	116.7	117.8	117.0	16	115.4	116.3	115.7	24	113.4	115.6	115.0	24	06/26
06/27									118.0	118.1	118.4	24	116.4	116.7	116.8	24	115.9	116.4	116.6	24	113.2	113.4	113.7	24	06/27
06/28									117.9	118.2	118.4	23	116.4	116.7	116.9	23	116.2	116.6	116.7	23	113.5	113.7	114.5	23	06/28

Total Dissolved Gas Data at Upper Columbia Sites

Wells		Wells Dwnstrm				Rocky Reach				Rocky R. Tlwr				Rock Island				Rock I. 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
06/15	116.4	116.7	117.1	24	118.0	119.6	119.4	24	116.7	116.9	117.5	24	120.1	120.8	124.1	22	116.1	117.0	118.1	24	119.0	120.1	120.9	20	06/15
06/16	115.8	116.3	116.6	24	116.9	118.0	121.1	24	117.7	118.2	118.8	24	118.4	120.7	119.5	22	116.2	116.6	116.8	23	118.6	120.1	119.8	21	06/16
06/17	116.2	117.2	118.0	24	118.0	119.0	121.2	24	116.6	117.1	117.4	24	117.0	117.4	117.8	19	115.4	116.2	116.3	21	118.1	118.9	119.0	18	06/17
06/18	116.3	116.7	117.2	24	117.3	119.0	118.4	24	116.3	116.7	116.9	23	117.7	118.0	119.1	23	114.7	115.9	116.1	24	116.8	118.6	119.6	20	06/18
06/19	116.4	116.9	117.4	24	117.6	118.3	119.1	24	116.7	116.7	117.1	22	117.5	117.7	117.9	20	115.3	116.1	116.5	22	117.7	118.8	118.5	19	06/19
06/20	117.0	117.4	117.9	24	117.7	118.3	118.7	24	116.8	117.4	117.8	24	117.7	118.3	118.9	23	115.5	116.1	116.7	24	117.8	118.3	118.7	21	06/20
06/21	116.6	117.2	117.7	24	117.6	118.2	118.7	24	117.5	117.6	117.6	24	118.0	118.4	119.4	23	115.5	116.3	116.3	23	117.5	118.4	118.4	22	06/21
06/22	116.1	116.4	116.7	24	117.7	118.8	122.4	24	116.2	117.4	117.0	24	117.5	118.1	118.4	24	114.3	115.8	115.0	24	116.5	117.7	117.4	23	06/22
06/23	115.6	116.0	116.4	24	117.0	118.5	118.6	24	115.0	116.1	115.6	24	116.7	117.5	117.3	22	113.6	114.5	114.5	22	115.8	116.5	116.5	20	06/23
06/24	116.1	116.4	117.4	24	118.4	119.7	122.1	24	116.3	116.7	117.0	24	117.6	118.1	119.0	24	114.6	115.8	116.1	24	116.4	117.4	117.9	24	06/24
06/25	115.1	116.6	117.5	23	117.8	120.2	121.5	23	116.3	116.9	117.3	24	118.3	119.4	122.6	23	114.9	115.8	115.9	24	116.8	117.8	119.0	21	06/25
06/26	113.7	114.1	114.5	24	120.2	121.7	126.3	24	115.4	116.0	116.4	24	118.8	120.5	122.8	22	115.1	116.3	117.0	24	117.6	120.1	120.9	20	06/26
06/27	113.8	114.2	114.4	10	105.8	120.4	122.0	23	118.7	120.2	121.5	24	123.0	124.5	125.1	22	117.3	119.9	120.6	23	121.4	122.9	123.7	21	06/27
06/28	113.9	114.0	114.3	17	112.2	118.8	119.8	23	118.7	119.6	120.3	23	122.4	123.8	125.8	23	117.7	119.9	119.9	23	122.1	123.1	124.5	22	06/28

FISH PASSAGE CENTER

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

[INTERNAL PURPOSES ONLY]

Date 6/29/2018 8:15:10 AM

Page 2 of 4

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
06/15	115.7	117.0	118.3	24	115.8	117.2	120.6	24	113.1	113.4	113.9	24	114.7	115.2	116.4	24	114.7	115.2	116.4	24	06/15
06/16	115.7	117.1	116.6	24	115.4	117.4	117.0	24	113.9	114.3	114.5	24	115.3	116.5	116.7	24	115.3	116.5	116.7	24	06/16
06/17	116.1	116.4	116.6	24	115.3	115.4	115.5	24	114.2	114.4	114.7	24	113.2	113.9	113.6	24	113.2	113.9	113.6	24	06/17
06/18	115.9	116.2	116.7	24	115.3	115.8	119.3	24	114.3	114.7	114.9	24	113.8	114.2	114.7	24	113.8	114.2	114.7	24	06/18
06/19	117.1	118.3	119.7	24	115.1	115.4	115.7	24	114.3	114.7	115.1	24	113.4	113.8	113.9	24	113.4	113.8	113.9	24	06/19
06/20	106.1	118.5	118.3	24	115.8	116.2	116.4	24	115.4	115.7	115.9	24	114.2	114.5	114.7	24	114.2	114.5	114.7	24	06/20
06/21	108.4	117.0	117.9	24	115.9	116.3	116.5	24	114.6	115.8	115.8	24	113.6	114.5	114.5	24	113.6	114.5	114.5	24	06/21
06/22	114.3	116.6	115.2	24	114.1	115.7	114.9	24	112.5	114.0	113.6	24	112.5	113.2	112.9	24	112.5	113.2	112.9	24	06/22
06/23	112.7	114.2	114.8	24	112.9	114.2	114.0	24	110.7	112.1	111.8	24	110.9	112.3	111.9	24	110.9	112.3	111.9	24	06/23
06/24	114.9	116.7	117.7	24	114.2	114.4	119.7	24	112.4	113.9	114.4	24	113.2	114.2	115.1	24	113.2	114.2	115.1	24	06/24
06/25	113.2	116.8	116.6	24	117.4	118.3	125.4	24	113.1	114.1	114.3	24	114.8	115.9	116.9	24	114.8	115.9	116.9	24	06/25
06/26	112.7	113.7	114.4	24	117.3	123.0	124.0	24	114.7	117.1	119.3	24	115.6	117.0	117.9	24	115.6	117.0	117.9	24	06/26
06/27	115.0	115.9	116.9	24	119.7	120.3	125.3	24	115.7	116.8	117.6	24	117.7	118.6	118.9	24	117.7	118.6	118.9	24	06/27
06/28	114.9	115.9	115.7	24	122.0	122.8	125.8	24	116.2	117.6	118.3	24	117.9	118.6	119.0	24	117.9	118.6	119.0	24	06/28

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
06/15	102.3	103.6	104.6	24	101.8	102.9	103.7	24	103.8	104.5	105.1	24	102.3	103.9	105.0	24	104.6	104.7	105.0	24	117.5	117.7	117.9	24	06/15
06/16	101.5	102.8	102.1	24	100.6	102.9	101.6	24	102.8	104.3	103.3	24	101.0	103.5	102.0	24	103.7	104.7	104.5	24	117.2	117.6	117.5	24	06/16
06/17	101.7	102.3	103.2	24	101.1	101.6	102.0	24	102.9	103.3	103.6	24	101.4	102.4	102.9	24	103.2	103.8	103.9	24	117.2	117.5	118.8	24	06/17
06/18	101.4	101.9	102.3	24	100.9	101.5	101.3	24	102.9	103.1	103.4	24	101.2	102.0	102.2	24	102.0	102.9	103.3	24	116.6	117.0	116.9	24	06/18
06/19	100.9	101.5	101.8	24	101.6	102.3	102.9	24	103.7	104.6	105.1	24	102.4	103.9	105.1	24	100.2	101.2	100.6	24	117.1	117.6	117.7	24	06/19
06/20	101.3	102.1	102.6	24	102.1	103.1	103.7	24	104.5	105.4	106.1	24	103.0	104.6	105.6	24	100.9	101.3	101.5	24	117.6	117.8	118.7	24	06/20
06/21	101.3	101.8	102.4	24	101.5	103.0	103.0	24	103.7	105.2	104.5	24	102.0	104.2	104.2	24	101.8	102.2	102.9	24	112.7	117.4	114.8	24	06/21
06/22	101.5	102.2	102.7	24	101.6	102.4	102.9	24	103.8	104.6	105.2	24	102.7	104.2	105.3	24	103.1	103.3	103.8	24	113.4	113.7	114.1	24	06/22
06/23	105.2	105.5	106.1	24	102.1	102.7	103.3	24	103.5	104.4	104.6	24	102.7	104.4	105.7	24	102.9	103.5	103.8	24	113.6	113.8	114.6	24	06/23
06/24	106.1	106.5	106.9	24	102.5	103.5	104.2	24	103.9	104.9	105.5	24	103.7	105.7	107.0	24	102.3	102.8	103.3	24	113.9	114.0	114.9	24	06/24
06/25	103.6	106.4	106.2	24	100.8	103.5	102.5	24	103.4	104.8	104.1	24	103.4	105.4	106.0	24	102.0	103.0	103.2	24	113.7	114.2	114.6	24	06/25
06/26	101.1	101.8	102.2	24	99.1	100.3	100.7	24	103.2	104.1	104.8	24	102.5	104.4	105.8	24	100.9	101.6	101.3	24	113.5	114.0	115.1	24	06/26
06/27	103.1	105.0	106.7	24	99.1	100.6	101.7	24	103.6	104.5	105.1	23	103.1	105.2	106.7	24	101.8	102.1	102.3	24	113.8	114.3	115.6	24	06/27
06/28	102.9	104.7	104.9	23	98.1	100.6	99.2	23	103.0	104.2	104.1	23	102.6	104.7	105.2	23	101.8	102.2	102.7	23	113.6	113.9	114.3	23	06/28

FISH PASSAGE CENTER

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

[INTERNAL PURPOSES ONLY]

Date 6/29/2018 8:15:10 AM

Page 3 of 4

Total Dissolved Gas Data at Lower Snake Sites

Little Goose				L. Goose Tlwr				Lower Mon.				Lwr. Mon. Tlwr				Ice Harbor				Tlwr 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
06/15	113.2	113.6	114.3	24	114.8	115.3	115.6	24	112.4	112.6	112.9	24	114.7	115.0	115.3	24	113.1	113.2	113.7	24	116.1	116.6	117.0	24	06/15
06/16	113.9	114.0	114.3	24	116.2	116.4	116.8	24	113.8	114.1	114.5	24	114.5	114.7	115.0	24	113.9	114.2	114.7	24	114.9	116.5	116.1	24	06/16
06/17	114.2	114.6	115.0	24	116.9	117.2	117.8	24	114.3	114.7	114.9	24	114.8	115.4	116.7	24	114.6	114.9	115.2	24	113.7	115.2	115.0	16	06/17
06/18	114.8	114.8	115.1	24	116.8	116.9	117.3	24	114.2	114.7	114.7	24	115.1	115.4	116.1	24	113.7	114.9	114.8	24	114.3	114.9	114.9	9	06/18
06/19	115.0	115.1	115.8	24	116.4	116.8	117.0	24	115.0	115.5	116.4	24	115.8	116.2	117.0	24	113.1	113.5	113.9	24	115.4	116.3	117.3	24	06/19
06/20	117.7	118.7	119.3	24	115.8	116.4	116.7	24	116.8	117.2	117.5	24	116.0	116.2	116.3	24	115.2	116.0	116.4	24	115.8	116.2	116.6	24	06/20
06/21	117.6	119.0	119.5	24	113.1	115.5	114.4	24	117.9	118.0	118.4	24	117.1	118.7	120.3	24	116.5	116.7	117.0	24	116.1	116.4	116.9	24	06/21
06/22	116.6	117.2	117.2	24	112.9	113.2	113.6	24	117.0	117.9	117.6	24	118.7	118.9	119.2	24	115.6	116.6	116.1	24	115.6	116.1	116.7	24	06/22
06/23	115.2	116.5	116.3	24	113.0	113.3	113.6	24	113.7	116.6	115.2	24	117.5	118.8	118.5	24	114.4	115.4	114.8	24	114.9	116.1	116.4	24	06/23
06/24	114.0	115.0	114.6	24	112.2	112.5	112.6	24	112.7	113.1	113.6	24	117.3	117.7	118.3	24	114.7	115.0	115.7	24	116.0	116.1	116.5	24	06/24
06/25	112.0	114.2	114.0	19	111.6	112.3	111.9	19	113.2	113.6	114.1	19	117.0	117.8	118.3	19	114.6	115.5	116.1	19	115.3	115.9	116.3	19	06/25
06/26	110.1	111.1	110.7	24	111.4	111.5	111.6	24	112.3	112.9	112.6	24	117.3	117.8	118.1	24	112.8	113.8	113.3	24	113.4	115.0	115.2	24	06/26
06/27	110.5	111.0	111.3	24	111.7	111.9	112.1	24	111.6	112.2	112.0	24	116.6	117.6	117.9	24	113.1	113.4	113.6	24	113.9	115.3	115.8	23	06/27
06/28	110.4	111.0	114.5	23	114.2	116.6	118.5	23	111.3	111.8	112.0	19	116.3	116.8	117.3	19	113.4	113.6	113.9	23	115.2	115.8	116.2	23	06/28

Total Dissolved Gas Data at Mid-Columbia Sites

McNary-Wash.				Tlwr McNary				John Day				Tlwr 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
06/15	111.6	112.5	113.0	24	119.4	119.6	119.8	24	109.9	110.6	111.0	24	117.2	117.5	117.8	24	114.3	115.1	116.4	24	120.0	120.8	121.9	24	06/15
06/16	111.9	112.5	112.8	24	115.0	119.4	118.0	24	110.0	110.6	110.5	24	114.5	117.3	116.2	24	113.9	115.7	115.7	24	117.3	119.5	120.1	24	06/16
06/17	111.9	112.7	113.8	24	114.4	115.0	114.8	24	110.0	110.3	110.8	24	113.6	114.8	114.9	24	112.8	113.4	113.4	24	116.4	117.0	116.9	24	06/17
06/18	111.1	112.9	112.7	24	116.9	118.4	118.9	24	110.1	110.4	111.1	24	113.7	114.9	116.0	24	112.2	113.2	113.1	24	116.2	116.5	116.6	24	06/18
06/19	111.1	111.2	112.5	24	118.3	118.8	119.3	24	111.7	112.7	114.1	24	114.4	114.8	115.1	24	112.7	113.4	113.5	24	116.5	117.3	118.1	24	06/19
06/20	111.6	112.0	113.3	24	118.7	119.2	119.9	24	114.5	114.9	115.3	24	114.6	114.7	115.9	24	114.0	114.2	114.5	24	117.3	117.9	118.4	24	06/20
06/21	113.2	113.3	113.4	24	118.9	119.4	119.8	24	112.6	114.8	114.4	24	114.5	116.3	116.8	24	111.7	114.2	114.0	24	116.0	117.9	117.6	24	06/21
06/22	111.9	113.3	113.2	24	118.0	119.0	119.4	24	110.2	111.9	110.6	24	113.6	116.1	115.6	24	109.1	110.5	110.0	24	114.3	115.5	114.9	24	06/22
06/23	109.3	110.7	110.0	24	118.9	119.8	120.1	24	109.3	110.1	109.8	24	113.5	114.6	114.8	24	108.5	108.9	109.1	24	114.2	115.1	115.6	24	06/23
06/24	110.6	111.1	112.5	24	119.6	120.5	120.9	24	109.3	110.1	110.7	24	114.2	115.1	117.1	24	110.8	112.2	112.8	24	115.8	116.8	117.7	24	06/24
06/25	110.0	111.6	112.8	19	118.9	120.5	119.9	23	108.2	110.1	110.2	17	115.7	117.1	117.8	24	109.3	112.3	111.7	17	114.7	116.9	116.5	17	06/25
06/26	109.0	109.3	109.8	24	117.6	118.5	118.9	24	107.3	107.7	108.1	18	116.9	117.9	118.2	24	110.0	110.6	111.2	18	115.4	115.7	116.1	18	06/26
06/27	111.0	111.8	112.5	24	119.1	120.2	120.5	24	109.4	110.3	110.5	24	116.3	118.1	118.4	24	110.1	111.0	111.4	24	115.4	115.9	116.3	24	06/27
06/28	111.5	111.9	112.3	23	117.6	119.5	118.6	23	108.7	110.4	110.1	23	113.9	117.0	117.2	23	108.8	110.1	110.7	23	114.4	114.9	115.2	23	06/28

FISH PASSAGE CENTER

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

[INTERNAL PURPOSES ONLY]

Date 6/29/2018 8:15:10 AM

Page 4 of 4

Total Dissolved Gas Data at Mid-Columbia Sites

Bonneville				Warrendale				Camas\Washug.				Cascade Isld.				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	Date
06/15	113.4	113.9	114.1	24	117.4	117.9	118.2	24	114.4	115.3	116.2	24					06/15
06/16	114.2	115.2	115.8	24	116.3	117.7	117.0	24	114.3	115.4	115.9	24					06/16
06/17	116.0	116.9	117.5	24	117.3	117.8	118.4	24	115.0	116.5	117.7	24					06/17
06/18	114.9	116.8	116.0	24	116.0	117.5	116.8	24	115.6	116.5	117.2	24					06/18
06/19	113.9	114.8	115.5	24	116.3	116.4	117.3	24	115.3	116.9	118.3	24					06/19
06/20	116.5	116.9	117.5	24	117.7	118.0	118.6	24	115.8	117.5	119.1	24					06/20
06/21	113.9	116.9	116.3	24	115.9	117.4	116.3	24	114.5	117.5	115.6	24					06/21
06/22	109.6	112.3	110.9	24	113.7	115.7	114.8	24	112.8	115.0	114.1	24					06/22
06/23	108.4	109.2	109.3	24	113.6	114.3	115.4	24	111.2	113.1	113.7	24					06/23
06/24	111.5	112.8	113.7	24	115.7	116.2	116.7	24	112.6	114.9	116.6	24					06/24
06/25	111.8	113.2	113.3	17	114.5	115.5	115.3	17	111.0	114.9	112.3	17					06/25
06/26	110.3	111.1	111.2	18	113.1	115.2	113.6	18	112.3	113.0	114.0	18					06/26
06/27	111.5	111.8	112.1	24	113.8	114.3	115.6	24	111.8	113.1	114.7	24					06/27
06/28	109.2	111.4	110.6	23	113.5	113.9	114.8	23	111.1	112.8	113.6	23					06/28

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
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	---	---	---	---	---	---	---	---	---

FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

Date 6/29/2018 8:17:12 AM

Page 1 of 7

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)
06/15/2018		9			91	45	293	0		381	446
06/16/2018		3			161	0	98	0	0		232
06/17/2018		8			60	0	0	0		293	202
06/18/2018		6			36	54	0	0	515		28
06/19/2018		10			41	3	0	0		39	110
06/20/2018		7			26	0	32	0	2		0
06/21/2018					23	0	0	0		136	0
06/22/2018					0	0	27	0	409		0
06/23/2018					28	0	54	0		0	146
06/24/2018					0	0	0	0	410		19
06/25/2018		11			56	59	54	0		76	0
06/26/2018		7			87	60	83	0	2		0
06/27/2018					0	29	60	0		0	26
06/28/2018					29	29	57	0	0		0
06/29/2018											
Total:	0	61	0	0	638	279	758	0	1,338	925	1,209
# Days:	0	8	0	0	14	14	14	14	7	7	14
Average:	0	8	0	0	46	20	54	0	191	132	86
YTD:	23,452	41,175	21,824	12,792	4,638,911	2,838,032	2,044,898	49,702	1,493,386	1,257,304	1,890,654

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
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

Date 6/29/2018 8:17:12 AM

Page 2 of 7

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)
06/15/2018		0			6,431	7,927	5,198	620		15,865	7,786
06/16/2018		0			5,268	6,200	3,949	712	17,619		7,690
06/17/2018		0			12,144	5,794	4,936	450		16,187	8,156
06/18/2018		0			25,946	6,755	5,306	375	23,880		7,501
06/19/2018		0			16,515	11,165	1,265	497		17,182	11,073
06/20/2018		0			11,610	33,045	7,457	212	60,849		9,611
06/21/2018					13,205	22,931	12,499	310		43,740	9,678
06/22/2018					11,598	35,279	5,030	621	70,807		12,223
06/23/2018					5,314	5,516	4,108	593		29,535	15,030
06/24/2018					6,938	4,583	7,028	272	134,120		29,194
06/25/2018		0			14,476	9,510	14,006	178		66,516	26,203
06/26/2018		0			9,211	8,574	2,439	227	118,965		22,014
06/27/2018					3,711	3,930	2,025	203		35,303	33,879
06/28/2018					3,025	5,195	2,030	219	99,507		42,348
06/29/2018											
Total:	0	0	0	0	145,392	166,404	77,276	5,489	525,747	224,328	242,386
# Days:	0	8	0	0	14	14	14	14	7	7	14
Average:	0	0	0	0	10,385	11,886	5,520	392	75,107	32,047	17,313
YTD:	0	6	89	192	764,345	822,464	432,040	22,917	1,441,502	532,300	1,938,316

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
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

Date 6/29/2018 8:17:12 AM

Page 3 of 7

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)
06/15/2018		0			0	134	126	35		508	942
06/16/2018		0			0	133	49	34	0		531
06/17/2018		0			153	102	0	28		293	628
06/18/2018		0			36	107	0	15	102		407
06/19/2018		0			124	80	0	47		377	966
06/20/2018		0			51	101	46	6	102		333
06/21/2018					92	140	49	8		212	458
06/22/2018					85	29	27	11	0		761
06/23/2018					0	72	27	17		0	878
06/24/2018					137	29	26	17	0		987
06/25/2018		0			167	72	27	3		152	494
06/26/2018		0			58	100	28	9	0		1,018
06/27/2018					29	43	0	5		0	294
06/28/2018					0	29	28	6	516		281
06/29/2018											
Total:	0	0	0	0	932	1,171	433	241	720	1,542	8,978
# Days:	0	8	0	0	14	14	14	14	7	7	14
Average:	0	0	0	0	67	84	31	17	103	220	641
YTD:	0	0	1,224	1,365	262,420	215,118	42,274	44,084	226,100	119,790	475,874

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
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

Date 6/29/2018 8:17:12 AM

Page 4 of 7

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)
06/15/2018		19			317	134	168	74		381	149
06/16/2018		22			269	133	98	44	0		167
06/17/2018		20			120	0	0	40		209	210
06/18/2018		33			145	0	64	37	519		350
06/19/2018		15			124	83	31	26		165	220
06/20/2018		21			103	162	57	37	318		216
06/21/2018					162	70	147	23		61	102
06/22/2018					113	658	81	19	205		51
06/23/2018					140	72	27	19		0	98
06/24/2018					192	200	26	16	412		96
06/25/2018		4			139	100	82	15		152	55
06/26/2018		8			145	240	55	17	18		127
06/27/2018					115	86	3	21		0	38
06/28/2018					117	160	28	13	0		281
06/29/2018											
Total:	0	142	0	0	2,201	2,098	867	401	1,472	968	2,160
# Days:	0	8	0	0	14	14	14	14	7	7	14
Average:	0	18	0	0	157	150	62	29	210	138	154
YTD:	723	27,437	3,888	5,328	3,924,507	3,003,450	1,942,482	24,843	240,966	681,267	356,223

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
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

Date 6/29/2018 8:17:12 AM

Page 5 of 7

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)
06/15/2018		0			0	45	0	2		0	149
06/16/2018		0			0	0	0	6	0		0
06/17/2018		0			0	0	0	4		0	28
06/18/2018		0			0	0	0	4	204		57
06/19/2018		0			41	0	0	3		102	56
06/20/2018		0			0	0	0	2	0		0
06/21/2018					23	0	0	6		0	0
06/22/2018					0	0	0	3	0		51
06/23/2018					0	0	0	0		0	0
06/24/2018					0	0	0	3	0		0
06/25/2018		0			0	14	0	2		76	0
06/26/2018		0			0	0	0	2	0		0
06/27/2018					0	0	0	3		0	0
06/28/2018					0	0	0	2	0		141
06/29/2018											
Total:	0	0	0	0	64	59	0	42	204	178	482
# Days:	0	0	0	0	5	4	0	3	29	25	34
Average:	0	0	0	0	5	4	0	3	29	25	34
YTD:	0	0	4	115	260,611	120,842	58,600	76,198	1,526,876	383,702	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
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

Date 6/29/2018 8:17:12 AM

Page 6 of 7

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)
06/15/2018		0			2	25	0	1		350	100
06/16/2018		0			2	0	0	2	0		29
06/17/2018		0			2	60	0	0		125	119
06/18/2018		0			2	0	0	1	200		43
06/19/2018		0			3	20	10	1		80	0
06/20/2018		0			13	0	0	2	50		50
06/21/2018					13	0	20	3		0	50
06/22/2018					6	400	0	1	0		75
06/23/2018					1	0	0	1		200	0
06/24/2018					13	0	0	2	0		30
06/25/2018		0			4	0	140	0		150	50
06/26/2018		0			7	20	80	1	0		50
06/27/2018					5	0	160	0		100	0
06/28/2018					11	0	20	1	200		50
06/29/2018											
Total:	0	0	0	0	84	525	430	16	450	1,005	646
# Days:	0	8	0	0	14	15	17	14	7	8	16
Average:	0	0	0	0	6	35	25	1	64	126	40
YTD:		1	3		417	35,509	56,570	358	218,362	226,028	26,387

- 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
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

FISH PASSAGE CENTER

Smolt Monitoring Program Two Week Passage Index Report

Date 6/29/2018 8:17:12 AM

Page 7 of 7

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
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

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 6/15/2018 12:00:00 AM TO 6/29/2018 12:00:00 AM

Date 6/29/2018 8:17:47 AM

Page 1 of 2

Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	68,668	300	491	20	1,140	71,759
Sum of Number Barged	67,735	305	489	18	1,045	70,637
Sum of Number Bypassed	980	0	0	0	98	1,176
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	23	0	0	0	0	23
Sum of Facility Morts	114	0	2	2	1	120
Sum of Reseach Morts	6	0	0	0	0	6
Sum of Total Project Mort	143	0	2	2	1	149

Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	96,258	169	635	35	1,343	99,783
Sum of Number Barged	172,501	148	614	84	2,601	178,549
Sum of Number Bypassed	11	0	0	0	0	11
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	20	0	0	0	0	20
Sum of Facility Morts	103	1	1	1	0	106
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	123	1	1	1	0	126

FISH PASSAGE CENTER

Two Week Transportation Summary Report

6/15/2018 12:00:00 AM TO 6/29/2018 12:00:00 AM

Date 6/29/2018 8:17:47 AM

Page 2 of 2

Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	45,719	437	250	0	487	47,380
Sum of Number Barged	46,763	452	270	0	507	48,499
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	1	0	0	0	0	1
Sum of Facility Morts	48	5	1	0	0	54
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	49	5	1	0	0	55

Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	210,645	906	1,376	55	2,970	218,922
Sum of Number Barged	286,999	905	1,373	102	4,153	297,685
Sum of Number Bypassed	991	0	0	0	98	1,187
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	44	0	0	0	0	44
Sum of Facility Morts	265	6	4	3	1	280
Sum of Reseach Morts	6	0	0	0	0	6
Sum of Total Project Mort	315	6	4	3	1	330

FISH PASSAGE CENTER

YTD Transportation Summary Report

Date 6/29/2018 8:17:24 AM

Page 1 of 2

Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	472168	3041083	182766	188691	2522798	8930304
Sum of Number Barged	455661	2429087	179163	184056	1811098	6870163
Sum of Number Bypassed	13715	610813	3539	4464	711353	2055237
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	58	58	0	9	44	213
Sum of Facility Morts	706	1063	64	162	188	2371
Sum of Reseach Morts	11	42	0	0	35	123
Sum of Total Project Mort	775	1163	64	171	267	2707

Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	488177	1857019	137000	74657	1968957	6494767
Sum of Number Barged	553886	1546115	136261	66127	1357960	5018309
Sum of Number Bypassed	852	306206	407	7716	611659	1538499
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	57	40	3	12	13	138
Sum of Facility Morts	3537	4638	309	802	385	10056
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	3594	4678	312	814	398	10194

FISH PASSAGE CENTER

YTD Transportation Summary Report

Date 6/29/2018 8:17:24 AM

Page 2 of 2

Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	261968	1217848	24820	35290	1178377	3896680
Sum of Number Barged	260397	1017913	24698	33644	926042	3188736
Sum of Number Bypassed	0	199433	100	1598	252167	705465
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	6	7	0	3	7	30
Sum of Facility Morts	139	455	3	45	141	924
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	145	462	3	48	148	954

Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	1222313	6115950	344586	298638	5670132	19321751
Sum of Number Barged	1269944	4993115	340122	283827	4095100	15077208
Sum of Number Bypassed	14567	1116452	4046	13778	1575179	4299201
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	121	105	3	24	64	381
Sum of Facility Morts	4382	6156	376	1009	714	13351
Sum of Reseach Morts	11	42	0	0	35	123
Sum of Total Project Mort	4514	6303	379	1033	813	13855

Cumulative Adult Passage at Mainstem Dams Through: 06/28

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	06/27	87894	6456	83624	18110	152393	25835	41021	2427	53542	6730	62692	13126	0	0	0	0	0	0
TDA	06/27	57935	4793	58310	12497	119227	21697	31971	1984	39682	5144	47796	9488	0	0	0	0	0	0
JDA	06/27	50572	5053	46675	12475	103731	20380	25945	2196	31818	3640	39588	8409	0	0	0	0	0	0
MCN	06/27	44427	3472	44292	7020	94405	16297	22661	1112	25511	2579	32279	5847	0	0	0	0	0	0
IHR	06/27	32600	2197	28306	6949	68113	11204	3994	325	5832	1451	12072	2902	0	0	0	0	0	0
LMN	06/27	35398	3020	28545	8270	68100	11017	3767	397	5049	1753	11912	2964	0	0	0	0	0	0
LGS	06/27	31834	2486	26598	8335	63992	12109	4888	315	4461	1682	10070	2907	0	0	0	0	0	0
LGR	06/27	31161	2948	27357	8256	62850	13009	4501	357	3692	1453	7842	2512	0	0	0	0	0	0
PRD	06/26	7067	949	7268	783	18018	1858	11271	417	11261	341	11813	570	0	0	0	0	0	0
WAN	06/26	8071	964	6612	484	17542	2163	9105	243	8776	231	9614	570	0	0	0	0	0	0
RIS	06/27	7894	997	8080	564	18255	2598	8939	156	8146	108	8387	529	0	0	0	0	0	0
RRH	06/27	5919	807	5864	406	8195	1153	5493	38	4331	37	4198	147	0	0	0	0	0	0
WEL	06/27	6964	961	5927	816	8154	1589	0	0	0	0	0	0	0	0	0	0	0	0
WFA	06/27	20911	1746	29506	1965	31471	1357	0	0	0	0	0	0	0	0	0	0	0	0

DAM	ENDDATE	Coho						Sockeye			Steelhead						Lamprey				
		2018		2017		10-Yr Avg.		10-Yr		10-Yr			Unclipped		Unclipped		10-Yr		10-Yr		
		Adult	Jack	Adult	Jack	Adult	Jack	2018	2017	Avg.	2018	2017	Avg.	2018	2017	Avg.	2018	2017	Avg.	2018	2017
BON	06/27	1	-1	0	0	0	0	120577	50329	186613	7110	4840	12435	3002	1606	4026	21995	31847	8651		
TDA	06/27	4	0	0	0	0	0	83079	32427	135480	1177	1708	4746	579	617	1801	2244	2527	1098		
JDA	06/27	0	0	0	0	0	1	89001	32236	116881	985	652	6306	537	434	2525	1252	859	543		
MCN	06/27	-4	0	0	0	1	0	65787	21822	78280	678	2573	5353	349	771	1968	182	35	41		
IHR	06/27	-1	0	0	0	0	0	78	80	95	1480	1115	4780	506	514	1611	88	23	9		
LMN	06/27	0	0	0	0	0	0	15	8	61	1308	1474	8648	381	709	2883	70	8	0		
LGS	06/27	0	0	0	0	0	0	12	0	35	1291	1505	5179	347	659	2570	12	1	0		
LGR	06/27	0	0	0	0	0	0	2	0	13	4587	7313	8839	1283	3057	3692	3	0	0		
PRD	06/26	0	0	0	0	0	0	31371	6071	27404	74	117	148	0	0	0	827	323	95		
WAN	06/26	0	0	0	0	0	0	24684	3423	19689	91	80	198	0	0	0	602	213	51		
RIS	06/27	0	0	0	0	0	0	20905	2569	15137	104	87	169	48	30	85	142	6	1		
RRH	06/27	0	0	0	0	0	0	14802	1367	9239	108	145	364	37	37	232	25	0	0		
WEL	06/27	0	0	0	0	0	0	6103	539	4605	144	60	100	56	42	64	88	1	0		
WFA	06/27	0	2	117	117	0	0	0	0	0	8010	2271	17648	1943	724	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.

