



## Fish Passage Center

# Weekly Report #18–22

August 3, 2018

### This Week's Highlights

#### Water Supply

Precipitation throughout the Columbia Basin has varied between 0% and 32% of average at individual sub-basins over early July. Precipitation above The Dalles has been 16% of average over July. Over the 2018 water year, precipitation has ranged between 86% and 109% of average.

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

Location	Water Year 2018		Water Year 2018	
	July 1-31, 2018		October 1, 2017 to August 1, 2018	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	0.57	27	33.2	97
SNAKE RIVER ABOVE ICE HARBOR	0.03	4	19.1	91
Columbia Above The Dalles	0.19	16	23.3	93
Kootenai	0.07	32	32.2	95
Clark Fork	0.06	4	27.2	109
Flathead	0.31	16	34.0	104
Pend Oreille River Basin above Waneta Dam	0.15	10	30.6	103
Salmon River Basin	0.00	0	25.4	95
Upper Snake Tributaries	0.21	16	22.9	94
Clearwater	0.02	1	41.1	108
Willamette River above Portland	0.00	0	54.2	86

Grand Coulee Reservoir is at 1283.1 feet (8-02-18) and has drafted 1.3 feet over the last week. Outflows at Grand Coulee have ranged between 86.5 Kcfs and 136.3 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2447.8 feet

(8-02-18) and has drafted 0.3 feet over the past week. Daily average outflows at Libby Dam have 9.0 over the last week.

Hungry Horse is currently at an elevation of 3558.1 feet (8-02-18) and has drafted 0.8 feet last week. Outflows at Hungry Horse have been 2.7 – 3.0 Kcfs over the last week.

Dworshak is currently at an elevation of 1568.3 feet (8-02-18) and has drafted 8.8 feet over the last week. Dworshak outflows have been 11.0 – 13.1 Kcfs.

The Brownlee Reservoir was at an elevation of 2059.0 feet on August 3<sup>rd</sup>, 2018 and has drafted 3.0 feet over the last week. Outflows at Hells Canyon have ranged between 9.3 and 21.9 Kcfs over the last four days.

The Biological Opinion flow period began on April 3<sup>rd</sup> in the lower Snake River (Lower Granite). According to the April Final Water Supply Forecast (April 4<sup>th</sup>, 2018), the flow objective this spring was 100 Kcfs at Lower Granite. Flows at Lower Granite Dam averaged 111.3 Kcfs over the spring season. The summer biological flow period began on June 21<sup>st</sup>, 2018 at Lower Granite (Flow Objective = 53.3 Kcfs), flows have averaged 43.2 Kcfs over the summer period and 33.4 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. Flows at McNary have averaged 179.6 Kcfs since the start of the summer period.

## Spill

Flows in the Lower Snake River this week were similar to the previous week. Daily average flows at Lower Granite Dam ranged from 31.7 to 35.8 Kcfs this week. Flows in the mid- and Upper Columbia River decreased this week, when compared to the previous week. Daily average flows at McNary and Rock Island dams ranged from 149.9 to 185.3 Kcfs and 76.8 to 141.0 Kcfs this week, respectively. Current forecasts for Lower Granite Dam show flows in the 28.5 to 34.5 Kcfs range over the next week while forecasts for McNary Dam show flows continuing to decrease over the next week.

Dworshak is currently in its summer draft operation, with daily average discharge ranging from 11.0 to 13.1 Kcfs over the last week. There have been a couple of instances of reduced powerhouse discharge at Dworshak this week. These instances include a 6-hour period when powerhouse discharge was reduced to as low as 2.1 Kcfs on July 27<sup>th</sup> and a 5-hour period on July 30<sup>th</sup> when powerhouse discharge was reduced to as low as 2.1 Kcfs. Hells Canyon Complex flows this week were similar to the previous week, with daily average outflows at Hells Canyon Dam ranging from 9.5 to 15.2 Kcfs over the last week. The daily average temperature in the Lower Granite tailrace exceeded 68 °F on July 30<sup>th</sup> and July 31<sup>st</sup>. The daily average temperatures on August 1<sup>st</sup> and August 2<sup>nd</sup> were 67.8 °F and 67.1 °F, respectively.

The 2018 spill for fish passage program at the lower Snake River and Mid-Columbia FCRPS projects began just after midnight on April 3<sup>rd</sup> and April 10<sup>th</sup>, respectively. Spring spill operations at these projects ran through June 15<sup>th</sup> in the Mid-Columbia and June 20<sup>th</sup> in the Snake River. According to the Fish Operations Plan, summer spill operations began at 0001 on June 16<sup>th</sup> at the Mid-Columbia River sites and 0001 on June 21<sup>st</sup> at the Snake River sites. These summer spill operations will run through August 31<sup>st</sup> 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 is 18 Kcfs, 24-hours per day. Summer spill volumes at Lower Granite Dam were generally met this week and there were no exceedences in total dissolved gas (TDG) waiver limits in the LGR tailrace or the Little Goose (LGS) forebay. Over the last week, the summer spill operation for LGS has fluctuated between 30% of instantaneous flows and a set spill volume. When the operation at LGS is a set spill volume, this spill volume ranges from 7 Kcfs to 11 Kcfs, depending on daily average flows from the previous day. The 30% operation was provided on July 28<sup>th</sup>, July 30<sup>th</sup>, August 1<sup>st</sup>, and August 2<sup>nd</sup>. Due to daily average flows that were less than 32 Kcfs the previous days, the set spill volume operation was provided on July 27<sup>th</sup>, July 29<sup>th</sup>, and July 31<sup>st</sup>. The set spill volume on these days was approximately 11.0 Kcfs. There were no exceedences in TDG waiver limits in the LGS tailrace or Lower Monumental (LMN) forebay. Spill patterns at LGS continued to be modified for most of this week (July 27<sup>th</sup> through August 1<sup>st</sup>). The modified operation was supposed to involve closing the RSW from ~0500 to ~1600 each day and distributing the RSW spill to other spillbays. However, the RSW could not be reopened on the afternoon of July 28<sup>th</sup> and, therefore, remained in the closed position until the afternoon of July 31<sup>st</sup>. The RSW was reopened at ~1700 on July 31<sup>st</sup>. The modified operation of closing the RSW from ~0500 to ~1600 occurred on August 1<sup>st</sup>. The modified operation did not occur on August 2<sup>nd</sup>, as the RSW remained open for all 24-hours. The RSW at LGS is expected to remain in operation until flows at LGS drop below 35 Kcfs. 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 or the Ice Harbor

(IHR) forebay. 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/or 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.

Summer spill at McNary (MCN) is 50%, 24-hours per day. This summer spill operation was met this week and there were no exceedences of TDG waiver limits in the MCN tailrace or the John Day (JDA) forebay. The current spill operation at JDA is 30% of instantaneous flows. This spill operation has been met 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 been met this week and 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 through the end of the summer spill season. This summer spill operation has been met this week. It is worth noting that there were some periods (August 1<sup>st</sup> and 2<sup>nd</sup>) when flows were sufficiently low that the night-time spill level of 121 Kcfs was 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.

**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 Rock Island, McNary, and Bonneville dams this week. Due to high temperatures and generally low TDG levels in their respective forebays, GBT sampling at Bonneville and McNary has been reduced from twice-per-week to once-per-week. In addition, GBT sampling has been terminated for the season at LGS and LMN due to low fish numbers. Signs of fin GBT were observed in two of the four GBT samples conducted this week (July 27-August 2). Bonneville observed zero signs of fin GBT in their sample on August 1<sup>st</sup>. McNary observed zero signs of fin GBT in their sample on July 29<sup>th</sup>. Rock Island observed three fish (3%) with Rank 1 signs of fin GBT in their sample on July 27<sup>th</sup> and five fish (6%) with Rank 1 signs of fin GBT in their sample on July 31<sup>st</sup>. It is worth noting that the sample size criterion was not met for the July 31<sup>st</sup> sample at Rock Island. Finally, GBT monitoring at Bonneville, McNary, and/or Rock Island may be terminated for the season if fish numbers continue to decline to levels where meeting sample size requirements is not possible. 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, McNary, and Ice Harbor dams are all approximately 1 to 2 °F higher than their respective 10-year averages for this time of year. The daily average temperature for August 2<sup>nd</sup> was 72.1 °F at Bonneville, 70.7 °F at McNary, and 71.4 °F at Ice Harbor. The current 10-year averages for

these three projects are 69.9 °F, 69.4 °F, and 70.2 °F, respectively. The forebay temperature at Lower Granite Dam is nearly identical to the current 10-year average. The daily average temperature for August 2<sup>nd</sup> in the Lower Granite forebay was 66.7 °F and the current 10-year average for that date is 66.5 °F.

### 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 bypass facilities. The one exception was Lower Granite Dam, where subyearling Chinook passage this week was very similar to last week.

Sampling at Bonneville Dam (BON) remained in the high temperature protocol this week, where sampling is reduced to a 24-hour sample every-other-day. This high temperature sampling protocol will remain in effect until daily average temperatures in the Bonneville forebay drop below 69.5 °F. This week's samples at BON were dominated by subyearling Chinook. This week's daily average passage index for subyearling Chinook was about 14,150 per day, which is a large decrease from last week's daily average passage index of about 53,300 per day. No spring migrants were encountered in this week's samples. Pacific lamprey macrophthalmia were encountered in two of this week's four 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 will be conducted on Monday and Thursday and data from these samples will be transmitted to FPC on Tuesday and Friday of each week. This high temperature sampling protocol will remain in effect until daily average temperatures in the John Day forebay drop below 69.5 °F. Subyearling Chinook dominated the two samples at JDA this week. In fact, the only other species that were encountered in this week's samples were coho.

McNary (MCN) has been operating under the high temperature sampling protocol since mid-July. Under the high temperature sampling protocol, sampling remains every-other-day but the target sample size is reduced from 300-500 fish per day to approximately

100 fish per day. This protocol will remain in effect until daily average forebay temperatures drop below 68 °F. Subyearling Chinook dominated this week's samples at MCN. This week's daily average passage index for subyearling Chinook was about 9,100 per day, which is a large decrease from last week's daily average passage index of about 29,000 per day. No spring migrants were encountered in this week's samples. In addition, Pacific lamprey macrophthalmia were encountered in only one of this week's three samples and Pacific lamprey ammocoetes were not encountered this week.

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 2,000 per day, which is very similar to last week's daily average passage index. No spring migrants were encountered in this week's samples. Pacific lamprey macrophthalmia were encountered in five of this week's samples and Pacific lamprey ammocoetes were encountered in two of this week's samples at LGR.

Similar to recent years, sampling at Little Goose Dam (LGS) began as every-other-day but was increased to every day when transportation started on April 23<sup>rd</sup>. Subyearling Chinook continued to dominate the samples at LGS this week. This week's daily average passage index for subyearling Chinook was about 900 per day, which is a decrease from last week's daily average passage index of about 1,900 per day. Very few spring migrants were encountered in this week's samples. Finally, Pacific lamprey macrophthalmia were encountered in only one of this week's samples and ammocoetes were encountered in four of this week's samples.

Sampling at Lower Monumental Dam (LMN) was every-third-day through April 14<sup>th</sup>, transitioned to every-other-day through April 23<sup>rd</sup>, 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 450 per day, which is a decrease from last week's daily average passage index of about 1,300 per day. Passage of spring migrants remained low this week. In fact, the only spring migrants that were encountered this week were steelhead, which were encountered in only one of this week's samples. Finally, Pacific lamprey macrophthalmia were encountered in one of this week's

samples while no ammocoetes were encountered this week.

Subyearling Chinook continued to dominate the samples at Rock Island Dam (RIS). This week's daily average passage index for subyearling Chinook was nearly 200 per day, which is a decrease from last week's daily average passage index of about 340 per day. Passage of spring migrants was very low this week. No Pacific lamprey macrophthalmia or ammocoetes were encountered in this week's samples.

### **Hatchery Releases**

FPC has not received all data from some hatcheries as of 08/03/18, 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 was one scheduled release of 1 million subyearling fall Chinook into Youngs Bay near the mouth of the Columbia River on July 28<sup>th</sup>. There are no scheduled releases into this zone in the next two weeks.

### **Adult Passage**

Adult Passage Daily passage numbers at Bonneville Dam ranged between 185 and 318 adult Chinook in the last week. Adult summer chinook passage counting at Bonneville Dam ends on July 31st each year. The 2018 summer Chinook count of 61,057 is about 69.3% of the 2017 count and 60% of the 10-year average. The 2018 summer Chinook jack count of 4,349 is about 40.8% of the 2017 count and about 20% of the 10-year average count. At Willamette Falls, 24,508 adult spring Chinook have been counted so far this year. In 2017, 34,103 adult spring Chinook were counted at Willamette Falls. This year's count is about 71.9% of the 2017 count and 68.9% of the 10-year average count of 35,585. As of August 2nd, a total of 42,049 adult summer Chinook have been counted at McNary Dam and 6,962 have been counted at Lower Granite Dam. The 2018 McNary Dam adult summer Chinook count is about 74.4% of the 2017 count and 60.4% of the 10-year average count. The 2018 Lower Granite Dam adult summer Chinook count is about 80.7% of the 2017 count and 41.7% of the 10-year average count. As of August 2<sup>nd</sup>, the adult fall Chinook count at Bonneville Dam is 418.

The 2018 Bonneville Dam adult steelhead count of 37,113 is about 1.5 times greater than the 2017 count of 25,331, while being about 34.5% of the 10-year average count of 107,464. The 2018 Bonneville Dam adult unclipped steelhead count of 16,644 is about 1.3 times greater than the 2017 count of 12,468, while being 34.1% of the 10-year average count of 48,802. Daily adult steelhead counts at Lower Granite Dam ranged from 20 to 48 adults per day last week. This year's Lower Granite steelhead count of 5,677 has 1,944 fewer fish than the 2017 count of 7,621 and is about 46.6% of the 10-year average count of 12,189. The 2018 Lower Granite Dam adult unclipped steelhead count of 1,886 has 1,379 fewer fish than the 2017 count of 3,265 and 3,278 fewer fish than the 10-year average count of 5,164. At Willamette Falls, the 2018 count for steelhead was 10,449 as of July 31<sup>st</sup>. This year's steelhead count is about 3.9 times greater than the 2017 count of 2,677, while being 51.4% of the 10-year average count of 20,317.

Daily adult sockeye passage numbers at Bonneville Dam ranged between 43 and 142 last week. The 2018 adult sockeye count at Bonneville Dam of 193,565 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 155,229 is about 2.7 times greater than the 2017 count, while being 67.6% of the 10-year average count. The Lower Granite Dam 2018 adult sockeye count of 262 has 37 more fish than the 2017 count of 225 and 781 fewer fish than the 10-year average count of 1,043. As of August 2nd at Bonneville Dam, the adult shad count was 6,045,652. This year's shad count is about 1.9 times greater than the 2017 count of 3,129,893 and 2.9 times greater than the 10-year average count of 2,099,252. A total of 37,768 lampreys have been counted at Bonneville Dam so far this year. The Bonneville 2018 lamprey count is about 51.7% of the 2017 count of 73,060, while being about 1.6 time greater than the 10-year average count of 24,343.

## Hatchery Releases Last Two Weeks

Hatchery Release Summary  
From: 7/21/2018 to 08/03/18

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CH0	FA	2018	1,000,000	07-28-18	07-28-18	Youngs Bay	Youngs River	LCOL
<b>Oregon Dept. of Fish and Wildlife Total</b>					<b>1,000,000</b>					
<b>Grand Total</b>					<b>1,000,000</b>					

## Hatchery Releases Next Two Weeks

Hatchery Release Summary  
From: 8/4/2018 to 8/17/2018

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone

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
07/20/2018	126.4	0.1	131.7	0.0	135.3	14.9	128.5	12.2	133.3	27.2	134.2	19.7	128.3	18.1
07/21/2018	115.8	0.1	112.0	0.0	117.2	13.3	118.9	9.0	126.9	23.5	138.7	19.9	134.8	19.0
07/22/2018	121.7	0.1	123.9	0.0	126.4	20.4	117.9	9.3	123.0	22.0	110.3	21.6	105.2	23.1
07/23/2018	120.0	0.2	123.4	0.0	138.7	10.2	138.1	13.3	144.8	26.4	150.7	33.5	148.2	34.7
07/24/2018	119.7	0.0	114.8	0.0	112.6	12.7	114.5	12.2	118.9	25.7	140.8	28.4	140.2	23.6
07/25/2018	123.2	0.1	113.9	0.0	111.1	13.0	119.0	12.2	122.4	26.6	136.4	22.4	131.9	19.1
07/26/2018	124.8	0.1	128.7	0.0	132.7	15.5	124.3	12.3	129.8	26.6	127.0	18.7	123.8	20.4
07/27/2018	119.4	0.1	123.9	0.0	129.4	12.5	128.6	12.3	132.3	27.2	136.0	18.9	132.9	19.8
07/28/2018	130.3	0.1	118.0	0.0	118.6	18.3	114.2	9.1	115.9	24.8	132.1	18.6	128.4	18.9
07/29/2018	103.7	0.1	105.7	0.0	113.7	10.0	116.5	9.1	123.8	21.0	141.0	18.7	135.4	19.0
07/30/2018	136.3	0.1	128.6	0.0	133.2	12.9	123.8	12.1	126.0	27.2	133.6	17.5	128.4	19.6
07/31/2018	121.2	0.1	127.5	0.0	128.1	16.1	128.4	12.2	133.3	25.7	127.4	18.4	125.7	19.9
08/01/2018	86.5	0.1	88.3	0.0	89.2	8.9	95.0	6.5	100.3	16.7	121.2	18.6	117.3	19.8
08/02/2018	79.4	0.1	75.2	0.0	76.2	10.2	74.3	6.4	76.8	17.0	82.8	17.7	83.1	19.3

**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
07/20/2018	10.6	1.0	---	---	34.6	17.7	32.7	9.8	32.4	17.1	36.2	26.2
07/21/2018	10.6	0.9	---	---	32.3	17.7	31.4	9.4	32.1	16.6	33.3	23.3
07/22/2018	11.8	2.1	---	---	30.5	17.7	29.1	10.3	30.5	17.1	33.2	23.3
07/23/2018	13.0	3.2	---	---	32.4	17.8	31.8	11.1	33.6	16.6	35.1	25.2
07/24/2018	7.4	2.2	---	---	33.7	16.2	33.1	11.1	34.6	17.1	35.2	25.6
07/25/2018	12.9	3.1	---	---	34.4	15.6	35.3	10.7	35.3	14.2	36.8	26.8
07/26/2018	12.0	3.9	---	---	33.0	17.3	31.9	9.5	32.5	16.0	35.1	24.9
07/27/2018	11.0	2.8	---	---	34.7	17.3	35.2	10.6	37.0	15.8	39.9	29.9
07/28/2018	13.1	3.3	---	---	34.2	17.3	31.8	9.6	30.1	16.3	30.5	20.4
07/29/2018	13.0	3.2	---	---	31.8	17.3	36.1	10.4	34.9	16.7	38.0	28.0
07/30/2018	11.4	2.8	---	---	31.7	17.3	31.3	9.3	30.2	16.7	30.3	20.6
07/31/2018	12.9	3.1	---	---	33.4	17.3	35.2	10.6	35.9	16.3	38.0	28.1
08/01/2018	12.9	3.0	---	---	35.8	17.6	35.3	10.6	34.8	17.0	36.9	26.9
08/02/2018	12.9	3.0	---	---	32.1	17.8	30.1	9.0	29.6	16.6	31.6	21.9

**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
07/20/2018	172.7	86.5	159.2	61.3	142.3	56.9	148.6	90.4	0.0	45.8
07/21/2018	174.0	87.3	178.8	53.6	167.9	67.0	180.9	94.7	0.0	73.8
07/22/2018	160.9	80.7	138.9	41.5	125.6	50.5	154.9	99.0	0.0	43.5
07/23/2018	171.7	86.2	171.9	51.1	162.5	64.6	167.7	93.7	11.6	50.0
07/24/2018	200.0	100.4	191.8	57.9	177.7	71.2	191.1	90.1	28.0	60.6
07/25/2018	167.3	84.3	151.5	45.6	140.9	56.3	168.2	94.5	8.3	53.0
07/26/2018	174.1	87.2	168.8	50.6	150.7	60.4	166.5	100.1	5.5	48.4
07/27/2018	183.6	91.9	169.4	50.6	159.6	63.9	164.3	96.1	5.8	50.0
07/28/2018	171.9	85.8	159.6	48.0	144.1	57.8	162.4	90.7	5.1	54.2
07/29/2018	173.0	86.6	168.5	50.6	155.9	62.4	175.4	94.4	1.5	67.1
07/30/2018	185.3	92.7	181.1	54.4	166.1	67.0	173.6	100.0	0.0	61.2
07/31/2018	180.3	90.1	169.2	51.1	157.6	62.5	162.8	95.9	0.1	54.4
08/01/2018	151.5	75.9	139.0	41.7	127.0	50.5	146.6	88.5	0.0	45.7
08/02/2018	149.9	75.0	134.2	40.0	121.3	48.5	132.0	87.5	0.0	32.1



## 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
<b>Lower Granite Dam</b>										
<b>Little Goose Dam</b>										
	07/23/18 Chinook + Steelhead	80*	0	0			0	0	0	0
<b>Lower Monumental Dam</b>										
	07/25/18 Chinook + Steelhead	33*	0	0			0	0	0	0
<b>McNary Dam</b>										
	07/29/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Bonneville Dam</b>										
	07/21/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	07/24/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	08/01/18 Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Rock Island Dam</b>										
	07/24/18 Chinook + Steelhead	100	3	3	3.00%	0.00%	3	0	0	0
	07/27/18 Chinook + Steelhead	100	3	3	3.00%	0.00%	3	0	0	0
	07/31/18 Chinook + Steelhead	89*	5	5			5	0	0	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.

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 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	
07/20									109.2	109.8	109.7	24	109.1	109.5	110.3	24	108.8	109.3	109.8	24	108.5	109.1	109.4	24	07/20
07/21									109.1	109.5	109.5	24	108.8	109.3	109.9	24	108.6	109.2	109.4	24	108.3	109.1	109.5	24	07/21
07/22									108.6	109.0	108.9	24	108.1	108.4	108.6	24	108.2	108.9	108.8	24	107.7	108.5	108.4	24	07/22
07/23									108.6	108.8	109.1	24	108.0	108.4	109.7	24	108.6	109.3	109.8	24	108.4	108.8	109.2	24	07/23
07/24									108.8	109.0	109.2	24	108.2	108.5	110.4	24	108.8	109.3	109.8	24	108.4	108.9	109.2	24	07/24
07/25									108.2	108.7	108.7	24	108.0	108.7	111.0	24	108.5	109.2	109.3	24	108.0	108.7	108.7	24	07/25
07/26									108.3	108.5	108.8	23	107.7	108.2	109.4	23	108.3	108.8	109.0	23	107.8	108.3	108.6	23	07/26
07/27									108.3	108.6	108.8	24	107.8	108.1	109.3	24	108.3	108.6	109.0	24	107.9	108.4	108.9	24	07/27
07/28									108.2	108.5	108.6	24	107.6	108.1	109.0	24	107.9	108.3	108.7	24	107.5	108.0	108.4	24	07/28
07/29									107.6	108.2	108.0	24	107.3	107.8	108.8	24	107.3	108.1	108.3	17	107.0	107.5	107.5	17	07/29
07/30									107.6	107.9	108.1	24	106.9	107.1	107.7	24	107.8	108.3	108.7	24	107.2	107.7	108.1	24	07/30
07/31									108.0	108.2	108.5	24	107.2	107.6	108.9	24	107.9	108.5	108.7	24	107.7	108.3	108.7	24	07/31
08/01									108.0	108.2	108.6	24	107.9	108.4	109.4	24	107.9	108.4	109.1	24	107.7	108.1	108.5	24	08/01
08/02									108.0	108.3	108.4	23	108.4	109.2	110.9	23	107.3	108.1	107.8	23	107.1	107.5	107.6	23	08/02

**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	
07/20	108.7	109.6	109.9	24	111.2	112.6	113.7	24	110.3	111.2	111.1	23	114.0	114.5	114.7	20	110.2	111.4	111.8	23	115.4	116.6	116.6	20	07/20
07/21	108.8	109.5	109.9	24	110.8	111.8	114.3	24	109.5	110.1	110.2	24	112.9	114.2	114.2	23	109.8	111.0	110.6	24	114.9	116.2	116.0	21	07/21
07/22	108.7	109.6	110.4	24	112.1	113.5	115.8	24	110.1	110.3	110.5	24	112.8	114.1	114.4	20	109.7	110.8	112.0	21	114.9	115.4	116.4	20	07/22
07/23	109.3	109.8	110.2	23	110.8	113.4	112.0	23	111.2	112.1	112.7	23	114.3	115.1	115.7	20	110.8	111.9	112.8	20	115.8	117.1	117.6	20	07/23
07/24	109.7	110.5	111.2	24	111.8	113.1	114.2	24	113.0	113.3	113.9	24	114.7	115.4	116.5	22	112.5	113.4	114.2	24	116.8	117.2	117.6	22	07/24
07/25	109.6	110.5	111.3	24	112.1	113.4	116.5	24	110.8	112.8	111.6	23	114.2	115.3	115.8	22	111.6	113.4	113.0	24	116.3	117.3	117.3	21	07/25
07/26	109.3	110.1	110.3	22	112.3	113.9	119.6	22	111.7	112.3	112.6	23	114.9	116.0	116.4	23	111.5	112.6	113.5	23	116.0	116.8	117.6	19	07/26
07/27	109.1	109.5	110.1	24	111.4	114.1	113.9	24	112.2	112.7	113.1	23	115.4	116.2	116.5	21	112.3	113.0	113.6	23	116.7	117.1	117.6	21	07/27
07/28	109.0	109.6	110.5	24	112.0	113.9	117.6	24	112.0	112.8	113.4	23	114.6	116.2	116.9	22	111.7	113.0	113.4	22	116.4	117.2	117.6	22	07/28
07/29	108.6	109.2	109.8	22	110.4	113.9	112.2	22	110.9	112.6	111.9	24	113.9	115.9	115.9	23	111.2	112.3	113.0	23	115.5	116.2	116.8	23	07/29
07/30	108.4	109.3	109.8	24	110.8	112.0	113.3	24	112.0	113.1	114.0	23	115.0	116.4	116.9	21	111.4	112.4	113.9	23	115.8	116.3	117.5	21	07/30
07/31	108.8	109.4	110.1	24	111.5	113.1	115.3	24	111.1	113.0	111.9	24	114.9	116.4	115.9	20	112.2	113.3	113.7	23	116.4	117.0	117.3	20	07/31
08/01	108.6	109.4	110.0	24	110.3	113.0	111.2	24	111.3	111.6	112.1	23	112.8	115.3	114.7	22	110.6	112.0	111.3	22	115.0	116.4	118.0	20	08/01
08/02	108.0	109.0	108.7	23	110.2	110.4	111.0	23	110.9	111.4	111.8	22	111.6	113.2	112.7	21	110.0	111.0	110.9	23	115.0	115.4	116.6	22	08/02

FISH PASSAGE CENTER

**Total Dissolved Gas Saturation(%) - Average of  
12 Highest Hours, 24 Hours Average and 24 Hours High  
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**Total Dissolved Gas Data at Upper and Mid-Columbia Sites**

Date	Wanapum				Wanapum Tlwr				Priest Rapids				Priest R. Dnstr				Pasco				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	
07/20	110.1	111.8	112.5	24	112.0	113.1	113.2	24	108.9	111.3	110.6	24				0					07/20
07/21	110.5	111.4	113.2	24	112.1	112.6	113.4	24	109.5	110.1	111.0	24				0					07/21
07/22	111.8	113.4	113.9	24	113.6	113.9	115.1	24	110.5	111.2	112.1	24				0					07/22
07/23	113.6	114.4	115.1	24	113.9	114.4	116.5	24	113.3	113.4	113.7	24				0					07/23
07/24	114.1	115.3	117.1	24	113.9	114.6	115.9	24	113.0	113.5	113.5	24	112.5	112.6	112.6	2					07/24
07/25	114.0	115.9	117.7	24	113.4	114.2	114.0	24	112.8	113.2	113.3	24	112.4	112.6	112.8	24					07/25
07/26	114.3	115.7	117.0	24	114.0	114.5	114.8	24	112.4	112.9	113.2	24	112.3	112.6	113.0	24					07/26
07/27	115.8	117.1	117.7	24	114.7	114.9	115.4	24	113.3	113.7	114.3	24	113.2	113.6	113.9	24					07/27
07/28	116.1	117.1	118.0	24	114.6	115.0	115.5	24	113.8	114.1	114.2	24	113.2	113.6	114.1	24					07/28
07/29	115.9	117.1	117.5	24	114.5	114.8	115.1	24	113.4	114.0	114.1	24	113.0	113.5	113.7	24					07/29
07/30	115.8	116.7	118.1	24	114.4	114.6	114.8	24	113.9	114.1	114.4	24	113.6	113.9	114.1	24					07/30
07/31	116.1	117.4	118.3	24	114.6	114.8	115.7	24	114.3	114.4	114.8	24	113.8	114.0	114.3	24					07/31
08/01	111.3	116.3	113.1	24	112.9	114.5	114.6	24	112.2	114.3	113.4	24	112.3	113.9	113.0	24					08/01
08/02	109.9	111.4	111.0	24	112.4	112.9	113.4	24	109.4	111.9	110.6	24	110.8	112.2	112.2	24					08/02

**Total Dissolved Gas Data at Snake and Clearwater Sites**

Date	Dworshak				Clrwr Peck				Anatone				Clrwr-Lewiston				Lower Granite				Lower G. 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	
07/20	102.4	105.3	103.1	24	103.9	106.9	105.9	24	101.9	103.3	104.4	24	104.7	108.4	108.8	24	102.9	103.1	103.2	24	115.6	115.9	116.5	24	07/20
07/21	102.1	102.5	102.8	24	103.5	104.8	105.6	24	101.5	102.9	104.2	24	104.1	106.6	108.5	24	102.9	103.1	103.3	24	115.7	115.9	116.8	24	07/21
07/22	105.1	108.8	109.2	24	105.0	107.8	109.4	24	101.7	103.3	104.7	24	104.0	106.6	108.3	24	103.4	103.4	103.6	24	116.1	116.4	116.6	24	07/22
07/23	108.8	109.2	109.5	24	107.9	109.1	109.9	24	102.2	103.8	105.2	24	105.9	108.5	110.2	24	103.0	103.4	103.4	24	115.8	116.2	116.3	24	07/23
07/24	110.1	113.5	124.5	24	107.5	109.9	112.7	24	102.2	103.6	104.9	24	106.1	108.7	110.7	24	102.3	103.1	102.6	24	115.1	116.0	116.3	24	07/24
07/25	108.3	108.9	109.3	24	107.2	108.7	109.6	24	102.1	103.6	105.1	24	105.1	108.2	109.8	24	101.0	102.1	101.6	24	114.0	114.9	116.1	24	07/25
07/26	111.5	114.8	124.2	24	109.6	112.5	117.5	24	102.2	103.8	105.2	24	106.0	108.4	110.1	24	101.3	101.9	102.6	24	115.3	115.4	116.6	24	07/26
07/27	108.6	114.6	113.9	24	107.3	112.3	109.1	24	102.3	103.7	105.1	24	106.3	108.2	109.9	24	103.4	103.7	104.1	24	115.4	115.7	116.6	24	07/27
07/28	109.1	109.3	109.6	24	107.9	108.9	109.7	24	102.2	103.6	105.0	24	105.8	108.2	109.9	24	103.2	103.7	103.4	24	115.3	115.6	116.4	24	07/28
07/29	108.8	109.1	109.3	24	107.5	108.5	109.2	24	102.0	103.5	104.8	24	105.9	108.2	110.0	24	102.4	103.1	102.7	24	115.4	115.6	116.0	24	07/29
07/30	108.6	109.2	110.2	24	106.8	108.1	109.3	24	102.2	103.8	105.3	24	106.0	108.5	110.3	24	102.5	102.7	102.9	24	115.7	116.0	116.6	24	07/30
07/31	108.9	109.1	109.3	24	107.1	107.8	108.3	24	101.9	103.4	103.6	24	105.2	108.1	108.6	24	102.6	102.7	102.9	24	115.7	116.0	117.5	24	07/31
08/01	109.0	109.3	109.6	24	106.8	107.8	108.5	24	102.0	103.4	104.7	24	106.0	108.3	110.1	24	102.5	102.8	102.9	24	115.6	116.0	117.0	24	08/01
08/02	108.9	109.2	109.5	23	106.6	107.6	108.5	23	101.9	103.3	104.6	23	105.7	108.2	109.8	23	102.9	103.1	103.4	23	115.6	115.9	116.4	23	08/02

FISH PASSAGE CENTER

**Total Dissolved Gas Saturation(%) - Average of  
12 Highest Hours, 24 Hours Average and 24 Hours High  
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**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
07/20	109.4	110.6	110.2	24	113.6	115.7	114.2	24	111.0	112.5	111.8	24	114.8	115.6	116.5	24	111.2	112.2	112.3	24	112.0	112.9	113.9	24	07/20
07/21	108.8	109.6	109.4	24	113.9	114.2	114.4	24	110.1	110.9	110.7	24	116.2	116.5	117.2	24	110.4	110.8	111.1	24	111.6	112.4	112.9	24	07/21
07/22	108.6	108.9	109.1	24	114.2	114.8	115.3	24	109.4	110.0	109.8	24	116.4	116.8	117.1	24	110.5	110.6	110.9	24	111.3	111.9	112.5	24	07/22
07/23	109.3	109.4	109.7	24	114.4	114.7	115.1	24	109.6	109.9	110.3	24	115.8	116.5	117.0	24	110.3	110.7	111.2	24	111.6	112.5	113.2	24	07/23
07/24	109.7	109.9	110.2	24	114.3	114.5	114.9	24	110.1	110.4	111.8	24	116.1	116.5	117.2	24	110.6	110.8	111.1	24	111.8	112.5	113.3	24	07/24
07/25	109.6	109.9	110.5	24	114.0	114.5	115.0	24	110.6	111.0	111.8	24	114.9	116.3	116.8	24	112.1	113.1	114.1	23	111.9	112.6	112.8	20	07/25
07/26	110.0	110.1	111.0	24	112.2	113.9	114.0	24	112.0	112.3	112.8	24	117.5	118.8	120.5	24	114.6	114.8	115.4	24	112.8	113.1	113.6	24	07/26
07/27	110.9	111.3	112.4	24	112.5	113.9	114.2	24	112.4	112.6	113.0	24	115.9	117.9	117.4	24	115.1	115.2	115.7	24	113.1	113.7	114.6	24	07/27
07/28	111.9	112.1	112.4	24	111.5	113.9	114.3	24	112.3	112.5	112.8	24	116.1	116.7	117.0	24	114.7	115.2	115.1	24	113.3	113.9	114.3	24	07/28
07/29	111.3	112.1	111.6	24	110.1	110.6	110.8	24	111.9	112.4	112.3	24	115.9	116.6	116.5	24	114.0	114.5	114.2	24	112.9	113.5	114.1	24	07/29
07/30	111.3	111.5	112.0	24	110.0	110.5	110.8	24	111.7	111.9	112.1	24	116.1	116.6	117.0	24	114.5	114.9	115.2	24	113.3	114.0	114.5	24	07/30
07/31	111.6	111.9	112.5	24	111.2	112.4	113.9	24	111.5	111.9	111.8	24	115.9	116.6	116.8	24	114.8	115.0	115.2	24	113.4	114.0	114.6	24	07/31
08/01	111.8	111.9	112.5	24	112.1	113.6	113.8	24	110.6	111.7	111.4	24	116.1	116.6	117.1	24	114.4	115.0	115.0	24	113.5	114.1	114.6	24	08/01
08/02	111.7	112.2	112.7	23	114.1	114.5	115.0	23	109.7	110.5	110.2	23	116.0	116.5	116.9	23	114.0	114.6	114.6	23	113.0	113.8	114.3	23	08/02

**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
07/20	106.4	107.8	107.5	24	114.5	115.6	116.1	24	105.9	107.2	106.4	24	113.7	114.0	114.8	24	105.9	106.6	106.2	24	111.6	112.1	112.5	24	07/20
07/21	107.0	107.8	108.5	24	115.1	115.7	115.7	24	105.1	106.0	105.7	24	114.1	115.0	115.2	24	106.9	107.4	107.7	24	112.3	112.9	113.2	24	07/21
07/22	106.3	106.9	107.7	24	114.4	115.0	115.5	24	104.2	105.0	104.8	24	113.6	114.2	114.6	24	107.5	107.6	107.8	24	112.7	113.7	114.1	24	07/22
07/23	107.2	107.9	108.8	24	115.0	116.5	117.0	24	104.8	104.8	105.3	24	113.3	114.1	114.8	24	108.7	109.3	109.9	24	113.8	115.2	116.1	24	07/23
07/24	107.8	108.3	109.4	24	115.9	117.4	118.7	24	104.6	105.0	105.5	24	113.6	114.3	114.6	24	108.2	109.3	109.4	24	113.8	115.3	115.2	24	07/24
07/25	108.6	108.8	109.3	24	114.5	116.7	116.0	24	105.0	105.6	106.2	24	113.4	114.4	114.8	24	107.4	107.6	107.8	24	113.2	114.3	114.4	24	07/25
07/26	110.1	111.0	111.7	23	115.4	115.9	117.0	23	106.1	107.2	108.0	23	114.2	115.1	115.6	23	107.9	108.2	108.5	23	113.5	114.4	114.8	23	07/26
07/27	111.5	111.9	112.5	24	115.9	117.2	118.0	24	107.3	108.1	108.5	24	113.9	114.3	115.4	24	108.0	108.2	108.4	24	113.7	114.2	115.1	24	07/27
07/28	111.1	112.0	112.0	24	115.3	116.9	116.9	24	107.8	108.6	109.1	24	114.2	114.7	115.3	24	108.0	108.2	108.3	24	113.3	114.2	114.1	24	07/28
07/29	110.5	110.9	113.0	24	115.2	116.3	117.0	24	108.1	108.9	109.3	24	114.2	114.6	115.1	24	109.1	109.9	110.5	24	113.8	114.7	115.2	24	07/29
07/30	109.8	110.8	111.9	24	116.0	116.8	117.7	24	109.4	109.9	111.3	24	114.4	114.8	115.4	24	111.0	111.2	111.6	24	115.2	115.8	116.1	24	07/30
07/31	109.7	110.8	110.8	24	115.6	116.5	116.9	24	109.5	110.2	110.4	24	114.0	114.4	114.7	24	109.3	111.1	111.0	24	114.1	115.7	115.0	24	07/31
08/01	110.1	110.2	110.5	24	114.3	116.2	115.1	24	108.2	109.3	109.5	24	113.7	114.3	114.8	24	107.2	108.1	107.6	24	112.4	113.5	113.2	24	08/01
08/02	108.7	110.1	109.8	23	114.3	114.9	115.0	23	107.3	108.7	108.0	23	113.5	113.9	113.8	23	106.1	107.0	106.5	23	111.4	112.4	112.2	23	08/02

FISH PASSAGE CENTER

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

[INTERNAL PURPOSES ONLY]

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**Total Dissolved Gas Data at Mid-Columbia Sites**

Date	Bonneville				Warrendale				Camas\Washug.				Cascade Islid.				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	
07/20	104.8	106.1	105.2	24	114.6	115.2	115.6	24	110.1	111.7	113.0	24	114.8	116.2	116.6	24	07/20
07/21	104.6	105.0	105.4	24	114.1	115.2	116.6	24	111.7	113.1	114.8	24	115.0	115.6	116.8	24	07/21
07/22	106.6	107.6	108.3	24	116.7	117.1	117.9	24	111.9	114.7	116.5	24	117.0	117.1	117.3	24	07/22
07/23	110.4	111.9	112.8	24	116.7	117.4	117.7	24	115.4	117.2	118.1	24	116.9	117.2	117.4	24	07/23
07/24	111.6	112.1	112.2	24	115.3	116.8	116.1	24	115.0	117.3	116.5	24	115.5	116.6	117.8	24	07/24
07/25	111.2	111.8	112.2	24	116.0	116.1	116.7	24	114.0	115.7	116.8	24	115.4	116.4	117.8	24	07/25
07/26	110.4	111.6	111.5	23	117.1	117.6	118.2	23	115.1	117.2	118.9	23	116.5	116.8	117.1	23	07/26
07/27	109.7	110.9	110.3	24	115.6	116.5	116.8	24	114.4	117.4	115.9	24	116.4	116.5	117.0	24	07/27
07/28	108.6	109.9	109.2	24	115.4	116.3	116.2	24	113.9	115.2	115.8	24	115.3	116.8	117.2	24	07/28
07/29	109.2	110.3	111.0	24	116.4	117.4	118.6	24	114.9	117.3	119.5	24	115.4	116.0	117.7	24	07/29
07/30	111.4	111.9	112.3	24	116.8	117.2	118.1	24	114.2	117.5	117.6	24	116.7	117.0	117.8	24	07/30
07/31	109.7	111.7	110.9	24	116.0	116.8	117.4	24	113.8	116.2	115.4	24	116.7	116.9	117.3	24	07/31
08/01	107.5	109.1	108.3	24	115.3	116.7	116.6	24	112.9	114.5	114.7	24	115.1	117.0	117.2	24	08/01
08/02	105.4	107.5	107.0	23	115.1	115.8	115.9	23	111.3	114.0	113.0	23	114.3	115.2	116.5	23	08/02

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

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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)
07/20/2018					0	0	0	0	0		0
07/21/2018					0	0	0	0		0	0
07/22/2018					0	0	0	0	0		0
07/23/2018					0	0	0	0		0	0
07/24/2018					0	0	0	0	0		0
07/25/2018					0	0	0	0			0
07/26/2018					0	0	7	0	0		
07/27/2018					0	0	0	0		0	0
07/28/2018					0	0	0	0	0		
07/29/2018					0	0	0	0			0
07/30/2018					0	0	0	0	0		
07/31/2018					0	0	0	0		0	0
08/01/2018					0	0	0	0	0		
08/02/2018					0	0	0	0			0
08/03/2018											
Total:	0	0	0	0	0	0	7	0	0	0	0
# Days:	0	0	0	0	14	14	14	14	7	4	10
Average:	0	0	0	0	0	0	1	0	0	0	0
YTD:	23,452	41,213	21,824	12,792	4,639,013	2,838,048	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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## Smolt Monitoring Program Two Week Passage Index Report

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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)
07/20/2018					415	2,793	3,280	479	47,114		156,367
07/21/2018					575	1,731	959	434		38,546	19,795
07/22/2018					1,991	1,076	972	270	22,740		74,758
07/23/2018					1,500	1,283	553	240		20,188	12,168
07/24/2018					4,253	1,363	875	507	19,369		27,600
07/25/2018					2,491	2,756	632	232			29,057
07/26/2018					1,489	2,177	1,893	192	26,094		
07/27/2018					2,150	1,902	1,571	246		3,149	29,067
07/28/2018					1,367	1,567	573	198	13,960		
07/29/2018					1,774	530	340	264			15,375
07/30/2018					1,541	689	288	277	7,192		
07/31/2018					1,973	450	235	136		2,079	7,206
08/01/2018					3,180	630	126	87	6,165		
08/02/2018					1,867	504	56	94			4,952
08/03/2018											
Total:	0	0	0	0	26,566	19,451	12,353	3,656	142,634	63,962	376,345
# Days:	0	0	0	0	14	14	14	14	7	4	10
Average:	0	0	0	0	1,898	1,389	882	261	20,376	15,991	37,635
YTD:	0	6	89	192	853,388	928,541	505,912	35,195	2,278,953	1,066,067	2,870,674

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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## Smolt Monitoring Program Two Week Passage Index Report

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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)
07/20/2018					0	0	0	0	0		0
07/21/2018					0	14	0	4		0	0
07/22/2018					5	14	0	3	0		0
07/23/2018					0	0	0	1		0	0
07/24/2018					0	0	0	3	0		0
07/25/2018					7	0	0	0			0
07/26/2018					0	0	0	2	0		0
07/27/2018					0	0	0	2		7	0
07/28/2018					0	0	0	1	0		0
07/29/2018					0	7	0	0			0
07/30/2018					0	0	0	0	0		0
07/31/2018					0	0	0	0		0	0
08/01/2018					0	6	0	0	0		0
08/02/2018					0	0	0	2			0
08/03/2018											
<b>Total:</b>	0	0	0	0	12	41	0	18	0	7	0
<b># Days:</b>	0	0	0	0	14	14	14	14	7	4	10
<b>Average:</b>	0	0	0	0	1	3	0	1	0	2	0
<b>YTD:</b>	0	0	1,224	1,365	262,500	215,260	42,470	44,204	226,511	120,100	477,464

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 STEELHEAD

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (Index)	LGS (Index)	LMN (Index)	RIS (Index)	MCN (Index)	JDA (Index)	BO2 (Index)
07/20/2018					0	0	0	0	0		0
07/21/2018					10	0	0	1		0	0
07/22/2018					0	0	12	1	0		0
07/23/2018					0	0	0	0		0	0
07/24/2018					0	0	10	0	0		0
07/25/2018					0	0	9	0			0
07/26/2018					0	7	7	0	0		
07/27/2018					0	0	0	0		0	0
07/28/2018					0	0	8	0	0		
07/29/2018					0	0	0	0			0
07/30/2018					0	14	0	0	0		
07/31/2018					0	0	0	0		0	0
08/01/2018					0	6	0	0	0		
08/02/2018					0	0	0	0			0
08/03/2018											
Total:	0	0	0	0	10	27	46	2	0	0	0
# Days:	0	0	0	0	14	14	14	14	7	4	10
Average:	0	0	0	0	1	2	3	0	0	0	0
YTD:	723	27,448	3,888	5,328	3,924,731	3,004,294	1,942,805	24,913	240,968	681,267	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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## 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)
07/20/2018					0	0	0	0	0		0
07/21/2018					0	0	0	0		0	0
07/22/2018					0	14	0	0	0		0
07/23/2018					0	0	0	0		0	0
07/24/2018					0	0	0	2	0		0
07/25/2018					0	0	9	0			0
07/26/2018					0	0	0	2	0		
07/27/2018					0	0	0	2		0	0
07/28/2018					0	0	0	0	0		
07/29/2018					0	0	0	0			0
07/30/2018					0	0	0	2	0		
07/31/2018					0	0	0	0		0	0
08/01/2018					0	0	0	0	0		
08/02/2018					0	0	0	2			0
08/03/2018											
Total:	0	0	0	0	0	14	9	10	0	0	0
# Days:	0	0	0	0	0	1	1	1	0	0	0
Average:	0	0	0	0	0	1	1	1	0	0	0
YTD:	0	0	4	115	260,629	120,859	58,625	76,235	1,527,701	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
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## 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)
07/20/2018					0	0	0	0	0		143
07/21/2018					0	0	0	0		300	0
07/22/2018					0	0	0	0	0		0
07/23/2018					0	5	0	0		0	0
07/24/2018					0	8	0	0	0		50
07/25/2018					3	8	10	0			100
07/26/2018					1	0	4	0	0		
07/27/2018					0	5	0	0		0	33
07/28/2018					1	0	4	0	0		
07/29/2018					7	20	0	0			0
07/30/2018					3	0	0	0	0		
07/31/2018					1	0	0	0		0	0
08/01/2018					5	4	0	0	20		
08/02/2018					1	10	0	0			10
08/03/2018											
Total:	0	0	0	0	22	60	18	0	20	300	336
# Days:	0	0	0	0	15	15	14	14	7	4	10
Average:	0	0	0	0	1	4	1	0	3	75	34
YTD:		1	3		468	35,789	56,788	368	219,182	227,728	27,303

- 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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## 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:**



**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

### 7/20/2018 12:00:00 AM TO 8/3/2018 12:00:00 AM

Date 8/3/2018 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	12,485	0	6	0	5	12,501
Sum of Number Barged	12,361	0	6	0	5	12,377
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	65	0	0	0	0	65
Sum of Facility Morts	59	0	0	0	0	59
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	124	0	0	0	0	124

#### Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	13,309	0	29	10	19	13,386
Sum of Number Barged	13,149	0	26	7	19	13,220
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	31	0	0	1	0	32
Sum of Facility Morts	129	0	3	2	0	134
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	160	0	3	3	0	166

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## Two Week Transportation Summary Report 7/20/2018 12:00:00 AM TO 8/3/2018 12:00:00 AM

Date 8/3/2018 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	6,182	4	0	5	23	6,237
Sum of Number Barged	6,157	4	0	5	23	6,212
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	4	0	0	0	0	4
Sum of Facility Morts	21	0	0	0	0	21
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	25	0	0	0	0	25

### Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	31,976	4	35	15	47	32,124
Sum of Number Barged	31,667	4	32	12	47	31,809
Sum of Number Bypassed	0	0	0	0	0	0
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	100	0	0	1	0	101
Sum of Facility Morts	209	0	3	2	0	214
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	309	0	3	3	0	315

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### Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	520789	3041143	182812	188701	2522928	8979301
Sum of Number Barged	505014	2429167	179209	184065	1811307	6920069
Sum of Number Bypassed	14636	610813	3539	4465	711353	2056159
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	190	58	0	9	44	345
Sum of Facility Morts	924	1063	64	162	189	2591
Sum of Reseach Morts	25	42	0	0	35	137
Sum of Total Project Mort	1139	1163	64	171	268	3073

### Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	560285	1857031	137094	74669	1969509	6568097
Sum of Number Barged	555315	1546147	136372	66134	1357446	5018860
Sum of Number Bypassed	854	306206	407	7716	611659	1538501
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	125	40	3	13	14	209
Sum of Facility Morts	3991	4638	312	806	390	10527
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	4116	4678	315	819	404	10736

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### Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	304130	1218103	24940	35305	1178560	3939598
Sum of Number Barged	303901	1018208	24837	33659	926245	3233095
Sum of Number Bypassed	0	199433	100	1598	252167	705465
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	13	7	0	3	7	37
Sum of Facility Morts	216	455	3	45	141	1001
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	229	462	3	48	148	1038

### Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	1385204	6116277	344846	298675	5670997	19486996
Sum of Number Barged	1364230	4993522	340418	283858	4094998	15172024
Sum of Number Bypassed	15490	1116452	4046	13779	1575179	4300125
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	328	105	3	25	65	591
Sum of Facility Morts	5131	6156	379	1013	720	14119
Sum of Reseach Morts	25	42	0	0	35	137
Sum of Total Project Mort	5484	6303	382	1038	820	14847



**Cumulative Adult Passage at Mainstem Dams Through: 08/02**

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	08/02	87894	6456	83624	18110	152393	25835	61057	4349	88044	10648	101791	21805	418	77	847	89	931	219
TDA	08/02	57935	4793	58310	12497	119227	21697	49180	3758	69048	9240	84202	17470	0	0	0	0	0	0
JDA	08/02	50572	5053	46675	12475	103731	20380	42592	4232	60039	7284	74609	16523	0	0	0	0	0	0
MCN	08/02	44427	3472	44292	7020	94405	16297	42049	2416	56466	4591	69575	12068	0	0	0	0	0	0
IHR	08/02	32600	2197	28306	6949	68113	11204	5902	509	9115	2065	18573	4756	0	0	0	0	0	0
LMN	08/01	35398	3020	28545	8270	68100	11017	5873	673	8009	3318	19028	5871	0	0	0	0	1	0
LGS	08/02	31834	2486	26598	8335	63992	12109	7208	575	8918	3696	18631	6298	0	0	0	0	0	0
LGR	08/02	31161	2948	27357	8256	62850	13009	6962	789	8624	3565	16677	6667	0	0	0	0	0	0
PRD	08/01	7067	949	7268	783	18018	1858	38554	2011	50954	1450	55714	2224	0	0	0	0	0	0
WAN	08/01	8071	964	6612	484	17542	2163	36174	1164	47296	1134	52383	1822	0	0	0	0	0	0
RIS	08/01	7894	997	8080	564	18255	2598	36629	1234	52864	951	53363	3742	0	0	0	0	0	0
RRH	08/01	5919	807	5864	406	8195	1153	30333	770	39098	647	40746	2459	0	0	0	0	0	0
WEL	08/01	7500	976	6589	820	8670	1609	18887	773	26280	716	29568	2205	0	0	0	0	0	0
WFA	07/31	24508	1996	34103	2426	35585	1650	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		
		Adult	Jack	Adult	Jack	Adult	Jack	2018	2017	Avg.	2018	2017	Avg.	2018	2017	Avg.	2018	2017	Avg.	2018
BON	08/02	3	1	0	0	0	0	193565	87494	321548	37113	25331	107464	16644	12468	48802	37768	73060	24343	
TDA	08/02	4	0	0	0	0	0	151789	63788	273190	12266	7349	55986	5878	3913	27353	8549	24759	6577	
JDA	08/02	0	0	0	0	0	1	168167	65783	264055	7258	4106	39098	4190	2755	18346	6758	17482	4657	
MCN	08/02	-4	0	0	0	1	0	155229	57903	229745	6027	4806	26909	3207	2146	11530	1111	1469	590	
IHR	08/02	-1	0	0	0	0	0	648	389	949	3453	2075	15587	1431	1066	5234	726	800	222	
LMN	08/01	0	0	0	0	0	0	369	345	1104	3407	2334	16860	1493	1249	6060	287	206	49	
LGS	08/02	0	0	0	0	0	0	256	285	1026	2438	1924	9510	982	946	4379	107	334	49	
LGR	08/02	0	0	0	0	0	0	262	225	1043	5677	7621	12189	1886	3265	5164	131	193	20	
PRD	08/01	0	0	0	0	0	0	189204	66499	269642	932	466	2639	0	0	0	6311	11063	2157	
WAN	08/01	0	0	0	0	0	0	195385	75733	239964	840	362	2553	0	0	0	3108	7499	1293	
RIS	08/01	0	0	0	0	0	0	170680	72683	261256	748	349	1742	432	201	908	1565	3045	416	
RRH	08/01	0	0	0	0	0	0	161130	46199	217765	478	245	1307	251	88	655	1493	2325	322	
WEL	08/01	0	0	0	0	0	0	151339	41636	205201	394	158	592	183	94	297	146	14	0	
WFA	07/31	0	2	117	117	0	0	0	0	0	10449	2677	20317	2113	741	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.

