



# Fish Passage Center

## Weekly Report #16-6

April 22, 2016

### Summary of Events

#### Water Supply

Precipitation throughout the Columbia Basin has varied between 32% and 102% of average at individual sub-basins over April. Precipitation above The Dalles has been 52% of average over April. Over the 2016 water year, precipitation has ranged between 89% and 113% of average.

**Table 1.** Summary of April precipitation and cumulative October through April 20 precipitation with respect to average (1971–2000) at select locations within the Columbia and Snake River Basins.

Location	Water Year 2016		Water Year 2016	
	April 1–20, 2016		October 1, 2015 to April 20, 2016	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia above Coulee	0.77	43	25.3	103
Snake River above Ice Harbor	0.89	64	15.4	101
Columbia above The Dalles	0.75	52	19.6	104
Kootenai	0.57	32	25.2	104
Clark Fork	1.01	63	15.7	93
Flathead	1.13	58	24.2	106
Pend Oreille River Basin above Waneta Dam	0.99	56	21.4	102
Salmon River Basin	1.30	71	19.5	101
Upper Snake Tributaries	1.68	102	15.3	89
Clearwater	1.30	56	29.5	104
Willamette River above Portland	2.02	55	60.5	113

Snowpack within the Columbia Basin has been declining. For basins above the Snake River confluence, snowpack in the Columbia Basin is 81% of average. For Snake River Basins the snowpack is 75% of average. For lower Columbia Basins between McNary and Bonneville Dam snowpack is 57% of average.

Table 2 displays the April 21<sup>st</sup> ESP runoff volume forecasts for multiple reservoirs along with the April COE forecasts at Libby and Dworshak. The April 21<sup>st</sup> ESP forecast at The Dalles between April and August is 90,975 Kaf (104% of average).

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

Location	April 21, 2016	
	% Average (1981–2010)	Runoff Volume (Kaf)
The Dalles (Apr–Aug)	104	90,975
Grand Coulee (Apr–Aug)	105	59,726
Libby Res. Inflow, MT (Apr–Aug)	102 114*	6,022 6,681*
Hungry Horse Res. Inflow, MT (Apr–Aug)	99	1,919
Lower Granite Res. Inflow (Apr–July)	97	19,346
Brownlee Res. Inflow (Apr–July)	84	4,623
Dworshak Res. Inflow (Apr–July)	103 95*	2,480 2,303*

\* Denotes COE April Forecast

Grand Coulee Reservoir is at 1,243.5 feet (4-21-16) and has drafted 6.1 feet over the last week. Outflows at Grand Coulee have ranged between 142.9 and 183.0 Kcfs over the last week. The April 30<sup>th</sup> FC Elevation at Grand Coulee is currently 1,243.8 feet. Grand Coulee will be drafted to 1,255 feet and below this year for a period of eight weeks for drum gate maintenance. The BOR expects to be finished with drum gate maintenance on May 6, 2016.

The Libby Reservoir is currently at elevation 2,398.2 feet (4-21-16) and has drafted 0.3 feet over the previous week. Daily average outflows at Libby Dam have been 16.5–20.1 Kcfs over the last week. The April 30<sup>th</sup> FC Elevation at Libby is currently 2,387.4 feet.

Hungry Horse is currently at an elevation of 3,527.4 feet (4-21-16) and has filled 3.1 feet over the last week. Outflows at Hungry Horse have been 2.2–3.0 Kcfs over the last week. The April 30<sup>th</sup> FC Elevation at Hungry Horse is currently 3,545.0 feet.

Dworshak is currently at an elevation of 1,562.1 feet (4-21-16) and has drafted 1.3 feet over the last week. Outflows have been 16.1–16.7 Kcfs over the last week. The April 30<sup>th</sup> System FC Elevation at Dworshak is currently 1,543.5. The COE is planning to deviate from the mid-April FC elevation by 294 kaf to avoid excessive drafts and will intersect the refill curve (begin refill) before the end of April.

The Brownlee Reservoir was at an elevation of 2,050.0 feet on April 21, 2016, and has drafted 2.1 feet over the last week. The April 30<sup>th</sup> FC Elevation at Brownlee is currently 2,046.9 feet.

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 7, 2016), the flow objective this spring will be 96 Kcfs at Lower Granite. Flows at Lower Granite Dam have averaged 96.5 last week and 85.1 Kcfs between April 3 and April 21, 2016.

Based on the April Final Water Supply Forecast, the Spring Biological Opinion Flow Objectives (which began April 10<sup>th</sup>) will be 243 Kcfs at McNary Dam and 135 Kcfs at Priest Rapids Dam. Between April 10 and April 21, flows at McNary Dam were 290.0 Kcfs, and Priest Rapids Dam flows were 184.3 Kcfs.

### Spill and River Temperature

Spill in excess of hydraulic capacity continues at Dworshak Dam. The increase in project outflow was necessary because the Corps of Engineers issued a new April water supply forecast that was significantly greater than the COE had been predicting would occur. Previously they estimated the April through July inflow to the project at 84% of average, while now they are estimating inflow to be 95% of average. This inflow increase of approximately 200 Kaf requires that the project draft to a deeper end of April flood control elevation. The new end of April flood control elevation of 1,543.5 feet would require a draft of approximately 20 feet from the project. A draft of this magnitude

would mean spilling considerable amounts of water that would cause the TDG below the project to exceed the 110% water quality standard. Consequently, to minimize the TDG level the COE has requested a flood control deviation of 20 feet by mid-April and will intersect the refill curve (begin refill) before the end of April.

Outflow from Dworshak has been slightly over 16 Kcfs, with a spill level ranging from 5.7 Kcfs to 6.8 Kcfs. For the most part, the total dissolved gas levels have remained below the 110% standard thus far, but have been as high as 110.0%.

The 2016 spill for fish passage program at the lower Snake River projects began just after midnight on April 3<sup>rd</sup>.

Project	Spill Level Day/Night
Lower Granite	20 Kcfs/20 Kcfs
Little Goose	30%/30%
Lower Monumental	Gas Cap/Gas Cap
Ice Harbor	April 3–April 28: 45 Kcfs/Gas Cap
	April 28–June 20: 30%/30% vs. 45 Kcfs/Gas Cap

Thus far Lower Granite, Little Goose and Lower Monumental dams have spilled at the 2016 Fish Operations Plan (FOP) levels over the past week. The gas cap spill level at Lower Monumental Dam has decreased from 28 Kcfs earlier in the week to 26 Kcfs later in the week in response to total dissolved gas readings in the tailrace at Lower Monumental Dam and in the forebay at Ice Harbor Dam.

A transmission system emergency was declared at Ice Harbor Dam on the evenings of both April 19<sup>th</sup> and 20<sup>th</sup>. The emergencies required increases in generation at Ice Harbor Dam to support local area overload problems resulting in a reduction of spill during the hours of the emergency. To account for the reduction from the planned spill levels, the first 2-day block of 30% spill, which is scheduled to start on 4/28, will be amended to have 1 day of 30% spill and 1 day of 45 Kcfs/gas cap spill.

Spill for fish passage began on April 10<sup>th</sup> at the lower Columbia River projects. Spill for fish passage occurred at the lower Columbia River projects at the following amounts described in the 2016 FOP.

Project	Spill Level Day/Night
McNary	40%/40%
John Day	30%/30%
The Dalles	40%/40%
Bonneville	100 Kcfs/100 Kcfs

Over the past week, uncontrolled spill (above the fish spill program levels) have occurred at McNary, John Day, and Bonneville dams. Spill at The Dalles Dam was decreased yesterday in response to the total dissolved gas measurements in the Bonneville Dam forebay.

At times this past week, the TDG readings were in excess of the waiver limits at some projects. The increased TDG was related to several factors including: increasing flow and spill amounts, changes in environmental conditions, and uncontrolled spill. Where possible, the COE reduced spill to address the TDG exceedences.

**Note:** The State of Oregon TDG waiver requires compliance only 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.

Monitoring for signs of gas bubble trauma (GBT) occurred at Lower Granite, Little Goose, Lower Monumental, Rock Island, McNary and Bonneville dams over the past week. One percent of the fish examined at Bonneville Dam on April 19<sup>th</sup> were observed with signs of GBT, and at Rock Island Dam one percent of the sample showed signs of GBT on April 19<sup>th</sup> and April 21<sup>st</sup>. All signs were considered minor and were considerably below the 15% action levels associated with the monitoring program.

**Temperature:** Newly implemented in this week's report, the Fish Passage Center will be graphically presenting the current years' forebay temperature at the TDG monitor location along with the past ten years' temperature data. The data will be presented for Lower Granite, Ice Harbor, McNary, and Bonneville dams. As can be seen from the graphs the current forebay temperatures are higher than the average for the past ten years.

### Smolt Monitoring

Smolt Monitoring Program (SMP) sampling is ongoing at all SMP traps and bypass facilities.

This week's samples at Bonneville Dam (BON) were dominated by yearling Chinook. In fact, yearling Chinook passage at BON increased this week when compared to last week. This week's daily average passage index for yearling Chinook at BON was nearly 56,000 per day, whereas that for last week was less than 10,000 per day. Steelhead and sockeye passage also increased this week. This week's daily average passage indices were about 3,300 per day for steelhead and 300 per day for sockeye. Last week's daily average passage indices were about 1,100 per day for steelhead and 100 per day for sockeye. Passage of subyearling fall Chinook tules from Spring Creek NFH was nearly complete by last Friday. Given this, subyearling Chinook passage at BON decreased substantially this week, when compared to last week. This week's daily average passage index for subyearling Chinook at BON was about 1,275, whereas that for last week was about 150,000 per day. Coho passage this week was slightly lower than what was observed the previous week. This week's daily average passage index for coho at BON was about 15,700 per day. Last week's daily average passage index for coho was about 18,500 per

day. No Pacific lamprey ammocoetes were sampled at BON this week. Pacific lamprey macrophthalmia were encountered in only three of this week's samples (April 15<sup>th</sup>, 16<sup>th</sup>, and 20<sup>th</sup>). Collection estimates on these three days ranged from 50 to 133 lamprey macrophthalmia.

Sampling at John Day Dam (JDA) in 2016 will be every-other-day for the entire SMP season. This is the first time every-other-day sampling has occurred at this site over the entire season. Yearling Chinook continued to dominate the collections at JDA this week, with a daily average passage index of about 51,200 fish per day. This is an increase over last week's daily average passage index of about 11,400 per day. Steelhead were the second most abundant salmonid this week, with a daily average passage index of nearly 15,000 fish per day, which is an increase over last week's daily average passage index of about 1,550 per day. Other salmonids encountered in this week's samples included subyearling Chinook (fry), coho, and sockeye. Passage numbers for these salmonids all increased this week when compared to the previous week. This week's daily average passage indices for these three species were about 580 for subyearling Chinook, 600 for coho, and 500 for sockeye. Last week's daily average passage indices for these three species were all below 100 per day. No Pacific lamprey ammocoetes were encountered in this week's samples. Pacific lamprey macrophthalmia were collected in all three of this week's samples, with a daily average collection of about 380 macrophthalmia per day, which was lower than last week's daily average collection of about 490 per day.

As in recent years, sampling at McNary Dam (MCN) in 2016 will be every-other-day for the entire SMP season. Yearling Chinook continued to dominate samples at MCN this week, with a daily average passage index of about 42,300 per day. This is a substantial increase over last week's daily average passage index of about 5,600 yearling Chinook per day. Passage of coho, sockeye, and steelhead also increased this week when compared to the previous week. This week's daily average passage indices for these three species were about 1,025, 6,600, and 23,400 per day, respectively. Last week's daily average passage indices were about 400 for coho, 120 for sockeye, and 2,900 for steelhead. Subyearling Chinook passage also increased this week, primarily due to a surge in passage

on April 17<sup>th</sup> and 19<sup>th</sup>. This week's daily average passage index for subyearling Chinook at MCN was about 19,700 per day. All of the subyearling Chinook juveniles that have been encountered so far at MCN have been fry. Finally, Pacific lamprey macrophthalmia were collected in all four of this week's samples, with a daily average collection of about 1,200 per day.

This week's samples at Lower Granite Dam (LGR) continued to be dominated by yearling Chinook. This week's daily average passage index for yearling Chinook was about 129,500 per day, which is an increase over last week's daily average passage index of about 104,000 per day. Steelhead were the second most abundant salmonid this week, with a daily average passage index of nearly 84,000 per day. This is also an increase over last week's daily average passage index of about 43,200 per day. Subyearling Chinook and coho passage also increased this week, with daily average passage indices of about 2,200 subyearling Chinook and 540 coho per day. To date, all of the subyearling Chinook that have been collected at LGR this year have been fry. Sockeye were collected at LGR on one day this week (April 15<sup>th</sup>). These sockeye are likely kokanee from Dworshak Reservoir, as Dworshak Dam has been spilling water for flood control since March 31<sup>st</sup>. Finally, one Pacific lamprey ammocoetes was sampled on April 16<sup>th</sup> while Pacific lamprey macrophthalmia were encountered in six of this week's samples. The daily average sample count for macrophthalmia this week was 8 per day.

Due to equipment malfunctions, sampling at Little Goose Dam (LGS) was delayed until April 9<sup>th</sup>, with the first sample tallied and reported on April 10<sup>th</sup>. In addition, sampling at LGS is limited to a 24-hour sample every-other-day until transportation begins. On April 18<sup>th</sup>, the GBT monitoring crew at LGS conducted a GBT sample of approximately 100 total yearling Chinook and steelhead that were collected at the separator. Unfortunately, this GBT sample was conducted on a non-sample day for LGS. Therefore, the Passage Index estimate for the April 19<sup>th</sup> sample is biased low and should not be used to assess trends in passage. Yearling Chinook continued to dominate the collections at LGS this week. This week's daily average passage index for yearling Chinook at LGS was about 166,000 fish per day. This is an increase over last week's daily average passage index of nearly



60,000 yearling Chinook per day. Steelhead passage also increased this week when compared to last week. This week's daily average passage index for steelhead at LGS was nearly 97,000 per day, whereas that for last week was about 50,500 per day. Subyearling Chinook were only encountered in one of this week's samples (April 16<sup>th</sup>), and coho and sockeye were not encountered at all this week. As with many of the other sites, all of the subyearling Chinook juveniles collected at LGS so far this season have been fry. Finally, Pacific lamprey macrophthalmia were encountered in all three of this week's samples. The estimated collection on three of these days was 800 macrophthalmia.

Sampling at Lower Monumental Dam (LMN) was limited to a 24-hour sample every-third-day through the April 14<sup>th</sup> sample and then every-other-day until transportation begins. As with last week, this week's samples at LMN were dominated by yearling Chinook. The daily average passage index of yearling Chinook this week was nearly 100,000 fish per day. Last week's daily average passage index for yearling Chinook was about 32,300 per day. Steelhead were the second most abundant salmonid species in this week's samples. This week's daily average passage index for steelhead was nearly 50,000 fish per day, which is an increase over last week's daily average passage index of about 7,850 per day. No other salmonids were encountered in this week's samples at LMN. Finally, no lamprey juveniles were encountered in this week's samples at LMN.

Yearling Chinook juveniles dominated this week's samples at Rock Island Dam (RIS), with a daily average passage index of about 370 per day. This represents an increase over last week's daily average passage index of about 100 per day. Sockeye juveniles were the second most abundant salmonid in this week's samples, with a daily average passage index of about 300 per day. However, this is a decrease over last week's daily average passage index of about 465 sockeye juveniles per day. Subyearling Chinook passage also decreased this week when compared to the previous week. This week's daily average passage index for subyearling Chinook was about 60 per day, whereas that for last week was about 300 per day. To date, all of the subyearling Chinook that have been sampled at RIS this year have been fry. Steelhead and coho were encountered every day this week but in relatively low

numbers. Finally, Pacific lamprey macrophthalmia were encountered in four of this week's samples at RIS. No ammocoetes were encountered at RIS this week.

The Grande Ronde Trap (GRN) is operated by the Oregon Department of Fish and Wildlife and is located at river kilometer 2 in the Grande Ronde River. Yearling Chinook continued to dominate the collections this week. The daily average collection for yearling Chinook this week was about 360, which represents a decrease over last week's daily average collection of about 640 per day. Steelhead collections increased at GRN this week, when compared to the previous week. This week's daily average collection for steelhead was about 160 fish per day, whereas that for last week was only 24 fish per day. The only other salmonids that were encountered in this week's samples were a few subyearling Chinook (fry) and that occurred in only two of this week's samples.

The Salmon River Trap at Whitebird (WTB) is located at river kilometer 103 and operated by Idaho Department of Fish and Game. Similar to 2015, sampling at the Salmon River Trap in 2016 is five days per week. Sampling at WTB resumed for the April 18<sup>th</sup> sample at a reduced level (i.e., <24 hour sample) and in a less efficient location. The reduction in time was to avoid handling too many listed hatchery yearling Chinook while the move to a less efficient location was to avoid debris. Sampling this week was suspended after the April 21<sup>st</sup> sample due to unsafe conditions associated with increased flows. Yearling Chinook dominated the four samples from WTB this week. This week's daily average collection for yearling Chinook at WTB was 275 per day. The daily average collection for steelhead this week was about 120 per day. Even with the reduced sampling (i.e., time and location), this week's daily average collection for steelhead was higher than what has been observed in previous weeks at this trap. Finally, one sockeye juvenile was collected in the April 18<sup>th</sup> sample. This is the first sockeye juvenile to be collected at this trap this year. Sampling at WTB will resume when conditions are deemed safe.

The Snake River Trap at Lewiston (LEW) is located at river kilometer 225 and is operated by Idaho Department of Fish and Game. Due to concerns over increased handling of listed hatchery yearling Chinook last week, sampling at LEW was suspended for the April 17<sup>th</sup> sample, and a reduced level of

sampling was implemented for the period of April 18<sup>th</sup> through April 22<sup>nd</sup>. The reduced sampling during this period equated to reducing the sampling period to approximately 8 hours per day. Steelhead dominated this week's collections at LEW, with a daily average collection of about 300 fish per day. Despite the reduced sampling, this week's daily average collection for steelhead is greater than last week's daily average collection of about 160 fish. This week's daily average collection for yearling Chinook was 240 fish per day. Other than yearling Chinook and steelhead, subyearling Chinook and coho were collected in this week's samples at LEW, but in relatively low numbers. Due to concerns over debris levels, sampling at LEW will be suspended over the weekend but will likely resume for Monday's sample.

The Imnaha River Trap (IMN) is located at river kilometer 7 and is operated by the Nez Perce Tribe. Sampling at the Imnaha River Trap is year-round and, for 2016, the Fish Passage Center has been receiving data since the January 1, 2016 sample. However, due to the remote nature of the trap, the Nez Perce Tribe is able to send collection data to the FPC only periodically. Currently, the FPC has data from IMN only through April 4<sup>th</sup>. Collections of yearling Chinook increased substantially on April 3<sup>rd</sup> and 4<sup>th</sup>. However, the vast majority (99%) of the yearling Chinook collected on these two days were of known hatchery origin. Similarly, steelhead collections at IMN increased substantially in the samples on April 2–4. As with the yearling Chinook, the vast majority (98%) of the steelhead collected on these three days were of known hatchery origin.

### **Adult Passage**

Adult counts at Bonneville Dam have been updated through 4/21/16. The 2016 adult spring Chinook count at Bonneville Dam of 9,201 is about 15.2% of the 2015 count of 60,400 and 49% of the 10-year average count of 18,777. At Willamette Falls 2,172 adult spring Chinook have been counted so far this season. The 2016 adult spring Chinook count is 32.9% of the 2015 count of 6,603, while having 324 more fish than the 10-year average count of 1,848.

A total of 119 spring chinook have been counted at Lower Granite Dam as of April 20<sup>th</sup>. This year's Lower

Granite steelhead count has 325 fewer fish than the 2015 count of 444, while having 19 more fish than the 10-year average count of 100. Counting at Priest Rapids Dam began on April 15<sup>th</sup>. In the first 6 days of counting, 34 spring Chinook and 7 steelhead were observed.

The 2016 Bonneville Dam adult steelhead count of 3,514 has 360 fewer fish than the 2015 count of 3,874, while having 113 more fish than the 10-year average count of 3,401. This year's Lower Granite steelhead count of 5,086 is about 59% of the 2015 count of 8,618 and 61.4% of the 10-year average count of 8,279. At Willamette Falls, the 2016 count for steelhead was 5,684 as of April 20<sup>th</sup>. This year's steelhead count is about 1.4 times greater than the 2015 count of 3,999 and has 5 more fish than the 10-year average count of 5,679.

## Hatchery Releases Last Two Weeks

**Hatchery Release Summary**  
From: **4/9/2016** to **04/22/16**

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Colville Tribe	Chief Joseph Hatchery	CH1	SP	2016	204,000	04-15-16	04-30-16	Riverside Pond	Okanogan River
Colville Tribe	Chief Joseph Hatchery	CH1	SP	2016	527,000	04-15-16	04-30-16	Chief Joseph Hatchery	Mid-Columbia River
Colville Tribe	Chief Joseph Hatchery	CH1	SU	2016	256,000	04-15-16	04-30-16	Omak Pond	Okanogan River
Colville Tribe	Chief Joseph Hatchery	CH1	SU	2016	342,500	04-15-16	04-30-16	Similkameen River	Okanogan River
Colville Tribe	Chief Joseph Hatchery	CH1	SU	2016	402,000	04-15-16	04-30-16	Chief Joseph Hatchery	Mid-Columbia River
Colville Tribe	Wells Hatchery	ST	SU	2016	2,000	04-20-16	04-23-16	Aneas Creek	Okanogan River
Colville Tribe	Wells Hatchery	ST	SU	2016	10,000	04-13-16	04-30-16	Omak Creek	Okanogan River
Colville Tribe	Wells Hatchery	ST	SU	2016	25,000	04-20-16	04-23-16	Similkameen Acclim Pd	Okanogan River
Colville Tribe	Wells Hatchery	ST	SU	2016	30,000	04-15-16	04-20-16	Omak Creek	Okanogan River
Colville Tribe	Wells Hatchery	ST	SU	2016	40,000	04-20-16	04-23-16	Salmon Creek (Okanogan)	Okanogan River
<b>Colville Tribe Total</b>					<b>1,838,500</b>				
Idaho Dept. of Fish and Game	Clearwater Hatchery	ST	SU	2016	227,969	04-11-16	04-11-16	Redhouse (SFK ClearH20 R)	S Fk Clearwater River
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2016	40,000	04-18-16	04-18-16	Little Salmon River	Salmon River (ID)
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2016	90,000	04-12-16	04-12-16	Shoup Br (Salmon R)	Salmon River (ID)
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2016	90,000	04-13-16	04-26-16	Salmon River (ID)	Salmon River (ID)
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2016	90,000	04-21-16	04-22-16	Pahsimeroi River	Pahsimeroi River
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2016	94,000	04-11-16	04-12-16	Salmon River (ID)	Salmon River (ID)
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2016	120,000	04-20-16	04-21-16	Squaw Creek	Salmon River (ID)
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2016	150,000	04-22-16	04-26-16	Pahsimeroi River	Pahsimeroi River
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2016	160,000	04-18-16	04-20-16	Little Salmon River	Salmon River (ID)
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2016	200,000	04-14-16	04-15-16	Little Salmon River	Salmon River (ID)
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2016	200,000	04-21-16	04-24-16	Little Salmon River	Salmon River (ID)
Idaho Dept. of Fish and Game	Pahsimeroi Hatchery	CH1	SU	2016	66,859	04-01-16	04-14-16	Pahsimeroi Hatchery	Pahsimeroi River
Idaho Dept. of Fish and Game	Pahsimeroi Hatchery	CH1	SU	2016	1,054,263	04-01-16	04-14-16	Pahsimeroi Hatchery	Pahsimeroi River
Idaho Dept. of Fish and Game	Sawtooth Hatchery	CH1	SP	2016	189,000	04-20-16	04-20-16	Yankee Fk (Salmon R)	Salmon River (ID)
<b>Idaho Dept. of Fish and Game Total</b>					<b>2,772,091</b>				
Nez Perce Tribe	Dworshak NFH	ST	SU	2016	200,000	04-11-16	04-22-16	Lolo Creek	Clearwater River M F
Nez Perce Tribe	Lookingglass Hatchery	CH1	SP	2016	250,000	04-15-16	04-15-16	Lostine Accim Pond	Wallowa River
<b>Nez Perce Tribe Total</b>					<b>450,000</b>				
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2016	360,000	04-10-16	04-10-16	Wallowa Acclim Pond	Wallowa River
Oregon Dept. of Fish and Wildlife	Lookingglass Hatchery	CH1	SP	2016	250,000	04-15-16	04-15-16	Lookingglass Creek	Grande Ronde River
Oregon Dept. of Fish and Wildlife	Lookingglass Hatchery	CH1	SP	2016	490,000	04-15-16	04-15-16	Imnaha Acclim Pond	Imnaha River
Oregon Dept. of Fish and Wildlife	Opal Springs Hatchery	ST	SU	2016	1,000	04-15-16	04-15-16	Crooked River (OR)	Deschutes River
Oregon Dept. of Fish and Wildlife	Opal Springs Hatchery	ST	SU	2016	20,000	04-15-16	04-15-16	Crooked River (OR)	Deschutes River
Oregon Dept. of Fish and Wildlife	Round Butte Hatchery	CH1	SP	2016	240,000	04-15-16	05-31-16	Deschutes River	Deschutes River
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2016	5,000	04-15-16	04-15-16	Crooked River (OR)	Deschutes River
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2016	5,000	04-15-16	04-15-16	Wychus Creek	Deschutes River
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2016	15,000	04-15-16	04-15-16	Metolius River	Deschutes River
<b>Oregon Dept. of Fish and Wildlife Total</b>					<b>1,386,000</b>				
U.S. Fish and Wildlife Service	Carson NFH	CH1	SP	2016	1,170,000	04-12-16	04-12-16	Carson Hatchery	Wind River
U.S. Fish and Wildlife Service	Dworshak NFH	ST	SU	2016	300,000	04-11-16	04-22-16	Clear Creek	Clearwater River M F
U.S. Fish and Wildlife Service	Dworshak NFH	ST	SU	2016	400,000	04-11-16	04-22-16	Redhouse (SFK ClearH20 R)	S Fk Clearwater River
U.S. Fish and Wildlife Service	Dworshak NFH	ST	SU	2016	1,200,000	04-11-16	04-22-16	Dworshak Hatchery	Clearwater River M F
U.S. Fish and Wildlife Service	Leavenworth NFH	CH1	SP	2016	1,050,000	04-11-16	04-11-16	Icicle Creek	Wenatchee River
U.S. Fish and Wildlife Service	Little White Salmon NFH	CH1	SP	2016	1,320,000	04-14-16	04-14-16	Little White Salmon Hatchery	Little White Salmon River
U.S. Fish and Wildlife Service	Spring Creek NFH	CH0	FA	2016	6,349,372	04-11-16	04-11-16	Spring Creek Hatchery	L Col R (D/s McN Dam)
U.S. Fish and Wildlife Service	Winthrop NFH	CH1	SP	2016	405,500	04-15-16	04-21-16	Winthrop Hatchery	Methow River
U.S. Fish and Wildlife Service	Winthrop NFH	ST	SU	2016	130,700	04-15-16	05-15-16	Winthrop Hatchery	Methow River
<b>U.S. Fish and Wildlife Service Total</b>					<b>12,325,572</b>				
Umatilla Tribe	Cascade Hatchery	CO	UN	2016	500,000	04-16-16	04-16-16	Pendelton Acclim Pond	Umatilla River
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2016	150,000	04-15-16	04-15-16	Catherine Cr Acclim Pond	Grande Ronde River
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2016	250,000	03-15-16	04-15-16	Grande Ronde Acclim Pond	Grande Ronde River
<b>Umatilla Tribe Total</b>					<b>900,000</b>				

## Hatchery Releases Last Two Weeks

Agency	Hatchery	Species	Race	MiqYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Washington Dept. of Fish and Wildlife	Chelan Hatchery	CH1	SU	2016	110,000	04-15-16	04-15-16	Chelan Falls	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Chelan Hatchery	CH1	SU	2016	119,000	04-15-16	04-15-16	Chelan Falls	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Chelan Hatchery	CH1	SU	2016	120,000	04-15-16	04-15-16	Chelan Falls	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Chelan Hatchery	CH1	SU	2016	121,000	04-15-16	04-15-16	Chelan Falls	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Chiwawa Hatchery	CH1	SP	2016	144,000	04-15-16	04-15-16	Chiwawa Hatchery	Wenatchee River
Washington Dept. of Fish and Wildlife	Chiwawa Hatchery	CH1	SP	2016	230,000	04-15-16	05-01-16	Nason Creek	Wenatchee River
Washington Dept. of Fish and Wildlife	COOP	CH0	SU	2017	225	04-20-16	05-01-16	Similkameen River	Okanogan River
Washington Dept. of Fish and Wildlife	Eastbank Hatchery	ST	SU	2016	24,000	04-20-16	05-31-16	Blackbird Island Acc Pond	Wenatchee River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2016	44,500	04-10-16	04-15-16	Tucannon River	Tucannon River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2016	47,000	04-15-16	04-20-16	Baileysburg Bridge	Touchet River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2016	85,000	03-25-16	04-15-16	Dayton Acclim Pond	Touchet River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2016	100,000	04-07-16	04-15-16	Walla Walla River	Walla Walla River
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2016	108,000	04-10-16	04-10-16	Lyons Ferry Hatchery	Snake River
Washington Dept. of Fish and Wildlife	Methow Hatchery	CH1	SP	2016	36,300	04-15-16	04-20-16	Twisp Acclim Pond	Methow River
Washington Dept. of Fish and Wildlife	Methow Hatchery	CH1	SP	2016	157,000	04-15-16	04-20-16	Methow Hatchery	Methow River
Washington Dept. of Fish and Wildlife	Ringold Springs Hatchery	ST	SU	2016	168,315	04-09-16	04-19-16	Ringold Springs Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Similkameen Hatchery	CH1	SU	2016	240,000	04-15-16	04-30-16	Similkameen Acclim Pd	Okanogan River
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	SU	2016	90,000	04-20-16	04-30-16	Klickitat River	Klickitat River
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	WI	2016	15,500	04-15-16	05-15-16	Rock Cr (Stevenson)	Columbia River
Washington Dept. of Fish and Wildlife	Tucannon Hatchery	CH1	SP	2016	220,000	04-01-16	04-15-16	Curl Lake Acclim Pond	Tucannon River
Washington Dept. of Fish and Wildlife	Tucannon Hatchery	ST	SU	2016	50,000	04-15-16	04-15-16	Tucannon River	Tucannon River
Washington Dept. of Fish and Wildlife	Wells Hatchery	CH1	SU	2016	320,000	04-15-16	05-07-16	Wells Hatchery	Mid-Columbia River
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2016	160,000	04-20-16	05-31-16	Wells Hatchery	Mid-Columbia River
<b>Washington Dept. of Fish and Wildlife Total</b>					<b>2,709,840</b>				
Yakama Tribe	Eagle Creek NFH	CO	UN	2016	95,939	04-15-16	06-01-16	Stiles Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2016	193,067	04-15-16	06-01-16	Holmes Pond	Yakima River
Yakama Tribe	Eagle Creek NFH	CO	UN	2016	215,045	04-15-16	06-01-16	Easton Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2016	74,227	04-15-16	06-01-16	Lost Creek Acclim Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2016	74,951	04-15-16	06-01-16	Stiles Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2016	76,167	04-15-16	06-01-16	Yakama River	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2016	299,959	04-15-16	06-01-16	Prosser Acclim Pond	Yakima River
<b>Yakama Tribe Total</b>					<b>1,029,355</b>				
<b>Grand Total</b>					<b>23,411,358</b>				



## Hatchery Releases Next Two Weeks

**Hatchery Release Summary**  
From: **4/23/2016** to **5/6/2016**

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Colville Tribe	Chief Joseph Hatchery	CH1	SP	2016	204,000	04-15-16	04-30-16		Okanogan River
Colville Tribe	Chief Joseph Hatchery	CH1	SP	2016	527,000	04-15-16	04-30-16	Chief Joseph Hatchery	Mid-Columbia River
Colville Tribe	Chief Joseph Hatchery	CH1	SU	2016	256,000	04-15-16	04-30-16		Okanogan River
Colville Tribe	Chief Joseph Hatchery	CH1	SU	2016	342,500	04-15-16	04-30-16		Okanogan River
Colville Tribe	Chief Joseph Hatchery	CH1	SU	2016	402,000	04-15-16	04-30-16	Chief Joseph Hatchery	Mid-Columbia River
Colville Tribe	Wells Hatchery	ST	SU	2016	2,000	04-20-16	04-23-16	Aneas Creek	Okanogan River
Colville Tribe	Wells Hatchery	ST	SU	2016	10,000	04-13-16	04-30-16	Omak Creek	Okanogan River
Colville Tribe	Wells Hatchery	ST	SU	2016	25,000	04-20-16	04-23-16	Similkameen Acclim Pd	Okanogan River
Colville Tribe	Wells Hatchery	ST	SU	2016	40,000	04-20-16	04-23-16	Salmon Creek (Okanogan)	Okanogan River
<b>Colville Tribe Total</b>					<b>1,808,500</b>				
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2016	90,000	04-13-16	04-26-16	Salmon River (ID)	Salmon River (ID)
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2016	150,000	04-22-16	04-26-16	Pahsimeroi River	Pahsimeroi River
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2016	200,000	04-26-16	05-03-16	Yankee Fk (Salmon R)	Salmon River (ID)
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2016	230,000	04-27-16	05-03-16	Yankee Fk (Salmon R)	Salmon River (ID)
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2016	200,000	04-21-16	04-24-16	Little Salmon River	Salmon River (ID)
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2016	250,000	04-24-16	04-30-16	Little Salmon River	Salmon River (ID)
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2016	2,500,000	03-14-16	04-29-16	Rapid River Hatchery	Little Salmon River
Idaho Dept. of Fish and Game	Springfield Hatchery	SO	UN	2016	540,000	05-02-16	05-13-16	Redfish Lake Creek	Salmon River (ID)
<b>Idaho Dept. of Fish and Game Total</b>					<b>4,160,000</b>				
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2016	120,000	05-04-16	05-04-16	Wallowa Acclim Pond	Wallowa River
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2016	160,000	04-30-16	04-30-16	Big Canyon Acclim.Pd (Grande Ronde)	Grande Ronde River
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2016	165,000	04-30-16	04-30-16	Little Sheep Creek	Imnaha River
Oregon Dept. of Fish and Wildlife	Umatilla Hatchery	ST	SU	2016	50,000	04-27-16	04-27-16	Thornhollow Acclim Pond	Umatilla River
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	ST	SU	2016	10,000	04-25-16	04-25-16	Wychus Creek	Deschutes River
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	ST	SU	2016	10,000	05-05-16	05-05-16	Wychus Creek	Deschutes River
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	ST	SU	2016	15,000	04-25-16	04-25-16	Crooked River (OR)	Deschutes River
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	ST	SU	2016	15,000	05-05-16	05-05-16	Crooked River (OR)	Deschutes River
<b>Oregon Dept. of Fish and Wildlife Total</b>					<b>545,000</b>				
U.S. Fish and Wildlife Service	Hagerman NFH	ST	SU	2016	84,500	05-01-16	05-01-16	East Fk Salmon River	Salmon River (ID)
U.S. Fish and Wildlife Service	Hagerman NFH	ST	SU	2016	1,404,000	04-06-16	04-30-16	S Fk Salmon River	Salmon River (ID)
<b>U.S. Fish and Wildlife Service Total</b>					<b>1,488,500</b>				
Umatilla Tribe	Umatilla Hatchery	ST	SU	2016	50,000	04-27-16	04-27-16	Minthorn Acclimation Pond	Umatilla River
Umatilla Tribe	Umatilla Hatchery	ST	SU	2016	50,000	04-27-16	04-27-16	Pendelton Acclim Pond	Umatilla River
<b>Umatilla Tribe Total</b>					<b>100,000</b>				
Warm Springs Tribe	Oak Springs Hatchery	ST	WI	2016	50,000	04-29-16	04-29-16	E Fk Irrig Dist Sand Trap	Hood River
<b>Warm Springs Tribe Total</b>					<b>50,000</b>				
Washington Dept. of Fish and Wildlife	Chiwawa Hatchery	CH1	SP	2016	230,000	04-15-16	05-01-16	Nason Creek	Wenatchee River
Washington Dept. of Fish and Wildlife	Chiwawa Hatchery	ST	SU	2016	199,000	04-25-16	05-07-16	Chiwawa Hatchery	Wenatchee River
Washington Dept. of Fish and Wildlife	COOP	CH0	FA	2016	175	05-01-16	05-31-16	Wenatchee River	Wenatchee River
Washington Dept. of Fish and Wildlife	COOP	CH0	FA	2016	1,025	05-01-16	05-31-16	Above McNary Dam	Mid-Columbia River
Washington Dept. of Fish and Wildlife	COOP	CH0	FA	2016	3,850	05-01-16	05-31-16	Above McNary Dam	Mid-Columbia River
Washington Dept. of Fish and Wildlife	COOP	CH0	FA	2016	3,975	05-01-16	05-31-16	Above McNary Dam	Mid-Columbia River
Washington Dept. of Fish and Wildlife	COOP	CH0	FA	2016	13,600	05-01-16	05-31-16	Yakama River	Yakima River
Washington Dept. of Fish and Wildlife	COOP	CH0	SU	2017	225	04-20-16	05-01-16		Okanogan River
Washington Dept. of Fish and Wildlife	COOP	CH0	SU	2017	225	05-01-16	05-31-16	Methow River	Methow River
Washington Dept. of Fish and Wildlife	Eastbank Hatchery	CH1	SU	2016	535,000	04-25-16	05-30-16	Dryden Acclim Pond	Wenatchee River
Washington Dept. of Fish and Wildlife	Methow Hatchery	CH1	SU	2016	171,500	05-01-16	05-15-16	Carlton Acclim Pond	Methow River
Washington Dept. of Fish and Wildlife	Methow Hatchery	ST	SU	2016	100,000	04-30-16	05-07-16	Methow Hatchery	Methow River
Washington Dept. of Fish and Wildlife	Similkameen Hatchery	CH1	SU	2016	240,000	04-15-16	04-30-16	Similkameen Acclim Pd	Okanogan River
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	SU	2016	90,000	04-20-16	04-30-16	Klickitat River	Klickitat River
<b>Washington Dept. of Fish and Wildlife Total</b>					<b>1,588,575</b>				

## Hatchery Releases Next Two Weeks

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Yakama Tribe	Cascade Hatchery	CO	UN	2016	68,020	05-01-16	05-31-16	Twisp Acclim Pond	Methow River
Yakama Tribe	Cascade Hatchery	CO	UN	2016	79,496	05-01-16	05-31-16	Coulter Creek	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2016	110,086	04-01-16	04-30-16	Leavenworth Hatchery	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2016	110,126	04-01-16	04-30-16	Leavenworth Hatchery	Wenatchee River
Yakama Tribe	Cascade Hatchery	CO	UN	2016	135,272	05-01-16	05-31-16	Butcher Creek Acclim. Pond	Wenatchee River
Yakama Tribe	Klickitat Hatchery	CO	NO	2016	1,000,000	05-01-16	05-01-16	Klickitat Hatchery	Klickitat River
Yakama Tribe	Marion Drain Hatchery	CH0	FA	2016	37,000	05-06-16	05-06-16	Roza Acclim Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CH0	FA	2016	20,000	05-06-16	05-06-16	Yakama River	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CH0	FA	2016	180,000	05-06-16	05-06-16	Prosser Acclim Pond	Yakima River
Yakama Tribe	Prosser Acclim. Pond	CH0	FA	2016	1,700,000	05-04-16	05-04-16	Prosser Acclim Pond	Yakima River
Yakama Tribe	Willard Hatchery	CO	UN	2016	58,499	04-01-16	04-30-16	Leavenworth Hatchery	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2016	110,615	04-01-16	04-30-16	Leavenworth Hatchery	Wenatchee River
Yakama Tribe	Willard Hatchery	CO	UN	2016	121,443	05-01-16	05-31-16	Rolfings Acclim Pond	Wenatchee River
Yakama Tribe	Winthrop NFH	CO	UN	2016	38,503	04-01-16	04-30-16	Methow River	Methow River
Yakama Tribe	Winthrop NFH	CO	UN	2016	42,471	04-01-16	04-30-16	Winthrop Hatchery	Methow River
Yakama Tribe	Winthrop NFH	CO	UN	2016	47,124	04-01-16	04-30-16	Methow River	Methow River
Yakama Tribe	Winthrop NFH	CO	UN	2016	212,356	04-01-16	04-30-16	Winthrop Hatchery	Methow River
<b>Yakama Tribe Total</b>					<b>4,071,011</b>				
<b>Grand Total</b>					<b>13,811,586</b>				

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
04/08/2016	84.7	0.0	78.8	0.0	97.3	0.0	94.8	0.0	107.2	0.0	131.6	0.0	133.5	0.0
04/09/2016	83.7	0.0	90.9	0.0	105.5	7.7	103.2	0.0	117.1	0.4	130.0	0.0	134.5	0.0
04/10/2016	113.8	0.0	109.1	0.0	129.4	9.7	121.9	0.0	135.6	14.7	141.6	0.0	130.5	0.0
04/11/2016	117.2	0.0	119.4	0.0	137.7	10.0	134.9	0.0	151.4	15.3	142.0	0.0	143.7	0.0
04/12/2016	130.1	0.0	136.4	0.0	148.7	10.0	141.6	0.0	158.6	17.0	138.8	11.1	137.4	0.0
04/13/2016	149.7	0.0	146.1	5.2	162.0	20.8	157.8	15.2	170.0	22.5	166.5	44.1	155.4	21.3
04/14/2016	162.2	0.0	157.3	17.0	180.7	32.5	178.6	25.0	185.9	35.5	192.8	65.4	195.4	85.8
04/15/2016	163.8	0.0	165.1	29.7	187.6	39.9	187.1	30.8	193.8	39.3	203.7	65.7	207.3	101.0
04/16/2016	170.6	0.0	175.9	27.3	193.2	45.0	195.2	38.3	199.2	43.8	209.0	71.5	212.4	95.7
04/17/2016	183.0	0.0	184.7	31.3	205.9	56.8	205.9	53.0	209.1	55.4	218.9	81.2	220.3	104.3
04/18/2016	168.3	0.0	168.3	22.3	190.1	39.8	191.5	36.1	198.0	43.2	208.2	74.6	213.0	107.6
04/19/2016	164.3	0.0	162.5	18.2	184.1	33.0	180.3	26.9	187.6	32.9	194.6	60.5	197.0	89.6
04/20/2016	142.9	0.0	146.8	7.1	169.4	22.0	173.1	19.1	187.6	36.8	199.1	60.2	205.6	108.7
04/21/2016	161.3	0.0	156.1	14.4	186.6	38.4	182.7	28.2	194.1	45.3	195.3	65.1	193.2	90.7

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

Date	Dworshak		Brownlee Inflow	Hells Canyon Outflow	Lower Granite		Little Goose		Lower Monumental		Ice Harbor	
	Flow	Spill			Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill
04/08/2016	16.3	6.3	---	17.1	68.6	20.5	66.7	20.0	66.7	28.0	67.9	50.7
04/09/2016	16.2	6.2	---	16.8	72.7	20.4	69.9	21.0	70.2	28.0	71.8	52.7
04/10/2016	16.2	6.2	---	16.9	82.3	20.4	80.3	24.2	82.3	27.9	86.6	57.8
04/11/2016	16.2	6.2	---	17.9	91.3	20.4	89.0	26.7	88.3	28.0	89.8	55.9
04/12/2016	16.4	6.5	---	16.7	94.5	20.3	92.4	27.7	93.8	28.0	96.2	63.0
04/13/2016	16.7	6.7	---	21.4	100.4	20.3	96.9	29.0	96.6	28.0	99.8	66.3
04/14/2016	16.7	6.8	---	21.7	104.0	20.4	100.0	30.0	101.6	29.1	103.9	66.2
04/15/2016	16.7	6.8	---	25.0	106.0	20.3	102.6	30.9	101.8	28.6	107.5	67.4
04/16/2016	16.6	6.7	---	25.9	100.6	20.3	98.7	29.7	97.6	28.0	102.0	65.0
04/17/2016	16.6	6.6	---	26.8	94.2	20.3	90.4	27.1	90.5	28.0	96.6	63.2
04/18/2016	16.5	6.5	---	28.5	91.9	20.3	89.1	26.7	86.0	27.9	90.8	63.5
04/19/2016	14.4	5.7	---	25.2	89.7	20.3	88.3	26.3	87.3	27.4	94.1	53.9
04/20/2016	16.4	6.4	---	25.4	94.0	20.4	87.6	26.3	85.5	26.9	93.9	45.6
04/21/2016	16.1	6.1	---	22.7	99.4	20.4	96.6	28.9	95.2	26.5	99.0	53.7

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

Date	McNary		John Day		The Dalles		Bonneville		PH1	PH2
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill		
04/08/2016	239.5	63.6	242.8	15.6	246.7	15.9	264.5	25.4	93.0	133.7
04/09/2016	213.1	38.0	213.7	0.0	210.2	0.0	238.6	2.5	92.8	130.9
04/10/2016	236.0	94.7	240.3	72.3	227.3	90.3	241.6	99.8	33.3	96.0
04/11/2016	238.3	95.6	235.5	70.8	222.4	89.4	256.3	98.8	44.8	100.3
04/12/2016	249.9	119.8	250.7	77.2	238.1	106.2	258.8	106.7	40.7	99.1
04/13/2016	265.3	128.9	266.9	79.7	253.5	100.9	272.6	100.3	58.9	101.0
04/14/2016	315.2	155.5	306.7	92.7	289.2	115.7	301.6	121.4	67.1	100.8
04/15/2016	320.7	145.7	328.5	100.5	311.0	124.2	316.5	132.2	68.4	103.5
04/16/2016	324.0	148.8	328.4	98.3	315.3	125.9	339.0	149.2	68.4	109.0
04/17/2016	319.5	144.4	314.3	95.2	300.2	119.9	327.6	127.0	68.3	119.9
04/18/2016	316.6	159.0	323.2	104.4	310.3	123.6	327.4	132.9	68.5	113.6
04/19/2016	305.1	154.2	302.5	92.5	284.9	113.8	310.8	120.8	68.0	109.6
04/20/2016	296.3	137.5	291.6	87.7	275.8	110.5	307.8	118.6	67.5	109.3
04/21/2016	292.6	119.7	303.9	91.4	286.3	111.8	294.9	106.6	67.5	108.5

## 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>											
	04/14/16	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	04/21/16	Chinook + Steelhead	101	0	0	0.00%	0.00%	0	0	0	0
<b>Little Goose Dam</b>											
	04/13/16	Chinook + Steelhead	99*	0	0			0	0	0	0
	04/18/16	Chinook + Steelhead	99*	0	0			0	0	0	0
	04/19/16	Chinook + Steelhead	1*	0	0			0	0	0	0
<b>Lower Monumental Dam</b>											
	04/15/16	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>McNary Dam</b>											
	04/14/16	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	04/18/16	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>Bonneville Dam</b>											
	04/16/16	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	04/19/16	Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0
<b>Rock Island Dam</b>											
	04/12/16	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
	04/19/16	Chinook + Steelhead	100	1	1	1.00%	0.00%	0	1	0	0
	04/21/16	Chinook + Steelhead	100	1	1	1.00%	0.00%	1	0	0	0

\* Sample size criteria not met, therefore no % fish with GBT estimated for this sample day.



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

### Total Dissolved Gas Saturation Data at Upper Columbia River Sites

Date	<u>Hungry H. Dnst</u>			<u>Boundary</u>			<u>Grand Coulee</u>			<u>Grand C. Tlwr</u>			<u>Chief Joseph</u>							
	<u>24 h</u>	<u>12 h</u>	#	<u>24 h</u>	<u>12 h</u>	#	<u>24 h</u>	<u>12 h</u>	#	<u>24 h</u>	<u>12 h</u>	#	<u>24 h</u>	<u>12 h</u>	#					
	<u>Avg</u>	<u>Avg</u>		<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>		<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>		<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>
4/8	96.4	96.9	97.1	24	---	---	---	0	107.1	107.7	109.3	24	105.3	106.0	106.5	24	105.0	105.8	106.4	24
4/9	97.0	97.3	97.6	24	---	---	---	0	107.5	108.0	108.6	24	105.7	106.3	106.6	24	106.1	106.4	106.7	24
4/10	96.3	96.6	97.1	24	---	---	---	0	107.0	107.3	107.5	24	105.2	105.5	105.8	24	106.4	107.0	107.4	24
4/11	96.6	96.8	97.1	24	---	---	---	0	106.8	107.2	110.9	24	105.0	105.8	106.3	24	106.5	106.8	107.2	24
4/12	96.6	96.7	96.9	24	---	---	---	0	106.8	107.3	111.2	24	105.0	105.4	105.9	24	105.8	106.1	106.4	24
4/13	96.7	96.9	97.1	24	---	---	---	0	106.3	106.6	106.9	24	104.9	105.4	105.6	24	105.6	106.1	106.3	24
4/14	97.1	97.3	97.6	24	---	---	---	0	107.5	107.9	108.3	24	105.7	106.0	106.3	24	105.9	106.4	106.6	24
4/15	96.1	96.4	96.8	24	---	---	---	0	107.4	107.6	108.0	24	104.7	104.9	105.0	24	104.1	104.4	104.7	24
4/16	96.2	96.3	96.5	24	---	---	---	0	107.4	107.7	108.3	24	104.5	104.8	105.0	24	104.0	104.3	104.5	24
4/17	95.3	95.6	95.9	24	---	---	---	0	107.4	107.7	108.6	24	104.4	104.8	105.3	24	104.5	104.8	105.0	24
4/18	95.6	96.1	96.5	24	---	---	---	0	107.1	107.4	107.9	24	105.1	105.7	105.8	24	105.3	105.6	105.9	24
4/19	96.2	96.5	96.8	24	---	---	---	0	108.6	108.9	109.9	24	106.1	106.7	106.8	24	106.1	106.6	107.2	24
4/20	97.1	97.8	98.4	24	---	---	---	0	109.3	109.7	110.1	24	107.0	107.6	108.1	24	107.0	107.5	107.9	24
4/21	99.8	101.2	102.2	23	---	---	---	0	110.4	110.9	111.7	23	107.8	108.3	108.5	23	107.7	108.0	108.3	23

### Total Dissolved Gas Saturation Data at Mid Columbia River Sites

Date	<u>Chief J. Dnst</u>			<u>Wells</u>			<u>Wells Dwnstrm</u>			<u>Rocky Reach</u>			<u>Rocky R. Tlwr</u>							
	<u>24 h</u>	<u>12 h</u>	#	<u>24 h</u>	<u>12 h</u>	#	<u>24 h</u>	<u>12 h</u>	#	<u>24 h</u>	<u>12 h</u>	#	<u>24 h</u>	<u>12 h</u>	#					
	<u>Avg</u>	<u>Avg</u>		<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>		<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>		<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>
4/8	105.0	105.3	105.9	24	105.4	106.3	106.7	24	105.6	106.6	107.0	24	106.3	106.8	107.1	24	106.4	107.0	107.2	24
4/9	106.1	106.3	106.8	24	105.8	106.2	106.7	24	107.2	107.7	108.2	24	107.0	107.3	107.5	24	107.1	107.4	107.7	24
4/10	106.3	106.5	107.2	24	105.6	106.2	106.7	24	107.4	107.9	108.6	24	106.7	107.0	107.3	24	106.9	107.2	107.5	24
4/11	106.6	107.0	107.6	24	105.9	106.3	106.7	24	107.6	108.2	108.7	24	106.9	107.1	107.3	24	107.2	107.4	107.6	24
4/12	105.3	105.6	105.7	24	105.7	105.9	106.1	24	107.7	107.9	108.1	24	106.8	107.1	107.3	24	107.1	107.3	107.4	24
4/13	105.7	106.7	108.2	24	105.3	105.5	105.6	24	109.3	110.4	111.4	24	107.3	107.8	108.0	24	112.6	115.4	117.3	24
4/14	108.1	109.4	110.7	24	105.5	105.8	106.0	23	111.1	112.0	112.3	23	108.5	109.0	109.3	24	115.8	118.1	119.1	24
4/15	110.3	110.8	111.1	24	104.6	104.9	105.0	24	111.4	111.9	112.5	24	108.9	109.2	109.5	24	118.2	118.5	119.2	24
4/16	109.6	109.9	110.2	24	104.6	104.8	105.1	24	112.4	113.3	113.8	24	110.4	110.7	110.8	24	119.5	120.8	121.2	24
4/17	110.2	110.8	111.0	24	105.2	105.8	106.0	24	114.7	116.7	118.4	24	112.0	112.4	112.8	24	121.7	122.6	123.9	24
4/18	109.0	110.0	110.3	24	106.2	106.6	106.9	24	113.4	115.4	118.2	24	114.6	116.3	117.1	24	121.9	122.5	123.4	24
4/19	107.7	108.2	108.4	24	106.6	106.8	107.1	21	111.9	113.1	115.9	21	115.9	117.4	117.9	24	121.2	122.3	123.1	24
4/20	107.5	108.1	108.4	24	107.0	107.5	107.8	24	111.1	112.6	113.6	24	112.5	113.4	113.6	24	117.8	121.0	121.9	24
4/21	109.1	110.9	112.7	23	107.5	107.6	107.8	23	113.3	116.0	118.1	23	112.5	113.2	113.8	23	117.7	121.6	122.6	23

### Total Dissolved Gas Saturation at Mid Columbia River Sites

Date	<u>Rock Island</u>			<u>Rock I. Tlwr</u>			<u>Wanapum</u>			<u>Wanapum Tlwr</u>			<u>Priest Rapids</u>							
	<u>24 h</u>	<u>12 h</u>	#	<u>24 h</u>	<u>12 h</u>	#	<u>24 h</u>	<u>12 h</u>	#	<u>24 h</u>	<u>12 h</u>	#	<u>24 h</u>	<u>12 h</u>	#					
	<u>Avg</u>	<u>Avg</u>		<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>		<u>High</u>	<u>hr</u>		<u>Avg</u>	<u>Avg</u>		<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>
4/8	105.9	106.6	107.0	24	105.9	106.4	106.9	24	108.8	111.3	113.8	24	106.4	107.1	107.5	24	107.0	107.9	108.6	24
4/9	106.4	106.8	106.9	24	106.3	106.7	107.1	24	108.7	109.8	110.9	24	107.4	107.7	107.9	24	107.8	108.4	109.6	24
4/10	105.8	106.3	106.5	24	108.4	109.2	111.3	24	108.2	109.1	110.2	24	107.3	107.6	107.8	24	107.7	108.4	109.7	24
4/11	105.8	106.3	106.6	24	107.8	108.4	108.7	24	107.1	107.6	107.9	24	106.8	107.1	107.1	24	107.3	107.8	109.6	24
4/12	105.8	106.1	106.2	24	108.5	109.1	109.8	23	106.9	107.3	107.9	24	108.1	109.5	110.6	24	106.8	107.4	108.2	24
4/13	107.0	108.4	109.9	24	110.3	111.7	113.2	24	108.0	109.4	110.9	24	111.4	113.0	114.8	24	108.3	109.8	111.3	24
4/14	109.3	109.9	110.3	24	114.1	115.0	115.9	24	108.6	109.1	110.1	24	114.1	116.6	121.3	24	113.7	115.2	118.8	24
4/15	110.1	111.1	112.1	24	114.9	115.4	116.1	24	109.5	110.4	110.9	24	112.8	113.4	115.5	24	111.3	112.7	113.8	24
4/16	111.8	113.4	114.2	24	116.3	117.2	117.9	24	111.2	112.6	113.8	24	114.0	115.2	117.3	24	112.9	114.5	116.6	24
4/17	113.4	115.2	115.8	24	118.0	119.7	120.9	24	114.0	115.8	116.8	24	116.4	118.2	120.8	24	114.2	115.2	115.8	24
4/18	115.3	116.1	117.4	24	119.3	120.2	121.7	24	116.9	118.6	120.3	24	117.0	117.9	120.5	24	117.7	118.4	119.3	24
4/19	116.6	117.4	118.3	24	118.2	119.9	120.5	24	119.3	120.5	122.4	24	117.0	117.5	119.0	24	116.7	117.7	119.1	24
4/20	113.5	114.2	115.4	24	116.9	117.5	118.4	24	---	---	---	0	---	---	---	0	---	---	---	0
4/21	112.1	113.2	115.6	23	116.9	119.7	122.9	23	---	---	---	0	---	---	---	0	---	---	---	0

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

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

Date	<u>Priest R. Dnst</u>			<u>Pasco</u>			<u>Dworshak</u>			<u>Clrwrtr-Peck</u>			<u>Anatone</u>							
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>					
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>				
4/8	105.9	106.4	106.6	24	---	---	---	0	108.4	108.7	109.0	24	104.2	104.9	105.5	24	103.2	104.1	104.9	24
4/9	106.6	106.8	106.9	24	---	---	---	0	108.7	108.9	109.3	24	104.0	104.4	105.0	24	103.0	103.7	104.4	24
4/10	106.4	106.5	106.6	24	---	---	---	0	108.5	108.7	109.0	24	103.4	103.9	104.4	24	102.8	103.5	104.1	24
4/11	106.1	106.3	106.4	24	---	---	---	0	108.2	108.5	108.8	24	103.3	104.1	104.5	24	103.1	103.8	104.5	23
4/12	105.8	106.0	106.2	24	---	---	---	0	108.3	108.8	109.2	24	102.9	103.4	103.6	24	102.8	103.1	103.3	24
4/13	108.8	111.1	111.7	24	---	---	---	0	109.3	109.5	110.0	24	103.6	104.2	104.5	24	103.7	104.5	104.8	24
4/14	116.5	117.7	118.5	24	---	---	---	0	109.6	109.8	109.8	24	103.6	103.8	104.3	24	103.8	104.1	104.4	24
4/15	117.0	117.4	118.4	24	---	---	---	0	108.9	109.1	109.2	24	103.0	103.4	104.0	24	103.3	103.6	104.2	22
4/16	117.2	118.0	118.3	24	---	---	---	0	108.4	108.6	108.8	24	103.5	104.3	104.7	24	103.8	104.5	105.2	24
4/17	118.7	119.3	119.7	24	---	---	---	0	108.4	108.7	109.2	24	103.8	104.5	105.1	24	103.8	104.5	105.2	24
4/18	120.2	120.4	120.7	24	---	---	---	0	108.6	108.9	109.2	24	104.0	104.7	105.2	24	103.7	104.4	105.2	24
4/19	119.0	119.5	120.2	24	---	---	---	0	107.9	109.8	110.1	24	103.6	104.9	105.6	24	103.8	104.5	105.3	24
4/20	---	---	---	0	---	---	---	0	109.4	109.9	110.7	24	104.3	104.8	105.2	24	104.0	104.7	105.4	24
4/21	---	---	---	0	---	---	---	0	109.1	109.6	109.9	23	104.1	104.8	105.3	23	104.2	105.0	105.6	23

### Total Dissolved Gas Saturation Data at Snake River Sites

Date	<u>Clrwrtr-Lewiston</u>			<u>Lower Granite</u>			<u>L. Granite Tlwr</u>			<u>Little Goose</u>			<u>L. Goose Tlwr</u>							
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>					
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>				
4/8	103.6	105.1	106.3	24	104.3	104.9	105.4	24	110.3	110.9	111.9	24	109.4	110.5	111.1	24	110.9	111.3	111.5	24
4/9	103.4	104.6	105.7	24	105.7	105.8	105.9	24	110.8	111.0	111.4	24	112.1	112.6	113.3	24	112.0	112.3	112.6	24
4/10	102.7	103.7	104.6	24	105.0	105.4	106.1	24	110.2	110.3	110.7	24	111.8	112.2	112.5	24	113.0	113.6	113.8	24
4/11	102.6	103.6	104.4	24	103.6	103.9	104.5	24	109.9	110.0	110.5	24	111.5	111.9	112.6	24	114.0	115.1	116.2	24
4/12	101.9	102.1	102.5	24	102.6	102.8	103.2	24	109.2	109.5	109.7	24	109.7	110.2	111.1	24	113.7	114.1	114.5	24
4/13	102.8	103.7	104.6	24	102.9	103.4	103.7	24	109.3	109.7	109.9	24	108.6	108.9	109.3	24	113.9	114.6	114.8	24
4/14	102.6	103.0	103.4	24	103.4	103.6	103.8	24	109.5	109.7	109.8	24	108.1	108.6	109.1	24	114.4	114.5	114.8	24
4/15	101.8	102.3	102.7	24	102.5	102.8	103.0	24	108.8	108.9	109.2	24	106.2	106.4	106.9	24	114.0	114.1	114.3	24
4/16	102.7	103.9	104.9	24	101.7	101.9	102.0	24	108.9	109.1	109.3	24	105.2	105.4	105.6	24	113.5	113.7	113.7	24
4/17	103.1	104.3	105.3	24	102.7	103.2	103.7	24	109.1	109.5	109.7	24	106.0	106.6	106.9	24	112.8	113.2	114.0	24
4/18	103.3	104.5	105.6	24	104.3	104.8	105.0	24	109.4	109.7	110.1	24	107.0	107.5	107.9	24	113.0	113.3	113.4	24
4/19	103.2	104.2	105.1	24	105.0	105.4	105.8	24	109.6	109.7	109.9	24	108.4	109.1	109.7	24	113.3	113.6	113.8	24
4/20	103.7	104.9	106.0	24	105.3	105.7	106.1	24	110.0	110.4	111.1	24	109.7	110.2	110.9	24	114.3	114.9	115.2	24
4/21	103.3	104.3	105.2	23	105.1	105.2	105.5	23	110.0	110.2	110.4	23	110.6	111.0	111.6	23	114.9	115.0	115.2	23

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

Date	<u>Lower Mon.</u>			<u>L. Mon. Tlwr</u>			<u>Ice Harbor</u>			<u>Ice Harbor Tlwr</u>			<u>McNary-Oregon</u>							
	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>	<u>24 h</u>	<u>12 h</u>	<u>#</u>					
	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>	<u>Avg</u>	<u>Avg</u>	<u>High</u>	<u>hr</u>				
4/8	111.1	111.6	111.9	24	119.0	119.2	119.4	24	116.3	117.0	117.2	24	115.6	115.8	115.9	24	---	---	---	0
4/9	112.2	112.5	112.6	24	119.5	119.7	119.9	24	117.6	117.8	117.9	24	115.7	115.9	116.0	24	---	---	---	0
4/10	112.2	112.3	112.7	24	119.3	119.5	119.8	24	117.4	117.6	117.7	24	116.0	116.4	116.8	24	---	---	---	0
4/11	112.0	112.3	112.9	24	118.9	119.1	119.3	24	115.8	116.2	117.0	24	116.1	116.7	117.2	24	---	---	---	0
4/12	112.2	112.4	112.9	24	118.9	119.1	119.4	24	114.1	114.5	115.4	24	116.8	117.3	117.9	24	---	---	---	0
4/13	113.1	113.6	114.6	24	119.3	120.3	121.5	24	113.3	113.8	114.3	24	117.7	118.9	120.6	24	---	---	---	0
4/14	114.1	114.3	114.9	19	119.3	120.5	121.4	19	114.2	114.3	114.7	24	117.8	119.1	120.8	24	---	---	---	0
4/15	112.5	112.9	113.7	24	120.6	120.9	121.2	24	112.7	113.0	113.7	24	118.0	119.5	120.2	24	---	---	---	0
4/16	112.5	112.9	113.6	24	119.5	120.0	120.5	24	113.2	113.8	114.2	24	117.3	118.3	119.5	24	---	---	---	0
4/17	113.7	114.1	114.3	24	119.6	120.0	120.4	24	114.7	115.1	115.6	24	116.8	117.3	117.5	24	---	---	---	0
4/18	114.3	114.5	114.7	24	120.1	120.7	120.8	24	116.0	116.5	117.1	24	116.5	117.1	117.5	24	---	---	---	0
4/19	114.6	114.8	115.2	24	120.3	120.7	120.9	24	117.3	117.7	118.0	24	116.7	117.2	117.6	24	---	---	---	0
4/20	115.1	115.3	115.6	24	120.3	120.6	120.9	24	118.2	118.6	119.1	24	115.6	116.3	117.2	24	---	---	---	0
4/21	115.2	115.4	115.6	23	120.0	120.3	120.7	23	118.3	118.5	118.7	23	117.5	118.2	120.2	23	---	---	---	0

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

### Total Dissolved Gas Saturation Data at Lower Columbia River Sites

Date	<u>McNary-Wash</u>			#	<u>McNary Tlwr</u>			#	<u>John Day</u>			#	<u>John Day Tlwr</u>			#	<u>The Dalles</u>			#
	<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>			<u>24h</u>	<u>12h</u>			<u>24h</u>	<u>12h</u>			<u>24h</u>	<u>12h</u>		
	<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>AVG</u>	<u>High</u>	
4/8	109.8	110.8	111.7	24	114.7	115.1	116.1	24	106.5	106.9	107.5	24	111.0	115.5	117.1	24	108.0	109.2	109.6	24
4/9	111.0	111.7	113.1	24	115.2	115.6	115.9	24	106.8	107.0	107.2	24	106.5	106.6	106.8	24	106.1	106.9	109.2	24
4/10	110.1	110.6	112.0	24	114.5	114.8	115.2	24	107.4	108.3	108.8	24	115.3	116.9	119.0	24	105.6	106.8	108.4	24
4/11	108.6	109.1	109.8	24	113.9	114.2	114.5	24	108.3	108.6	109.0	24	114.3	114.9	115.6	24	107.8	108.2	108.6	24
4/12	107.2	107.7	108.2	24	115.0	116.4	116.9	24	108.7	109.0	109.1	24	114.2	114.7	115.7	24	108.5	108.8	109.1	24
4/13	107.2	107.8	109.2	24	115.7	117.1	117.5	24	109.1	109.6	110.2	24	114.9	115.7	115.9	24	109.9	110.9	111.6	24
4/14	108.4	108.7	109.3	24	117.7	117.9	118.1	24	109.8	110.1	110.2	24	116.3	116.6	118.2	24	110.5	110.8	111.3	24
4/15	107.6	107.9	108.3	24	117.1	117.3	117.4	24	107.3	107.6	108.5	24	117.6	117.8	118.6	24	108.4	108.8	109.2	24
4/16	109.8	111.4	112.5	24	117.2	117.3	117.4	24	107.5	108.2	108.8	24	117.5	117.7	117.9	24	109.0	109.9	110.5	24
4/17	113.2	114.3	115.0	24	117.4	117.6	118.0	24	109.7	110.4	110.9	24	117.1	117.2	117.3	24	110.4	111.1	111.6	24
4/18	114.7	115.9	116.5	24	117.8	118.0	118.2	24	111.5	112.3	113.0	24	118.0	118.5	118.7	24	111.7	112.6	113.4	24
4/19	116.6	117.4	118.1	24	117.9	118.0	118.1	24	114.2	115.2	116.1	24	116.9	117.3	117.7	24	113.4	114.1	114.6	24
4/20	117.9	118.7	119.7	24	117.8	118.5	119.1	24	116.7	117.3	117.8	24	116.6	117.0	117.4	24	114.8	115.3	115.7	24
4/21	117.7	117.9	118.1	23	116.3	116.5	117.7	23	117.5	117.9	118.1	23	117.2	118.0	118.6	23	115.1	115.8	116.3	23

### Total Dissolved Gas Saturation Data at Lower Columbia River Sites

Date	<u>The Dalles Dnst</u>			#	<u>Bonneville</u>			#	<u>Warrendale</u>			#	<u>Camas\Washougal</u>			#	<u>Cascade Island</u>			#
	<u>24 h</u>	<u>12 h</u>			<u>24 h</u>	<u>12 h</u>			<u>24h</u>	<u>12h</u>			<u>24h</u>	<u>12h</u>			<u>24h</u>	<u>12h</u>		
	<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>		<u>Avg</u>	<u>Avg</u>	<u>High</u>	
4/8	108.3	109.1	109.7	24	106.4	106.9	107.4	24	107.5	107.8	107.9	24	106.6	108.0	109.0	24	110.5	111.2	112.6	24
4/9	105.9	107.0	109.0	24	107.8	108.2	108.6	24	108.1	108.6	109.0	24	106.8	107.8	108.6	24	109.5	110.1	110.5	24
4/10	111.3	112.3	113.1	24	105.9	106.7	107.5	24	111.8	112.7	113.0	24	107.9	109.1	110.2	24	117.2	117.3	117.4	24
4/11	113.5	114.0	114.3	24	105.8	107.8	108.3	24	111.4	111.8	112.2	24	108.9	109.4	110.0	24	117.3	117.6	117.8	24
4/12	115.8	117.8	120.2	24	109.3	110.4	110.9	24	113.7	114.6	115.8	24	109.6	110.4	111.0	24	118.0	118.6	119.7	24
4/13	115.2	115.9	116.4	24	113.7	116.2	118.1	24	115.2	116.2	117.5	24	112.4	113.6	114.7	24	118.2	118.7	119.5	24
4/14	115.9	116.2	116.4	24	115.2	115.6	116.2	24	116.8	117.1	117.6	24	113.8	114.4	115.0	24	120.1	120.7	121.0	24
4/15	114.2	114.6	114.9	24	112.4	112.8	113.6	24	115.8	116.0	116.7	24	114.0	114.8	115.3	24	120.4	121.0	122.3	24
4/16	114.6	115.2	115.9	24	113.6	114.6	115.5	24	117.4	118.0	118.1	24	114.7	115.8	116.3	24	122.7	122.8	122.9	24
4/17	115.6	116.1	116.5	24	115.0	115.4	116.2	24	117.2	117.7	118.4	24	114.4	114.9	115.8	24	120.9	121.5	122.8	24
4/18	116.5	117.0	117.6	24	115.9	116.5	117.3	24	117.7	118.6	118.9	24	113.8	114.9	115.6	24	121.7	122.8	123.1	24
4/19	117.3	117.6	118.3	24	117.7	118.1	118.8	24	118.4	118.7	119.0	24	116.8	118.1	118.9	24	120.2	120.5	123.1	24
4/20	117.9	118.2	118.7	24	118.7	119.2	119.8	24	118.8	119.2	119.6	24	117.6	118.5	119.4	24	120.1	120.3	120.5	24
4/21	118.1	118.3	118.5	23	117.5	117.7	118.0	23	117.8	118.3	118.5	23	117.3	117.9	118.6	23	119.3	119.6	120.0	23

## Two-Week Summary of Passage Indices

Source: Fish Passage Center

Updated: 4/22/2016 6:54

\* One or more of the sites on this date had an incomplete or biased sample.

See Sampling Comments: <http://www.fpc.org/currentDaily/smpcomments.htm>

For clip information see: <http://www.fpc.org/CurrentDaily/catch.htm>

For sockeye and yearling chinook (Snake only) race information see: <http://www.fpc.org/smoltqueries/currentsmptsubmitdata.asp>

<b>COMBINED YEARLING CHINOOK</b>												
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)	
04/08/2016	*	1,155	---	280	63	27,875	---	19,295	70	---	4,891	4,163
04/09/2016	*	---	---	478	96	34,419	---	---	53	449	---	5,664
04/10/2016	*	---	---	610	73	47,246	16,303	---	84	---	3,475	5,289
04/11/2016	*	668	---	704	185	60,859	---	18,424	220	4,069	---	3,234
04/12/2016	*	178	---	1,232	1,423	138,101	48,800	---	162	---	16,855	4,804
04/13/2016	*	157	---	294	1,029	198,635	---	---	106	12,305	---	13,428
04/14/2016	*	---	---	862	824	219,877	111,794	59,105	51	---	20,495	31,665
04/15/2016	*	---	---	538	758	275,321	---	---	75	21,065	---	37,017
04/16/2016	*	---	---	558	620	196,396	185,723	107,169	112	---	48,468	61,940
04/17/2016	*	---	---	137	---	124,583	---	---	283	26,250	---	61,760
04/18/2016	*	80	---	96	15	96,572	207,521	68,761	343	---	55,376	61,996
04/19/2016	*	529	---	322	16	68,870	132	---	474	48,351	---	55,254
04/20/2016	*	265	---	330	8	66,707	105,170	120,599	579	---	49,854	55,395
04/21/2016	*	224	---	562	8	78,092	---	---	716	73,417	---	58,015
04/22/2016	*	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>		<b>3,256</b>	<b>0</b>	<b>7,003</b>	<b>5,118</b>	<b>1,633,553</b>	<b>675,443</b>	<b>393,353</b>	<b>3,328</b>	<b>185,906</b>	<b>199,414</b>	<b>459,624</b>
<b># Days:</b>		<b>8</b>	<b>0</b>	<b>14</b>	<b>13</b>	<b>14</b>	<b>7</b>	<b>6</b>	<b>14</b>	<b>7</b>	<b>7</b>	<b>14</b>
<b>Average:</b>		<b>407</b>	<b>0</b>	<b>500</b>	<b>394</b>	<b>116,682</b>	<b>96,492</b>	<b>65,559</b>	<b>238</b>	<b>26,558</b>	<b>28,488</b>	<b>32,830</b>
<b>YTD</b>		<b>27,295</b>	<b>38,675</b>	<b>11,196</b>	<b>5,358</b>	<b>1,790,113</b>	<b>675,457</b>	<b>394,661</b>	<b>3,416</b>	<b>186,404</b>	<b>206,818</b>	<b>476,936</b>

<b>COMBINED SUBYEARLING CHINOOK</b>												
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)	
04/08/2016	*	0	---	1	16	0	---	0	374	---	9	597
04/09/2016	*	---	---	0	0	427	---	---	176	6,091	---	941
04/10/2016	*	---	---	0	6	0	---	---	224	---	22	571
04/11/2016	*	0	---	0	43	2,911	---	0	476	2,882	---	294
04/12/2016	*	0	---	0	13	2,572	0	---	390	---	43	637,918
04/13/2016	*	0	---	4	62	2,295	---	---	294	1,183	---	391,563
04/14/2016	*	---	---	0	26	497	573	0	185	---	71	13,903
04/15/2016	*	---	---	0	19	996	---	---	181	8,531	---	3,834
04/16/2016	*	---	---	0	11	4,475	573	0	85	---	286	2,375
04/17/2016	*	---	---	0	---	2,018	---	---	36	41,963	---	1,172
04/18/2016	*	0	---	0	0	2,049	0	0	35	---	577	0
04/19/2016	*	0	---	1	6	512	0	---	28	23,482	---	868
04/20/2016	*	0	---	0	1	4,169	0	0	18	---	867	690
04/21/2016	*	0	---	3	1	1,268	---	---	16	4,667	---	0
04/22/2016	*	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>9</b>	<b>204</b>	<b>24,189</b>	<b>1,146</b>	<b>0</b>	<b>2,518</b>	<b>88,799</b>	<b>1,875</b>	<b>1,054,726</b>
<b># Days:</b>		<b>8</b>	<b>0</b>	<b>14</b>	<b>13</b>	<b>14</b>	<b>7</b>	<b>6</b>	<b>14</b>	<b>7</b>	<b>7</b>	<b>14</b>
<b>Average:</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>16</b>	<b>1,728</b>	<b>164</b>	<b>0</b>	<b>180</b>	<b>12,686</b>	<b>268</b>	<b>75,338</b>
<b>YTD</b>		<b>0</b>	<b>6</b>	<b>29</b>	<b>287</b>	<b>29,451</b>	<b>1,146</b>	<b>0</b>	<b>5,389</b>	<b>89,286</b>	<b>1,890</b>	<b>1,085,880</b>



## Two-Week Summary of Passage Indices

<b>COMBINED COHO</b>												
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)	
04/08/2016 *	0	---	0	0	289	---	0	1	---	36	8,755	
04/09/2016 *	---	---	0	0	0	---	---	4	73	---	10,707	
04/10/2016 *	---	---	0	0	137	0	---	3	---	22	10,959	
04/11/2016 *	0	---	0	0	0	---	0	13	407	---	11,073	
04/12/2016 *	0	---	0	4	0	0	---	6	---	43	21,472	
04/13/2016 *	0	---	0	2	0	---	---	1	690	---	31,573	
04/14/2016 *	---	---	0	19	497	573	0	9	---	286	35,184	
04/15/2016 *	---	---	0	23	747	---	---	9	1,115	---	28,696	
04/16/2016 *	---	---	0	29	994	0	0	2	---	286	15,237	
04/17/2016 *	---	---	0	---	252	---	---	6	739	---	13,490	
04/18/2016 *	0	---	0	2	512	0	0	16	---	505	16,690	
04/19/2016 *	0	---	0	0	768	0	---	25	629	---	16,489	
04/20/2016 *	0	---	0	0	0	0	0	30	---	1,012	10,604	
04/21/2016 *	0	---	0	0	507	---	---	47	1,616	---	8,905	
04/22/2016	---	---	---	---	---	---	---	---	---	---	---	
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>79</b>	<b>4,703</b>	<b>573</b>	<b>0</b>	<b>172</b>	<b>5,269</b>	<b>2,190</b>	<b>239,834</b>	
<b># Days:</b>	<b>8</b>	<b>0</b>	<b>14</b>	<b>13</b>	<b>14</b>	<b>7</b>	<b>6</b>	<b>14</b>	<b>7</b>	<b>7</b>	<b>14</b>	
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>336</b>	<b>82</b>	<b>0</b>	<b>12</b>	<b>753</b>	<b>313</b>	<b>17,131</b>	
<b>YTD</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>81</b>	<b>5,100</b>	<b>573</b>	<b>27</b>	<b>179</b>	<b>5,335</b>	<b>2,195</b>	<b>255,609</b>	

<b>COMBINED STEELHEAD</b>												
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)	
04/08/2016 *	8	---	15	65	14,285	---	674	11	---	779	840	
04/09/2016 *	---	---	13	47	14,507	---	---	6	1,368	---	1,035	
04/10/2016 *	---	---	28	69	44,925	14,719	---	20	---	880	1,065	
04/11/2016 *	61	---	41	63	28,048	---	3,838	16	1,814	---	1,127	
04/12/2016 *	31	---	45	302	88,724	42,926	---	56	---	1,418	1,107	
04/13/2016 *	45	---	7	336	41,818	---	---	35	5,482	---	1,090	
04/14/2016 *	---	---	17	232	69,814	93,967	19,008	30	---	3,106	1,279	
04/15/2016 *	---	---	23	483	94,925	---	---	47	19,216	---	2,520	
04/16/2016 *	---	---	96	192	122,312	63,048	47,400	35	---	8,436	2,968	
04/17/2016 *	---	---	475	---	79,189	---	---	45	26,805	---	2,466	
04/18/2016 *	54	---	118	32	66,089	111,916	40,905	89	---	14,493	4,427	
04/19/2016 *	152	---	155	194	94,217	37	---	75	20,210	---	3,761	
04/20/2016 *	148	---	115	417	71,657	116,024	58,491	72	---	21,965	2,706	
04/21/2016 *	122	---	164	479	59,076	---	---	104	27,464	---	4,048	
04/22/2016	---	---	---	---	---	---	---	---	---	---	---	
<b>Total:</b>	<b>621</b>	<b>0</b>	<b>1,312</b>	<b>2,911</b>	<b>889,586</b>	<b>442,637</b>	<b>170,316</b>	<b>641</b>	<b>102,359</b>	<b>51,077</b>	<b>30,439</b>	
<b># Days:</b>	<b>8</b>	<b>0</b>	<b>14</b>	<b>13</b>	<b>14</b>	<b>7</b>	<b>6</b>	<b>14</b>	<b>7</b>	<b>7</b>	<b>14</b>	
<b>Average:</b>	<b>78</b>	<b>0</b>	<b>94</b>	<b>224</b>	<b>63,542</b>	<b>63,234</b>	<b>28,386</b>	<b>46</b>	<b>14,623</b>	<b>7,297</b>	<b>2,174</b>	
<b>YTD</b>	<b>755</b>	<b>4,992</b>	<b>1,320</b>	<b>3,204</b>	<b>949,567</b>	<b>442,638</b>	<b>171,369</b>	<b>679</b>	<b>103,575</b>	<b>52,006</b>	<b>32,982</b>	

## Two-Week Summary of Passage Indices

<b>COMBINED SOCKEYE</b>											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (INDEX)	LGS (INDEX)	LMN (INDEX)	RIS (INDEX)	MCN (INDEX)	JDA (INDEX)	BO2 (INDEX)
04/08/2016 *	0	---	0	0	0	---	0	207	---	0	93
04/09/2016 *	---	---	0	0	0	---	---	247	20	---	94
04/10/2016 *	---	---	0	0	0	0	---	376	---	0	38
04/11/2016 *	0	---	0	0	0	---	0	582	34	---	98
04/12/2016 *	0	---	0	0	0	0	---	797	---	14	0
04/13/2016 *	0	---	0	0	0	---	---	576	316	---	363
04/14/2016 *	---	---	0	0	0	0	0	470	---	71	0
04/15/2016 *	---	---	0	0	249	---	---	597	1,648	---	203
04/16/2016 *	---	---	0	0	0	0	0	506	---	286	199
04/17/2016 *	---	---	0	---	0	---	---	225	6,100	---	0
04/18/2016 *	1	---	0	0	0	0	0	164	---	216	340
04/19/2016 *	0	---	0	0	0	0	0	61	8,177	---	772
04/20/2016 *	0	---	0	0	0	0	0	105	---	1,012	331
04/21/2016 *	0	---	0	0	0	---	---	459	10,411	---	270
04/22/2016	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>249</b>	<b>0</b>	<b>0</b>	<b>5,372</b>	<b>26,706</b>	<b>1,599</b>	<b>2,801</b>
<b># Days:</b>	<b>8</b>	<b>0</b>	<b>14</b>	<b>13</b>	<b>14</b>	<b>7</b>	<b>6</b>	<b>14</b>	<b>7</b>	<b>7</b>	<b>14</b>
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>384</b>	<b>3,815</b>	<b>228</b>	<b>200</b>
<b>YTD</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>323</b>	<b>0</b>	<b>0</b>	<b>6,017</b>	<b>26,706</b>	<b>1,604</b>	<b>3,104</b>

<b>COMBINED LAMPREY JUVENILES</b>											
Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR <sup>†</sup> (Samp)	LGS (Coll)	LMN (Coll)	RIS (Coll)	MCN (Coll)	JDA (Coll)	BO2 (Coll)
04/08/2016 *	0	---	0	0	0	---	0	2	---	696	40
04/09/2016 *	---	---	0	0	0	---	---	0	75	---	210
04/10/2016 *	---	---	0	0	0	0	---	0	---	340	120
04/11/2016 *	0	---	0	0	0	---	200	7	100	---	240
04/12/2016 *	0	---	0	0	0	100	---	26	---	480	143
04/13/2016 *	0	---	0	0	1	---	---	5	30	---	429
04/14/2016 *	---	---	0	0	5	0	0	2	---	550	0
04/15/2016 *	---	---	0	0	5	---	---	1	625	---	50
04/16/2016 *	---	---	0	0	22	800	0	1	---	400	133
04/17/2016 *	---	---	0	---	22	---	---	0	3,200	---	0
04/18/2016 *	0	---	0	0	3	800	0	1	---	150	0
04/19/2016 *	0	---	0	0	1	0	---	1	600	---	0
04/20/2016 *	0	---	0	0	2	800	0	0	---	600	110
04/21/2016 *	0	---	0	0	0	---	---	0	400	---	0
04/22/2016	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>61</b>	<b>2,500</b>	<b>200</b>	<b>46</b>	<b>5,030</b>	<b>3,216</b>	<b>1,475</b>
<b># Days:</b>	<b>8</b>	<b>0</b>	<b>14</b>	<b>13</b>	<b>14</b>	<b>7</b>	<b>6</b>	<b>14</b>	<b>7</b>	<b>7</b>	<b>14</b>
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>357</b>	<b>33</b>	<b>3</b>	<b>719</b>	<b>459</b>	<b>105</b>
<b>YTD</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>71</b>	<b>2,500</b>	<b>220</b>	<b>65</b>	<b>5,050</b>	<b>4,604</b>	<b>5,823</b>

## Two-Week Summary of Passage Indices

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

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

Two classes of fish counts are shown in these tables:

Sample counts (Samp) are provided for juvenile lamprey at LGR. See note below for details †.

Collection counts (Coll), which account for sample rates but are not adjusted for flow;

Passage indices (INDEX), which are collection counts divided by the proportion of water passing through the sampled powerhouse.

Passage indices are not population estimates, but are used to adjust collection counts for daily fluctuations in the site's or project's operations.

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

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

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

### Definitions for Smolt Index Counts

WTB (Collection) = Salmon River Trap at Whitebird : Collection Counts

IMN (Collection) = Imnaha River Trap : Collection Counts

GRN (Collection) = Grande Ronde River Trap : Collection Counts

LEW (Collection) = Snake River Trap at Lewiston : Collection Counts

LGR (Index) = Lower Granite Dam Bypass Collection System : Passage Index Counts

Passage Index = Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill)}

LGS (Index) = Little Goose Bypass Collection System : Passage Index Counts

Passage Index = Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill)}

LMN (Index) = Lower Monumental Dam Bypass Collection System : Passage Index Counts

Passage Index = Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill)}

RIS (Index) = Rock Island Dam Second Powerhouse Bypass Trap : Passage Index Counts

Passage Index = Collection Counts / {Powerhouse 2 Flow / (Powerhouse 1 & 2 Flow + Spill)}

MCN (Index) = McNary Dam Bypass Collection System : Passage Index Counts

Passage Index = Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill)}

JDA (Index) = John Day Dam Bypass Collection System : Passage Index Counts

Passage Index = Collection Counts / {Powerhouse Flow / (Powerhouse Flow + Spill)}

BO2 (Index) = Bonneville Dam Second Powerhouse Bypass Collection System : Passage Index Counts

Passage Index = Collection Counts / {Powerhouse 2 Flow / (Powerhouse 1 & 2 Flow + Spill)}

JDA and BO2 data collected for the FPC by Pacific States Marine Fisheries Commission.

RIS data collected for the FPC by Chelan Co. PUD.

LGR, LMN, and MCN data collected for the FPC by Washington Dept. of Fish and Wildlife.

LGS and GRN data collected for the FPC by Oregon Dept. of Fish and Wildlife.

IMN data collected for the FPC by the Nez Perce Tribe.

Fall (post SMP season) trapping at the Imnaha River Fish Trap (IMN) is funded by the Lower Snake River Compensation Program (LSRCP)

WTB and LEW data collected for the FPC by Idaho Dept. of Fish and Game.

## Two Week Transportation Summary

Source: Fish Passage Center

Updated:

4/22/16 6:54 AM

		04/08/16	TO	04/22/16			
		Species					
Site	Data	CH0	CH1	CO	ST	SO	Grand Total
<b>LGR</b>	Sum of NumberCollected	18,900	1,284,184	3,700	696,417	200	2,003,401
	Sum of NumberBarged	0	0	0	0	0	0
	Sum of NumberBypassed	18,850	1,284,041	3,700	696,404	200	2,003,195
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	8	21	0	9	0	38
	Sum of FacilityMorts	42	62	0	4	0	108
	Sum of ResearchMorts	0	60	0	0	0	60
	Sum of TotalProjectMorts	50	143	0	13	0	206
<b>LGS</b>	Sum of NumberCollected	800	471,858	400	309,304		782,362
	Sum of NumberBarged	0	0	0	0		0
	Sum of NumberBypassed	800	471,793	400	309,298		782,291
	Sum of Numbertrucked	0	0	0	0		0
	Sum of SampleMorts	0	6	0	2		8
	Sum of FacilityMorts	0	59	0	4		63
	Sum of ResearchMorts	0	0	0	0		0
	Sum of TotalProjectMorts	0	65	0	6		71
<b>LMN</b>	Sum of NumberCollected		269,764		117,334		387,098
	Sum of NumberBarged		0		0		0
	Sum of NumberBypassed		269,752		117,333		387,085
	Sum of Numbertrucked		0		0		0
	Sum of SampleMorts		12		1		13
	Sum of FacilityMorts		0		0		0
	Sum of ResearchMorts		0		0		0
	Sum of TotalProjectMorts		12		1		13
Total Sum of NumberCollected		19,700	2,025,806	4,100	1,123,055	200	3,172,861
Total Sum of NumberBarged		0	0	0	0	0	0
Total Sum of NumberBypassed		19,650	2,025,586	4,100	1,123,035	200	3,172,571
Total Sum of Numbertrucked		0	0	0	0	0	0
Total Sum of SampleMorts		8	39	0	12	0	59
Total Sum of FacilityMorts		42	121	0	8	0	171
Total Sum of ResearchMorts		0	60	0	0	0	60
Total Sum of TotalProjectMorts		50	220	0	20	0	290



### YTD Transportation Summary

Source: Fish Passage Center

Updated:

4/22/16 6:54 AM

TO: 04/22/16

		Species					
Site	Data	CH0	CH1	CO	SO	ST	Grand Total
<b>LGR</b>	Sum of NumberCollected	23,390	1,423,484	4,070	250	741,827	2,193,021
	Sum of NumberBarged	0	0	0	0	0	0
	Sum of NumberBypassed	23,340	1,423,328	4,070	250	741,814	2,192,802
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	8	33	0	0	9	50
	Sum of FacilityMorts	42	63	0	0	4	109
	Sum of ResearchMorts	0	60	0	0	0	60
	Sum of TotalProjectMorts	50	156	0	0	13	219
<b>LGS</b>	Sum of NumberCollected	800	471,858	400		309,304	782,362
	Sum of NumberBarged	0	0	0		0	0
	Sum of NumberBypassed	800	471,793	400		309,298	782,291
	Sum of NumberTrucked	0	0	0		0	0
	Sum of SampleMorts	0	6	0		2	8
	Sum of FacilityMorts	0	59	0		4	63
	Sum of ResearchMorts	0	0	0		0	0
	Sum of TotalProjectMorts	0	65	0		6	71
<b>LMN</b>	Sum of NumberCollected		270,894	20		118,264	389,178
	Sum of NumberBarged		0	0		0	0
	Sum of NumberBypassed		270,882	20		118,262	389,164
	Sum of NumberTrucked		0	0		0	0
	Sum of SampleMorts		12	0		2	14
	Sum of FacilityMorts		0	0		0	0
	Sum of ResearchMorts		0	0		0	0
	Sum of TotalProjectMorts		12	0		2	14
Total Sum of NumberCollected		24,190	2,166,236	4,490	250	1,169,395	3,364,561
Total Sum of NumberBarged		0	0	0	0	0	0
Total Sum of NumberBypassed		24,140	2,166,003	4,490	250	1,169,374	3,364,257
Total Sum of NumberTrucked		0	0	0	0	0	0
Total Sum of SampleMorts		8	51	0	0	13	72
Total Sum of FacilityMorts		42	122	0	0	8	172
Total Sum of ResearchMorts		0	60	0	0	0	60
Total Sum of TotalProjectMorts		50	233	0	0	21	304

Cumulative Adult Passage at Mainstem Dams Through: 04/21

DAM	END DATE	Spring Chinook						Summer Chinook						Fall Chinook					
		2016		2015		10-Yr Avg.		2016		2015		10-Yr Avg.		2016		2015		10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	04/21	9201	50	60400	368	18777	94	0	0	0	0	0	0	0	0	0	0	0	0
TDA	04/21	2939	61	35084	242	9355	46	0	0	0	0	0	0	0	0	0	0	0	0
JDA	04/21	2033	21	20609	136	6100	45	0	0	0	0	0	0	0	0	0	0	0	0
MCN	04/21	1089	2	7808	109	2678	21	0	0	0	0	0	0	0	0	0	0	0	0
IHR	04/21	457	8	2525	7	964	2	0	0	0	0	0	0	0	0	0	0	0	0
LMN	04/21	341	1	1432	25	507	2	0	0	0	0	0	0	0	0	0	0	0	0
LGS	04/21	198	2	935	16	236	4	0	0	0	0	0	0	0	0	0	0	0	0
LGR	04/21	119	1	444	5	100	1	0	0	0	0	0	0	0	0	0	0	0	0
PRD	04/20	34	-1	204	2	71	0	0	0	0	0	0	0	0	0	0	0	0	0
WAN	04/20	18	0	56	0	31	0	0	0	0	0	0	0	0	0	0	0	0	0
RIS	04/20	10	0	28	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0
RRH	04/20	4	1	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEL		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WFA	04/20	2172	13	6603	121	1848	14	0	0	0	0	0	0	0	0	0	0	0	0

DAM	END DATE	Coho						Sockeye			Steelhead						Lamprey		
		2016		2015		10-Yr Avg.		2016	2015	10-Yr Avg.	2016	2015	10-Yr Avg.	Wild 2016	Wild 2015	10-Yr Avg.	2016	2015	10-Yr Avg.
		Adult	Jack	Adult	Jack	Adult	Jack												
BON	04/21	0	0	0	0	0	0	1	1	0	3514	3874	3401	1525	2120	1121	1	0	0
TDA	04/21	0	0	0	0	0	0	0	0	0	262	214	2131	152	124	841	0	0	0
JDA	04/21	0	0	0	0	0	1	0	0	0	297	341	4286	211	237	1590	11	2	-1
MCN	04/21	0	0	0	0	1	0	1	0	0	443	486	5148	306	308	1679	2	4	0
IHR	04/21	0	0	0	0	0	0	0	0	0	1110	737	4671	611	467	1333	1	2	0
LMN	04/21	0	0	0	0	0	0	0	0	0	1145	2952	7633	790	1501	2385	0	0	0
LGS	04/21	0	0	0	0	0	0	0	0	0	3029	1033	2298	1707	662	1013	0	0	0
LGR	04/21	0	0	0	0	0	0	0	0	0	5086	8618	8279	2826	3936	2903	0	0	0
PRD	04/20	0	0	0	0	0	0	0	0	0	7	13	14	0	0	0	0	3	0
WAN	04/20	0	0	0	0	0	0	0	0	0	6	18	36	0	0	0	0	0	0
RIS	04/20	0	0	0	0	0	0	0	0	0	15	26	38	9	19	21	0	0	0
RRH	04/20	0	0	0	0	0	0	0	0	0	35	39	103	14	28	72	0	0	0
WEL		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WFA	04/20	0	0	1	0	0	0	0	0	0	5684	3999	5679	0	0	0	0	0	0

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

### Columbia/Snake Project Forebay Temperatures

