



## Fish Passage Center

# Weekly Report #17-05

April 7, 2017

### This Week's Highlights

#### System Reservoirs

This year at Dworshak, Unit #3 is out of service for rehabilitation through at least the early summer period. As Unit #3 is the largest in terms of outflow capacity of the three units at Dworshak, flow through the powerhouse is limited to 4.5-4.8 Kcfs. Any outflow beyond the constrained powerhouse capacity at Dworshak, must be spilled; creating concerns over TDG (Total Dissolved Gas supersaturation) in the river environment below Dworshak Dam and subsequently at Dworshak Hatchery as water to the hatchery is supplied by river water.

Currently, Dworshak is releasing a total outflow of 25 Kcfs, with spill levels around 20 Kcfs, which is producing TDG below Dworshak between 125-127%. These conditions are expected to last for the foreseeable future.

Drafting for flood control is also occurring at Grand Coulee Dam on the Upper Columbia River and at the Hells Canyon Complex on the Snake River. Significant spill is also occurring at each of these projects with elevated TDG supersaturation below the projects.

#### Water Supply

Precipitation throughout the Columbia Basin has varied between 12% and 82% of average at individual sub-basins over early April. Precipitation above The Dalles has been 45% of average over early April. Over the 2017 water year, precipitation has ranged between 118% and 144% of average.

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

Location	Water Year 2017 April 1-5, 2017		Water Year 2017 October 1, 2016 to April 5, 2017	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	0.32	71	29.4	126
Snake River Above Ice Harbor	0.11	31	19.4	137
Columbia Above The Dalles	0.17	45	22.3	127
Kootenai	0.34	76	30.6	134
Clark Fork	0.10	25	18.3	118
Flathead	0.34	69	29.5	139
Pend Oreille River Basin above Waneta Dam	0.20	46	25.7	131
Salmon River Basin	0.08	18	25.6	144
Upper Snake Tributaries	0.34	82	22.4	142
Clearwater	0.07	12	33.0	125
Willamette River above Portland	0.12	13	69.9	138

Snowpack within the Columbia Basin has been above average. Average snowpack in the Columbia River for basins above the Snake River confluence is 104% of average, for Snake River Basins the average snowpack is 130% of average, and for lower Columbia Basins between McNary and Bonneville Dam average snowpack is 124% of average.

Table 2 displays the April 5<sup>th</sup> ESP runoff volume forecasts for multiple reservoirs along with the April COE forecasts at Libby and Dworshak. The April 5<sup>th</sup> ESP forecast at The Dalles between April and August is 105,039 Kaf (120% of average).

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

Location	April 5, 2017 5-day QPF ESP	
	% Average (1981-2010)	Runoff Volume (Kaf)
The Dalles (Apr-Aug)	120	105,039
Grand Coulee (Apr-Aug)	114	64,955
Libby Res. Inflow, MT (Apr-Aug)	118 122*	6,928 7,654*
Hungry Horse Res. Inflow, MT (Apr-Aug)	121	2,342
Lower Granite Res. Inflow (Apr- July)	143	28,373
Brownlee Res. Inflow (Apr-July)	198	108,845
Dworshak Res. Inflow (Apr-July)	111 122*	2,691 2,984*

\* Denotes COE April Forecast

Grand Coulee Reservoir is at 1242.5 feet (4-5-17) and has drafted 5.9 feet over the last week. Outflows at Grand Coulee have ranged between 204.5 Kcfs and 208.4 Kcfs over the last week. The April 15<sup>th</sup> FC Elevation at Grand Coulee is 1249.6 feet.

The Libby Reservoir is currently at elevation 2380.7 feet (4-5-17) and has drafted 5.9 feet over the past week. Daily average outflows at Libby Dam have been 25 Kcfs over the last week. The April 30<sup>th</sup> FC Elevation at Libby is 2325.4 feet (based on COE April final Forecast of 7.654 Kaf).

Hungry Horse is currently at an elevation of 3534.5 feet (4-5-17) and has drafted 2.5 feet last week. Outflows at Hungry Horse have been 11.7 Kcfs over the last week. The April 15<sup>th</sup> FC Elevation at Hungry Horse is 3538.2 feet.

Dworshak is currently at an elevation of 1520.6 feet (4-5-17) and has drafted 7.6 feet over the last week. Inflows to Dworshak decreased last week from 23.4 to 13.8 Kcfs. Dworshak outflows were 25.0 Kcfs last week. The April 15<sup>th</sup> System FC Elevation is 1448.3 feet (based on COE April final Forecast of 2.984 Kaf).

The Brownlee Reservoir was at an elevation of 2021.3 feet on April 5, 2017, and drafted 4.3 feet last week. Outflows at Hells Canyon have ranged between 66.8 and 75.3 Kcfs over the last four days. The minimum flow at Hells Canyon is 8.5 Kcfs. The April 15<sup>th</sup> FC Elevation at Brownlee is 2030.8 feet.

### Spill

Flows in the Snake River remained high over the past week primarily due to continued flood control operations at Dworshak Dam and the Hells Canyon Complex and, also as a function of precipitation and some snowmelt. Flows in the Upper Columbia have also been high as Grand Coulee increased discharge to draft the reservoir for flood control management. Both the Snake River and Upper Columbia River flows are contributing to the high flows in the middle Columbia River.

The 2017 spill for fish passage program at the lower Snake River projects began just after midnight on April 3<sup>rd</sup>. However, due to the high river flows, significant involuntary spill has occurred at all of the mainstem federal projects, and at the Upper Columbia projects. BPA has indicated that the involuntary spill that is occurring in the Federal Columbia River Power System is mostly in excess of hydraulic capacity, as several projects are presently operating with generation unit outages, limiting hydraulic capacity.

Project	Spill Level Day/Night
Lower Granite	20 Kcfs/20 Kcfs
Little Goose	30%/30%
Lower Monumental	Gas Cap/Gas Cap
Ice Harbor	45 Kcfs/Gas Cap

As a result of limited hydraulic capacity all of the Snake River projects are spilling above the levels targeted for fish spill. Spill at Lower Granite Dam exceeded the Biological Opinion level of 20 Kcfs, and ranged from 70 to 82 Kcfs. At Little Goose Dam spill ranged from 28.5% to 36.3% of average daily flow. Spill at Lower Monumental Dam ranged from 64 Kcfs to 77 Kcfs and at Ice Harbor spill ranged from 93 Kcfs to 105 Kcfs. Spill for fish passage is scheduled to begin in the middle Columbia River on April 10<sup>th</sup>. However, significant spill has occurred in the middle Columbia River over the past week, all of it “involuntary” spill. Similarly,

high spill levels are occurring at projects in the Upper Columbia River.

High total dissolved gas (TDG) supersaturation levels are occurring below Dworshak Dam, as well as at the Hells Canyon Complex dams on the Snake River, due to discharge in excess of hydraulic capacity for flood control operations (TDG supersaturation is well in excess of 125% below these projects). Consequently, due to flood control the TDG supersaturation levels are already well in excess of 100% when the river water enters the mainstem Snake River hydrosystem. TDG supersaturation at the Lower Granite Dam forebay monitor has averaged about 107% to 111% over the past week.

In addition to flood control operations elevating TDG supersaturation above the mainstem federal hydrosystem, the present uncontrolled spill due to unit outages has resulted in elevated TDG supersaturation levels throughout the hydrosystem. (The present TDG criteria are noted below). Over the past week the tailwater TDG supersaturation (average of 12 highest hourly levels in a calendar day) ranged from 124% to 129% at Lower Granite Dam; 120% to 122% at Little Goose Dam; 121% to 130% at Lower Monumental Dam; and, 121% to 128% at Ice Harbor Dam. TDG supersaturation levels have also increased at the Middle Columbia projects, ranging from a low of 123% to 129% at the tailwater of McNary Dam; 121% to 125% at The Dalles Dam; 121% to 124% below John Day Dam; and, 124% to 128% at the Warrendale gage below Bonneville Dam. Similar to the federal hydrosystem, TDG supersaturation levels are also high prior to Wells Dam on the Upper Columbia River (118% to 119% in the forebay of wells Dam) and then often exceeding 125% in the tailraces of the downstream projects.

**Note:** The State of Oregon TDG waiver only requires compliance with 120% TDG in the tailrace, while the State of Washington requires compliance with both a 115% TDG forebay requirement and a 120% tailrace TDG requirement. The State of Oregon and the State of Washington also use different methodologies to estimate the 12-hour average TDG. For Oregon, the 12-hour average is based on the 12 highest hourly TDG measurements in a single calendar day (not necessarily consecutive). For Washington, the 12-hour average is based on 12-hour rolling averages. The highest of the rolling averages is what is reported as the 12-hour average for a given day. The location of a TDG monitor

will dictate which of these methodologies is used for compliance monitoring. The Washington methodology will apply to all the lower Snake River projects, as well as the middle Columbia River forebay monitors. On any given day the compliance of the tailrace monitors at the middle Columbia River projects will be determined using either the Washington or Oregon methodology, whichever is the most restrictive, and spill will be decreased if needed.

Gas bubble trauma monitoring in smolts took place over the past week at Lower Granite and Lower Monumental dams. At Lower Granite Dam 2% of the sample was observed with minor signs of GBT in their fins (likely as a result of the TDG levels encountered due to flood control operations). At Little Goose Dam no fish were detected with signs of GBT. The observed signs of GBT are well below the action criteria that would be in place during the voluntary spill for fish passage program. The action criteria for interruption of the voluntary spill for fish passage program is defined as either 15 percent of examined fish showing signs of gas bubble trauma in their non-paired fins, or five percent of the fish examined show signs of gas bubble trauma in their non-paired fins where more than 25 percent of the surface area of the fin is occluded by gas bubbles, corresponding to ranks greater than 2.

#### **Temperature**

Forebay temperatures are now being reported for Lower Granite, Ice Harbor, McNary and Bonneville dams. Thus far, reported temperatures are close to average based on the past ten years of data.

#### **Smolt Monitoring**

Sampling for the Smolt Monitoring Program (SMP) is underway at all bypass facilities, except McNary Dam. Sampling at McNary is expected to begin around April 8<sup>th</sup>. Due to high flows and debris loads, sampling at the Snake River Trap has been terminated for the 2017 season. However, sampling at each of the other SMP traps continued this week.

This week's samples at BON were dominated by subyearling Chinook and coho. The daily average passage indices for these two species were nearly 3,100 for subyearling Chinook and about 3,250 for coho. This week's daily average passage index for subyearling Chinook was very similar to last week's daily average passage. However, this week's passage

index for coho was a substantial increase over last week's daily average passage index of only 55 fish per day. The substantial increase in coho passage this week is likely explained by nearby hatchery releases, as 99% of the coho juveniles sampled this week were clipped. As has been observed over the previous several weeks, nearly all of the subyearling Chinook juveniles sampled at BON this week were fry. Yearling Chinook, sockeye, and steelhead numbers all increased this week, when compared to the previous week. This week's daily average passage indices were about 1,050 for yearling Chinook, 350 for sockeye, and 550 for steelhead. Last week's daily average passage indices for these three species were 280, 65, and 16 per day, respectively. Pacific lamprey macrophthalmia were encountered every day this week. This week's daily average collection for Pacific macrophthalmia was about 580 per day, which is lower than last week's daily average collection of nearly 700 per day. No Pacific lamprey ammocoetes were encountered in this week's collections.

Sampling at John Day Dam (JDA) began on April 1<sup>st</sup>, with the first sample being tallied and reported on April 2<sup>nd</sup>. Similar to 2016, sampling at JDA in 2017 will be every-other-day. This week's samples at JDA were dominated by steelhead, with a daily average passage index of about 18,600 per day. Yearling Chinook were the second most abundant species in this week's samples, with a daily average passage index of nearly 4,000 per day. Subyearling Chinook, coho, and sockeye were also encountered in this week's samples but in relatively low numbers. All of the subyearling Chinook that were collected at JDA this week were fry. Finally, Pacific lamprey ammocoetes and macrophthalmia were collected in all three of this week's samples. The daily average collection for Pacific ammocoetes was about 100 per day, while that for Pacific macrophthalmia was nearly 1,700 per day.

Sampling at Lower Granite Dam (LGR) began on March 25<sup>th</sup>, with the first sample being tallied and reported on March 26<sup>th</sup>. Steelhead continued to dominate the samples at LGR this week, with a daily average passage index of nearly 15,000 per day. This is a decrease from the previous week when the daily average passage index for steelhead was about 55,000 per day. Yearling Chinook passage at LGR increased this week, when compared to the previous week. This week's daily average passage index for yearling Chinook

was about 11,600 per day, whereas that for last week was about 8,000 per day. Subyearling Chinook, coho, and sockeye were also encountered at LGR this week but in relatively low numbers. Most, if not all, of the sockeye juveniles encountered at LGR this week were likely kokanee that have escaped from Dworshak reservoir through spill. All of the subyearling Chinook that were collected this week were fry. Finally, Pacific lamprey macrophthalmia were encountered in only one of this week's samples (April 4<sup>th</sup>).

Sampling at Little Goose Dam (LGS) began on April 1<sup>st</sup>, with the first sample being tallied and reported on April 2<sup>nd</sup>. Similar to recent years, sampling at LGS will be every-other-day until transportation begins, at which time sampling will occur every day. Steelhead dominated this week's samples at LGS, with a daily average passage index of about 10,200 per day. Yearling Chinook were the second most dominate species in this week's samples, with a daily average passage index of about 4,500 per day. Subyearling Chinook, coho, and sockeye were all encountered in this week's samples but in relatively low numbers. All of the subyearling Chinook in this week's samples were fry. Finally, no lamprey juveniles were encountered at LGS this week.

Sampling at Lower Monumental Dam (LMN) began on April 1<sup>st</sup>, with the first sample being tallied and reported on April 2<sup>nd</sup>. Similar to recent years, sampling at LMN will start out at every-third-day through mid-April and switch to every-other-day from mid-April until transportation begins. Once transportation begins, sampling will occur every day. Steelhead dominated this week's samples at LMN, with a daily average passage index of nearly 15,000 per day. Yearling Chinook were the second most dominate species in this week's samples, with a daily average passage index of about 1,325 per day. The only other species that was encountered in this week's samples was subyearling Chinook. This week's daily average passage index for subyearling Chinook at LMN was about 300 per day. Unlike LGR and LGS, the subyearling Chinook collected at LMN this week were not fry. It is likely that these subyearling Chinook were from hatchery releases above Lower Monumental Dam that took place over the last couple of weeks. These releases include a surplus production release of subyearling fall Chinook into the Tucannon River and an accidental release of subyearling fall Chinook from Lyons Ferry Hatchery.

No lamprey juveniles were encountered at LMN this week.

Sampling at Rock Island Dam (RIS) began on March 31<sup>st</sup>, with the first sample being tallied and reported on April 1<sup>st</sup>. Subyearling Chinook dominated this week's samples at RIS, with a daily average passage index of about 70 fish per day. All of the subyearling Chinook that were collected this week were fry. Yearling Chinook, steelhead, and sockeye were also collected this week, but in relatively low numbers. Pacific lamprey macropthalmia were encountered in three of this week's samples (April 2<sup>nd</sup>, 3<sup>rd</sup>, and 5<sup>th</sup>).

The Grande Ronde Trap (GRN) is operated by the Oregon Department of Fish and Wildlife and is located at river kilometer two in the Grande Ronde River. The start of sampling at GRN was delayed due to high flows and debris levels in the Grande Ronde River. Sampling began on March 27<sup>th</sup>, with the first sample tallied and reported on March 28<sup>th</sup>. After two days of successful sampling, increased flows from March 29<sup>th</sup> to March 31<sup>st</sup> led to the suspension of sampling. Sampling resumed for the sample on April 1<sup>st</sup> and has continued since. For the period of April 1<sup>st</sup> through April 6<sup>th</sup>, yearling Chinook dominated the samples at GRN. The daily average collection for yearling Chinook over this period was about 475 per day. The daily average collection for steelhead over this same period was 270 per day. The only other salmonids that were encountered over this period were coho, with a daily average collection of about 50 per day. These coho juveniles were likely part of a release of approximately 500,000 hatchery coho juveniles into the Lostine River on March 9<sup>th</sup>. Finally, Pacific lamprey ammocoetes were encountered in two of this week's samples (April 2<sup>nd</sup> and April 3<sup>rd</sup>).

The Salmon River Trap at Whitebird (WTB) is located at river kilometer 103 and is operated by Idaho Department of Fish and Game. Similar to the last two years, sampling at WTB started out at 5-days per week. However, due to the termination of sampling at the Snake River Trap and the suspension of sampling from March 17<sup>th</sup> to 26<sup>th</sup>, sampling frequency at WTB may be increased for at least a portion of the 2017 season. Over the last four samples (April 3<sup>rd</sup> through April 6<sup>th</sup>), sampling at WTB has been limited to 4-17.5 hours per day, in an effort to reduce handling of hatchery yearling Chinook. For the period of March 31<sup>st</sup> through April 6<sup>th</sup>, collections at WTB have been dominated by

yearling Chinook. This week's daily average collection for yearling Chinook at WTB was 1,470 fish per day. Approximately 71% of the yearling Chinook juveniles collected over this period were of known hatchery origin. Steelhead collections at WTB increased slightly over this period, with a daily average collection of nearly 40 per day.

The Snake River Trap at Lewiston, ID (LEW) is located at river kilometer 225 and operated by Idaho Department of Fish and Game. Sampling at LEW began on March 5<sup>th</sup> but was suspended soon thereafter due to high flows and high debris levels. After several weeks of suspended sampling, it was decided that sampling at LEW would be terminated for the 2017 season. The risk of injury to the crew and damage to the trap from the high flows were too high to warrant continued efforts to sample fish at this site.

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. For 2017, the FPC currently has data from IMN for the period of January 27<sup>th</sup> through April 1<sup>st</sup>. Sampling at IMN was suspended from March 19<sup>th</sup> through March 26<sup>th</sup> due to high flows. Since sampling resumed on March 27<sup>th</sup>, samples at IMN have been dominated by yearling Chinook. For the period of March 27<sup>th</sup> to April 1<sup>st</sup>, the daily average collection for yearling Chinook at IMN was 110 per day. The daily average collection for steelhead over this same period was 33 per day.

### Hatchery Release

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

**Snake River Zone:** The Snake River Zone encompasses the Snake River and its tributaries from its confluence with the Columbia River to Hells Canyon Dam. Approximately 610,000 yearling fall Chinook juveniles were scheduled to be released into this zone this week. Of these, 150,000 (25%) were released from Pittsburg Landing Acclimation Pond on the Snake River (above Lower Granite Dam) on April 7<sup>th</sup>.

The remaining 460,000 (75%) were scheduled to be released from Lyons Ferry Hatchery on or around April 1<sup>st</sup>. In addition, about 770,000 yearling spring Chinook were planned for release into this zone this week. Of these, approximately 280,000 (36%) were scheduled to be released into the Imnaha River and 250,000 (32%) were scheduled to be released into the Grande Ronde River. The remaining 240,000 were scheduled to be released into the Tucannon River, which empties into the Lower Snake River above Lower Monumental Dam. Just over 1.22 million yearling summer Chinook were scheduled to be released into the Salmon River and its tributaries this week. About 550,000 coho juveniles were scheduled to be released into Clear Creek, a tributary of the Clearwater River, beginning on or around April 5<sup>th</sup>. Finally, just over 2.5 million summer steelhead juveniles were scheduled to be released into this zone this week. Of these, nearly 1.69 million (67%) were scheduled to be released into the Salmon River, 282,000 (11%) were scheduled to be released into the Pahsimeroi River, 320,000 (13%) were scheduled to be released into the Wallowa River, and 215,000 (9%) were scheduled to be released into the Imnaha River.

Approximately 150,000 yearling fall Chinook juveniles are scheduled to be released into the Clearwater River next week. In addition, approximately 922,500 yearling spring Chinook juveniles are scheduled to be released to this zone over the next two weeks. These spring Chinook releases are scheduled to take place throughout the Snake River Zone: including releases to the Grande Ronde River and its tributaries (70%), tributaries of the Salmon River (20%), and tributaries of the Clearwater River (10%). Nearly 1.24 million yearling summer Chinook juveniles are scheduled to be released into the Pahsimeroi River over the next two weeks. Approximately 735,000 sockeye juveniles are scheduled to be released into Redfish Lake Creek, beginning on or around April 17<sup>th</sup>. These sockeye releases are planned to run through early May and are about 2-3 weeks earlier than past years' releases. Finally, nearly 3.86 million summer steelhead juveniles are scheduled to be released to this zone over the next two weeks. Of these, approximately 95% are scheduled to be released into the Snake River, or its tributaries, above Lower Granite Dam. The remaining 5% are scheduled to be released either directly from Lyons Ferry Hatchery or into the Tucannon River.

**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. Approximately 64,000 yearling spring Chinook juveniles were scheduled to be released into the Methow River on or around April 1<sup>st</sup>. The only other release that was scheduled for this zone this week was a release of approximately 500 subyearling summer Chinook parr to Chelan Falls. This release is part of the WDFW COOP program.

Just over 1.95 million yearling spring Chinook are scheduled to be released to this zone over the next two weeks. These releases are scheduled to occur throughout this river zone, including releases to the Okanogan (10%), Methow (31%), and Wenatchee (21%) rivers, as well as a release from Chief Joseph Hatchery just below Chief Joseph Dam (38%). In addition, nearly 2.68 million yearling summer Chinook are scheduled to be released into this zone over the next two weeks. These summer Chinook are also scheduled to be released throughout this river zone. Nearly 365,000 coho juveniles are scheduled to be released to this zone over the next two weeks. These coho are part of a Yakama Tribal program to reintroduce coho to the Methow and Wenatchee rivers. Of the coho juveniles scheduled to be released into this zone over the next two weeks, 81% are scheduled to be released into the Methow River and 19% are scheduled to be released into the Wenatchee River. Finally, approximately 319,500 summer steelhead juveniles are scheduled to be released to this zone over the next two weeks. These steelhead releases are scheduled to occur on the Okanogan River (40%), the Wenatchee River (8%), and from Wells Hatchery, which is located just below Wells Dam (52%).

**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). Approximately 250,000 yearling spring Chinook juveniles were scheduled to be released into the Umatilla River this week. In addition, about 2.55 million coho juveniles were scheduled to be released into the Klickitat River this week. Finally, about 162,000 summer steelhead juveniles were scheduled to be released into the Deschutes River this week.

Approximately 6.0 million subyearling fall Chinook tules are scheduled to be released from Spring Creek NFH, on or around April 10<sup>th</sup>. In addition, nearly 2.85 million yearling spring Chinook juveniles are scheduled

to be released to this zone over the next two weeks. These releases are scheduled to occur in the Wind (44%), Little White Salmon (38%), Umatilla (6%), Deschutes (9%), and Hood (3%) rivers. Approximately 1.03 million coho juveniles are scheduled to be released into this zone this week. Of these, about 500,000 (48%) are scheduled to be released into the Umatilla River. The remaining 532,000 (52%) are part of a Yakama Tribal Program to reintroduce coho to the Yakima River. About 446,000 summer steelhead juveniles are scheduled to be released into this zone over the next two weeks. These summer steelhead juveniles are scheduled to be released throughout the Middle Columbia River Zone. Finally, about 20,000 winter steelhead juveniles are scheduled to be released into Rock Creek, a tributary of the Columbia River that empties into the Columbia just above Bonneville Dam.

**Lower Columbia Zone:** The Lower Columbia Zone is defined as the Columbia River and its tributaries below Bonneville Dam. Approximately 121,000 yearling spring Chinook juveniles were scheduled for release into this zone this week. Of these, about 66,000 (55%) were scheduled to be released into the Sandy River while 55,000 (45%) were scheduled to be released into the Clackamas River. In addition, just over 1.6 million coho juveniles were scheduled to be released into this zone this week. Nearly all (99.7%) of these coho juveniles were scheduled to be released into the Lewis River. The remaining few (5,000) were scheduled to be released into Cathlamet Channel. Approximately 551,500 summer steelhead juveniles were scheduled to be released into the Willamette River and its tributaries this week. Finally, about 100,000 winter steelhead juveniles were scheduled to be released in this zone this week. Of these, about 60% were scheduled to be released into Big Creek while 40% were scheduled to be released into Gnat Creek.

Approximately 1.6 million subyearling fall Chinook tules are scheduled to be released from Bonneville Hatchery on or around April 18<sup>th</sup>. In addition, about 434,000 yearling spring Chinook juveniles are scheduled for release into this zone over the next two weeks. Of these, approximately 234,000 (54%) are scheduled to be released into the Willamette River while the remaining 200,000 (46%) are scheduled to be released from a Select Area Fisheries net pen at Tongue Point. Nearly 2.48 million coho juveniles are also scheduled to be released into this zone over the

next two weeks. These coho releases are scheduled to occur throughout this river zone. About 105,000 sea-run cutthroat trout are scheduled to be released into the Cowlitz River, beginning on or around April 15<sup>th</sup>. Finally, nearly 2.06 million steelhead juveniles are scheduled to be released into this zone over the next two weeks. Of these, approximately 1.54 million (75%) are winter steelhead while the remaining 516,600 (25%) are summer steelhead. These steelhead releases are scheduled to occur throughout this river zone.

### Adult Passage

Bonneville Dam uses video counts from January 1<sup>st</sup> through March 31<sup>st</sup> and direct counting after this period. Bonneville Dam counts adult salmon and steelhead year round. Lower Granite Dam uses video counts from March 1<sup>st</sup> through March 31<sup>st</sup> and direct counting after this period. Lower Granite Dam counts adult salmon and steelhead through December 30<sup>th</sup> each year. Willamette Falls Dam also uses video counts and reports adult counts year round. Video counts can cause a delay in posting the count data to the web, because the counting staff at the projects has to review the tapes. The FPC collects the adult count data from projects several times a day and updates Adult Dam Count Report linked on our homepage (<http://www.fpc.org/>). During the winter season at Bonneville Dam (from 1/1/2017 through 3/31/2017), 16 adult Chinook and 1,666 adult steelhead were counted. In 2016 for the same time frame, 237 adult Chinook and 2,775 adult steelhead were counted. The 2017 Bonneville Dam winter season count of adult steelhead had 1,109 fewer fish than the 2016 count.

The direct counts at Bonneville Dam showed 1 to 14 adult spring Chinook passing over the project this past week, with a cumulative total of 38 for both direct and video counts (through April 5). This is 5.4% of the 2016 count and 5% of the ten-year average. Adult steelhead direct counts ranged from 31 to 56 since April 1<sup>st</sup>, with a cumulative total of 1889 for both direct and video counts through April 5<sup>th</sup>. This is 63.2% of the 2016 count and 71.1% of the ten-year average.

The Willamette Falls cumulative steelhead count from January 1<sup>st</sup> through April 4<sup>th</sup> is 492. The 2017 Willamette Falls winter steelhead count is about 10.4% of the 2016 count of 4,749 and 11.5% of the 10-year average count of 4,282. This year's Lower Granite steelhead count of 6,104 had 1,790 more fish than the 2016 count of 4,314 and 70 less fish than the 10-year average count of 6,174.

The Bonneville Dam corner collector was opened on March 22<sup>nd</sup> for kelt passage. Between March 2<sup>nd</sup> and March 22<sup>nd</sup>, a total of 20 steelhead and 1 salmon were observed over the separator at the Bonneville Juvenile Monitoring Facility (JMF). Kelt passage at the Bonneville JMF can be found at: <http://www.fpc.org/adultsalmon/bonkeltcounts.htm>.

The Corp of Engineers adult count project and ladder queries are now available on FPC.org at the following url: <http://www.fpc.org/environment/home.asp>.



## Hatchery Releases Last Two Weeks

### Hatchery Release Summary

From: 3/25/2017 to 04/07/17

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2017	608,234	03-29-17	03-29-17	Kooskia Hatchery	Clearwater River M F	SNAK
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2017	1,289,680	03-23-17	03-29-17	Red River	S Fk Clearwater River	SNAK
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2017	187,154	04-05-17	04-07-17	Little Salmon River	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2017	281,898	04-03-17	04-06-17	Pahsimeroi River	Pahsimeroi River	SNAK
Idaho Dept. of Fish and Game	McCall Hatchery	CH1	SU	2017	162,707	04-03-17	04-06-17	Knox Bridge	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	McCall Hatchery	CH1	SU	2017	946,134	04-03-17	04-06-17	Knox Bridge	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2017	390,299	03-27-17	03-31-17	Pahsimeroi River	Pahsimeroi River	SNAK
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2017	560,000	03-20-17	03-29-17	Hells Canyon Dam	Snake River	SNAK
Idaho Dept. of Fish and Game	Sawtooth Hatchery	CH1	SP	2017	119,299	03-29-17	03-29-17	Sawtooth Hatchery	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	Sawtooth Hatchery	CH1	SP	2017	1,114,789	03-29-17	03-29-17	Sawtooth Hatchery	Salmon River (ID)	SNAK
<b>Idaho Dept. of Fish and Game Total</b>					<b>5,660,194</b>					
Nez Perce Tribe	Dworshak NFH	CO	UN	2017	550,000	04-05-17	04-05-17	Clear Creek	Clearwater River M F	SNAK
Nez Perce Tribe	Lyons Ferry Hatchery	CH1	FA	2017	150,000	03-31-17	03-31-17	Cpt John Acclim Pond Pittsburg Landing	Snake River	SNAK
Nez Perce Tribe	Lyons Ferry Hatchery	CH1	FA	2017	150,000	04-07-17	04-07-17	Acclim Pond	Snake River South Fork Salmon River	SNAK
Nez Perce Tribe	McCall Hatchery	CH1	SU	2017	111,405	04-01-17	04-02-17	Johnson Cr Idaho	River	SNAK
<b>Nez Perce Tribe Total</b>					<b>961,405</b>					
Oregon Dept. of Fish and Wildlife	Big Creek Hatchery	CM	UN	2017	290,000	03-31-17	03-31-17	Big Creek Hatchery	Big Creek	LCOL
Oregon Dept. of Fish and Wildlife	Big Creek Hatchery	ST	WI	2017	60,000	04-07-17	04-07-17	Big Creek Hatchery	Big Creek	LCOL
Oregon Dept. of Fish and Wildlife	Clackamas Hatchery	CH1	SP	2017	66,000	04-06-17	04-06-17	Bull Run Acclimation	Sandy River	LCOL
Oregon Dept. of Fish and Wildlife	Clackamas Hatchery	ST	SU	2017	125,000	04-07-17	04-07-17	Clackamas Hatchery	Clackamas River	LCOL
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CH1	SP	2017	250,000	03-31-17	03-31-17	Tongue Pt	Col R Bel. Bon Dam	LCOL
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CH1	SP	2017	400,000	03-31-17	03-31-17	Youngs Bay	Youngs River	LCOL
Oregon Dept. of Fish and Wildlife	Eagle Creek NFH	ST	WI	2017	100,000	03-31-17	03-31-17	Eagle Creek Hatchery	Eagle Creek	LCOL
Oregon Dept. of Fish and Wildlife	Enhancement Program	CH1	SP	2017	55,000	04-07-17	04-07-17	Clackamas River	Clackamas River	LCOL
Oregon Dept. of Fish and Wildlife	Gnat Creek Hatchery	ST	WI	2017	40,000	04-07-17	04-07-17	Gnat Creek Hatchery	Col R Bel. Bon Dam	LCOL
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2017	215,000	04-01-17	04-30-17	Little Sheep Creek	Imnaha River	SNAK
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2017	320,000	04-01-17	04-03-17	Wallowa Acclim Pond	Wallowa River	SNAK
Oregon Dept. of Fish and Wildlife	Leaburg Hatchery	ST	SU	2017	108,000	04-07-17	04-07-17	McKenzie River	Willamette River	LCOL
Oregon Dept. of Fish and Wildlife	Lookingglass Hatchery	CH1	SP	2017	250,000	04-01-17	04-01-17	Lookingglass Creek	Grande Ronde River	SNAK
Oregon Dept. of Fish and Wildlife	Lookingglass Hatchery	CH1	SP	2017	280,000	04-01-17	04-01-17	Imnaha Acclim Pond	Imnaha River	SNAK
Oregon Dept. of Fish and Wildlife	Roaring River Hatchery	ST	SU	2017	96,000	04-01-17	04-01-17	Willamette River	Willamette River	LCOL
Oregon Dept. of Fish and Wildlife	Round Butte Hatchery	ST	SU	2017	162,000	04-07-17	04-07-17	Deschutes River	Deschutes River	MCOL
Oregon Dept. of Fish and Wildlife	South Santiam Hatchery	ST	SU	2017	55,000	03-31-17	03-31-17	Minto Pond South Santiam	Santiam River	LCOL
Oregon Dept. of Fish and Wildlife	South Santiam Hatchery	ST	SU	2017	161,500	04-03-17	04-03-17	Hatchery	Santiam River	LCOL
Oregon Dept. of Fish and Wildlife	Willamette Hatchery	ST	SU	2017	61,000	04-05-17	04-05-17	Dexter Pond	Willamette River	LCOL
Oregon Dept. of Fish and Wildlife	Willamette Hatchery	ST	SU	2017	66,000	03-31-17	03-31-17	Minto Pond	Santiam River	LCOL
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2017	7,500	03-25-17	03-25-17	Metolius River	Deschutes River	MCOL
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2017	7,500	03-25-17	03-25-17	Wychus Creek	Deschutes River	MCOL
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2017	10,000	03-25-17	03-25-17	Crooked River (OR)	Deschutes River	MCOL
<b>Oregon Dept. of Fish and Wildlife Total</b>					<b>3,185,500</b>					
U.S. Fish and Wildlife Service	Hagerman NFH	ST	SU	2017	1,500,000	04-04-17	04-07-17	Sawtooth Hatchery	Salmon River (ID)	SNAK
<b>U.S. Fish and Wildlife Service Total</b>					<b>1,500,000</b>					
Umatilla Tribe	Carson NFH	CH1	SP	2017	249,095	03-28-17	03-28-17	Walla Walla River	Walla Walla River	MCOL
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2017	250,000	04-03-17	04-03-17	Imeques Acclim Pond	Umatilla River	MCOL
<b>Umatilla Tribe Total</b>					<b>499,095</b>					

Washington Dept. of Fish and Wildlife	COOP	CO	NO	2017	5,000	04-01-17	04-01-17	Cathlamet Channel Net Pen	Col R Bel. Bon Dam	LCOL
Washington Dept. of Fish and Wildlife	Lewis River Hatchery	CO	NO	2017	900,000	04-01-17	04-10-17	Lewis River Hatchery	Lewis River	LCOL
Washington Dept. of Fish and Wildlife	Lewis River Hatchery	CO	SO	2017	700,000	04-01-17	04-10-17	Lewis River Hatchery	Lewis River	LCOL
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	CH0	FA	2017	110,000	03-29-17	04-05-17	Tucannon River	Tucannon River	SNAK
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	CH0	FA	2017	245,000	03-20-17	03-27-17	Lyons Ferry Hatchery	Snake River	SNAK
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	CH1	FA	2017	460,000	04-01-17	04-06-17	Lyons Ferry Hatchery	Snake River	SNAK
Washington Dept. of Fish and Wildlife	Tucannon Hatchery	CH1	SP	2017	240,000	04-01-17	04-15-17	Curl Lake Acclim Pond	Tucannon River	SNAK
Washington Dept. of Fish and Wildlife	Washougal Hatchery	CO	NO	2017	2,550,000	04-01-17	04-01-17	Klickitat River	Klickitat River	MCOL
<b>Washington Dept. of Fish and Wildlife Total</b>					<b>5,210,000</b>					
<b>Grand Total</b>					<b>17,016,194</b>					

## Hatchery Releases Next Two Weeks

### Hatchery Release Summary

From: 4/8/2017 to 4/21/2017

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
Colville Tribe	Chief Joseph Hatchery	CH1	SP	2017	200,000	04-15-17	04-22-17	Riverside Pond	Okanogan River	UCOL
Colville Tribe	Chief Joseph Hatchery	CH1	SP	2017	744,000	04-15-17	04-21-17	Chief Joseph Hatchery Similkameen Acclim	Wells Pool	UCOL
Colville Tribe	Chief Joseph Hatchery	CH1	SU	2017	150,000	04-15-17	04-22-17	Pd	Okanogan River	UCOL
Colville Tribe	Chief Joseph Hatchery	CH1	SU	2017	210,000	04-15-17	04-22-17	Omak Pond	Okanogan River	UCOL
Colville Tribe	Chief Joseph Hatchery	CH1	SU	2017	232,000	04-15-17	04-21-17	Chief Joseph Hatchery	Wells Pool	UCOL
Colville Tribe	Wells Hatchery	ST	SU	2017	20,000	04-17-17	05-01-17	Omak Creek	Okanogan River	UCOL
Colville Tribe	Wells Hatchery	ST	SU	2017	107,000	04-17-17	05-01-17	Okanogan River	Okanogan River	UCOL
<b>Colville Tribe Total</b>					<b>1,663,000</b>					
Idaho Dept. of Fish and Game	Clearwater Hatchery	ST	SU	2017	145,295	04-15-17	04-15-17	Newsome Creek Redhouse (SfK)	S Fk Clearwater River	SNAK
Idaho Dept. of Fish and Game	Clearwater Hatchery	ST	SU	2017	238,714	04-13-17	04-14-17	ClearH20 R)	S Fk Clearwater River	SNAK
Idaho Dept. of Fish and Game	Clearwater Hatchery	ST	SU	2017	594,369	04-10-17	04-12-17	Meadow Creek - CLES	S Fk Clearwater River	SNAK
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2017	93,338	04-13-17	04-14-17	Pahsimeroi River	Pahsimeroi River	SNAK
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2017	155,680	04-14-17	04-18-17	Pahsimeroi River	Pahsimeroi River	SNAK
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2017	217,796	04-10-17	04-12-17	Little Salmon River	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2017	625,970	04-12-17	04-25-17	Yankee Fk (Salmon R)	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2017	210,000	04-18-17	04-18-17	Little Salmon River	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	Pahsimeroi Hatchery	CH1	SU	2017	67,300	04-18-17	04-26-17	Pahsimeroi Hatchery	Pahsimeroi River	SNAK
Idaho Dept. of Fish and Game	Pahsimeroi Hatchery	CH1	SU	2017	1,053,825	04-18-17	04-26-17	Pahsimeroi Hatchery	Pahsimeroi River	SNAK
Idaho Dept. of Fish and Game	Sawtooth Hatchery	CH1	SP	2017	189,042	04-18-17	04-18-17	Yankee Fk (Salmon R)	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	Sawtooth Hatchery	CH1	SU	2017	118,586	04-19-17	04-19-17	Pahsimeroi River	Pahsimeroi River	SNAK
Idaho Dept. of Fish and Game	Springfield Hatchery	SO	UN	2017	735,200	04-17-17	05-05-17	Redfish Lake Creek	Salmon River (ID)	SNAK
<b>Idaho Dept. of Fish and Game Total</b>					<b>4,445,115</b>					
Nez Perce Tribe	Lookingglass Hatchery	CH1	SP	2017	250,000	04-20-17	04-20-17	Lostine Accim Pond Big Canyon	Wallowa River	SNAK
Nez Perce Tribe	Lyons Ferry Hatchery	CH1	FA	2017	150,000	04-10-17	04-14-17	(Clearwater River)	Clearwater River M F	SNAK
Nez Perce Tribe	Nez Perce Tribal Hatchery	CH1	SP	2017	83,500	04-12-17	04-12-17	Lolo Creek	Clearwater River M F	SNAK
<b>Nez Perce Tribe Total</b>					<b>483,500</b>					
Oregon Dept. of Fish and Wildlife	Bonneville Hatchery	CH0	FA	2017	1,600,000	04-18-17	04-18-17	Tanner Creek	Tanner Creek	LCOL
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CH1	SP	2017	200,000	04-20-17	04-20-17	Tongue Pt	Col R Bel. Bon Dam	LCOL
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CO	UN	2017	200,000	04-14-17	04-14-17	S Fk Klaskanine River	Klaskanine River	LCOL
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CO	UN	2017	400,000	04-14-17	04-14-17	Blind Slough	Col R Bel. Bon Dam	LCOL
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CO	UN	2017	825,000	04-14-17	04-14-17	Youngs Bay	Youngs River	LCOL
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2017	150,500	04-15-17	04-15-17	Big Canyon Acclim.Pd (Grande Ronde)	Wallowa River	SNAK
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2017	169,500	03-16-17	04-15-17	Big Canyon Acclim.Pd (Grande Ronde)	Wallowa River	SNAK
Oregon Dept. of Fish and Wildlife	Klaskanine Hatchery	ST	WI	2017	40,000	04-14-17	04-14-17	Klaskanine Hatchery	Klaskanine River	LCOL
Oregon Dept. of Fish and Wildlife	Opal Springs Hatchery	ST	SU	2017	1,000	04-15-17	04-15-17	Crooked River (OR)	Deschutes River	MCOL
Oregon Dept. of Fish and Wildlife	Round Butte Hatchery	CH1	SP	2017	240,000	04-14-17	05-31-17	Deschutes River	Deschutes River	MCOL
Oregon Dept. of Fish and Wildlife	Sandy Hatchery	CO	UN	2017	200,000	04-14-17	04-14-17	Cedar Creek (Sandy R)	Sandy River	LCOL
Oregon Dept. of Fish and Wildlife	Sandy Hatchery	ST	SU	2017	75,000	04-18-17	04-18-17	Cedar Creek (Sandy R)	Sandy River	LCOL
Oregon Dept. of Fish and Wildlife	Sandy Hatchery	ST	SU	2017	75,000	04-18-17	04-18-17	Cedar Creek (Sandy R)	Sandy River	LCOL
Oregon Dept. of Fish and Wildlife	Sandy Hatchery	ST	WI	2017	160,000	04-13-17	04-13-17	Cedar Creek (Sandy R)	Sandy River	LCOL
Oregon Dept. of Fish and Wildlife	Sandy Hatchery	ST	WI	2017	160,000	04-13-17	04-13-17	Cedar Creek (Sandy R)	Sandy River	LCOL
Oregon Dept. of Fish and Wildlife	Willamette Hatchery	CH1	SP	2017	234,000	04-14-17	04-14-17	Dexter Pond	Willamette River	LCOL
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2017	7,500	04-15-17	04-15-17	Metolius River	Deschutes River	MCOL
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2017	7,500	04-15-17	04-15-17	Wychus Creek	Deschutes River	MCOL
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2017	10,000	04-15-17	04-15-17	Crooked River (OR)	Deschutes River	MCOL

<b>Oregon Dept. of Fish and Wildlife Total</b>										
					<b>4,755,000</b>					
U.S. Fish and Wildlife Service	Carson NFH	CH1	SP	2017	1,263,440	04-10-17	04-10-17	Carson Hatchery	Wind River	MCOL
U.S. Fish and Wildlife Service	Dworshak NFH	ST	SU	2017	1,040,000	04-10-17	04-10-17	Dworshak Hatchery	Clearwater River M F	SNAK
U.S. Fish and Wildlife Service	Eagle Creek NFH	CO	SO	2017	350,000	04-10-17	04-10-17	Eagle Creek Hatchery	Eagle Creek	LCOL
U.S. Fish and Wildlife Service	Entiat Hatchery	CH1	SU	2017	460,000	04-15-17	04-15-17	Entiat Hatchery	Entiat River	UCOL
								Little White Salmon	Little White Salmon	MCOL
U.S. Fish and Wildlife Service	Little White Salmon NFH	CH1	SP	2017	1,080,000	04-12-17	04-12-17	Hatchery	River	
U.S. Fish and Wildlife Service	Spring Creek NFH	CH0	FA	2017	6,000,000	04-10-17	04-10-17	Spring Creek Hatchery	Bonneville Pool	MCOL
U.S. Fish and Wildlife Service	Winthrop NFH	CH1	SP	2017	424,500	04-15-17	04-26-17	Winthrop Hatchery	Methow River	UCOL
<b>U.S. Fish and Wildlife Service Total</b>										
					<b>10,617,940</b>					
Umatilla Tribe	Cascade Hatchery	CO	UN	2017	500,000	04-11-17	04-11-17	Pendelton Acclim Pond	Umatilla River	MCOL
								Catherine Cr Acclim		SNAK
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2017	150,000	04-20-17	04-20-17	Pond	Grande Ronde River	SNAK
								Grande Ronde Acclim		SNAK
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2017	250,000	04-15-17	04-15-17	Pond	Grande Ronde River	
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2017	165,000	04-17-17	04-17-17	Imeques Acclim Pond	Umatilla River	MCOL
<b>Umatilla Tribe Total</b>										
					<b>1,065,000</b>					
Warm Springs Tribe	Round Butte Hatchery	CH1	SP	2017	75,000	04-15-17	04-15-17	W Fk Hood River	Hood River	MCOL
<b>Warm Springs Tribe Total</b>										
					<b>75,000</b>					
Washington Dept. of Fish and Wildlife	Beaver Creek Hatchery	ST	SU	2017	30,000	04-15-17	04-15-17	Beaver Creek Hatchery	Elochoman River	LCOL
Washington Dept. of Fish and Wildlife	Beaver Creek Hatchery	ST	WI	2017	34,000	04-15-17	04-15-17	Beaver Creek Hatchery	Elochoman River	LCOL
Washington Dept. of Fish and Wildlife	Beaver Creek Hatchery	ST	WI	2017	104,000	04-15-17	04-15-17	Beaver Creek Hatchery	Elochoman River	LCOL
Washington Dept. of Fish and Wildlife	Chiwawa Hatchery	CH1	SP	2017	163,000	04-15-17	04-22-17	Chiwawa Hatchery	Wenatchee River	UCOL
Washington Dept. of Fish and Wildlife	Chiwawa Hatchery	CH1	SP	2017	243,000	04-15-17	04-22-17	Nason Creek	Wenatchee River	UCOL
Washington Dept. of Fish and Wildlife	COOP	CT	UN	2017	10,080	04-15-17	04-15-17	Cowlitz River	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Cowlitz Trout	CT	UN	2017	95,000	04-15-17	05-15-17	Cowlitz Trout	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Cowlitz Trout	ST	WI	2017	50,000	04-15-17	05-15-17	Cowlitz Trout	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Cowlitz Trout	ST	WI	2017	120,000	04-15-17	05-15-17	Cowlitz Trout	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Cowlitz Trout	ST	WI	2017	480,000	04-15-17	05-15-17	Cowlitz Trout	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Eastbank Hatchery	CH1	SU	2017	460,000	04-15-17	04-15-17	Chelan Falls	Rocky Reach Pool	UCOL
Washington Dept. of Fish and Wildlife	Eastbank Hatchery	CH1	SU	2017	529,000	04-20-17	04-30-17	Dryden Acclim Pond	Wenatchee River	UCOL
Washington Dept. of Fish and Wildlife	Eastbank Hatchery	ST	SU	2017	24,500	04-20-17	05-31-17	Blackbird Island Acc Pond	Wenatchee River	UCOL
Washington Dept. of Fish and Wildlife	Fallert Creek Hatchery	ST	SU	2017	24,600	04-15-17	05-15-17	Fallert Creek Hatchery	Kalama River	LCOL
Washington Dept. of Fish and Wildlife	Kalama Falls Hatchery	CO	NO	2017	500,000	04-15-17	04-15-17	Kalama Falls Hatchery	Kalama River	LCOL
Washington Dept. of Fish and Wildlife	Kalama Falls Hatchery	ST	SU	2017	55,000	04-15-17	04-15-17	Kalama Falls Hatchery	Kalama River	LCOL
Washington Dept. of Fish and Wildlife	Kalama Falls Hatchery	ST	WI	2017	12,000	04-15-17	05-15-17	Coweeman River	Coweeman River	LCOL
Washington Dept. of Fish and Wildlife	Kalama Falls Hatchery	ST	WI	2017	43,900	04-15-17	05-15-17	Kalama Falls Hatchery	Kalama River	LCOL
Washington Dept. of Fish and Wildlife	Kalama Falls Hatchery	ST	WI	2017	45,300	04-15-17	04-15-17	Kalama Falls Hatchery	Kalama River	LCOL
Washington Dept. of Fish and Wildlife	Lewis River Hatchery	CO	NO	2017	900,000	04-01-17	04-10-17	Lewis River Hatchery	Lewis River	LCOL
Washington Dept. of Fish and Wildlife	Lewis River Hatchery	CO	SO	2017	700,000	04-01-17	04-10-17	Lewis River Hatchery	Lewis River	LCOL
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2017	25,000	04-10-17	04-10-17	Tucannon River	Tucannon River	SNAK
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2017	35,000	04-10-17	04-10-17	Walla Walla River	Walla Walla River	MCOL
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2017	55,000	04-15-17	04-20-17	Dayton Acclim Pond	Touchet River	MCOL
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2017	85,000	04-15-17	04-20-17	Dayton Acclim Pond	Touchet River	MCOL
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2017	110,000	04-10-17	04-10-17	Lyons Ferry Hatchery	Snake River	SNAK

Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2017	200,000	04-10-17	04-17-17	Cottonwood Acclim Pond	Grande Ronde River	SNAK
Washington Dept. of Fish and Wildlife	Merwin Hatchery	ST	SU	2017	60,000	04-15-17	04-15-17	Echo Net Pens	Lewis River	LCOL
Washington Dept. of Fish and Wildlife	Merwin Hatchery	ST	SU	2017	177,000	04-15-17	05-15-17	Lewis River	Lewis River	LCOL
Washington Dept. of Fish and Wildlife	Merwin Hatchery	ST	WI	2017	116,000	04-15-17	05-15-17	Lewis River	Lewis River	LCOL
Washington Dept. of Fish and Wildlife	Methow Hatchery	CH1	SP	2017	41,000	04-15-17	04-15-17	Twisp Acclim Pond	Methow River	UCOL
Washington Dept. of Fish and Wildlife	Methow Hatchery	CH1	SP	2017	136,000	04-15-17	04-20-17	Methow Hatchery	Methow River	UCOL
Washington Dept. of Fish and Wildlife	Methow Hatchery	CH1	SU	2017	170,000	04-15-17	04-20-17	Carlton Acclim Pond	Methow River	UCOL
Washington Dept. of Fish and Wildlife	Ringold Springs Hatchery	ST	SU	2017	180,000	04-15-17	04-15-17	Ringold Springs Hatchery	McNary Pool	MCOL
Washington Dept. of Fish and Wildlife	Similkameen Hatchery	CH1	SU	2017	131,000	04-15-17	04-15-17	Similkameen River	Okanogan River	UCOL
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	SU	2017	20,000	04-15-17	05-15-17	S Fk Toutle River	Toutle River	LCOL
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	SU	2017	90,000	04-17-17	05-17-17	Klickitat River	Klickitat River	MCOL
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	WI	2017	20,000	04-17-17	05-17-17	Rock Cr (Stevenson)	Bonneville Pool	MCOL
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	WI	2017	39,000	04-16-17	04-22-17	Salmon Creek (WA)	Col R Bel. Bon Dam	LCOL
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	WI	2017	60,000	04-17-17	05-17-17	Washougal River	Washougal River	LCOL
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	WI	2017	75,000	04-17-17	05-17-17	Washougal River	Washougal River	LCOL
Washington Dept. of Fish and Wildlife	Tucannon Hatchery	CH1	SP	2017	240,000	04-01-17	04-15-17	Curl Lake Acclim Pond	Tucannon River	SNAK
Washington Dept. of Fish and Wildlife	Tucannon Hatchery	ST	SU	2017	49,000	04-15-17	05-07-17	Curl Lake Acclim Pond	Tucannon River	SNAK
Washington Dept. of Fish and Wildlife	Wells Hatchery	CH1	SU	2017	336,000	04-15-17	04-15-17	Wells Hatchery	Rocky Reach Pool	UCOL
Washington Dept. of Fish and Wildlife	Wells Hatchery	ST	SU	2017	168,000	04-17-17	05-01-17	Wells Hatchery	Rocky Reach Pool	UCOL
<b>Washington Dept. of Fish and Wildlife Total</b>					<b>7,241,380</b>					
Yakama Tribe	Cascade Hatchery	CO	UN	2017	50,203	04-21-17	05-03-17	Winthrop Hatchery	Methow River	UCOL
Yakama Tribe	Cascade Hatchery	CO	UN	2017	68,383	04-19-17	04-19-17	Leavenworth Hatchery	Wenatchee River	UCOL
Yakama Tribe	Eagle Creek NFH	CO	UN	2017	141,000	04-15-17	06-01-17	Holmes Pond	Yakima River	MCOL
Yakama Tribe	Eagle Creek NFH	CO	UN	2017	141,000	04-15-17	06-01-17	Stiles Pond	Yakima River	MCOL
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2017	250,000	04-15-17	06-01-17	Prosser Acclim Pond	Yakima River	MCOL
Yakama Tribe	Winthrop NFH	CO	UN	2017	245,996	04-21-17	05-03-17	Winthrop Hatchery	Methow River	UCOL
<b>Yakama Tribe Total</b>					<b>896,582</b>					
<b>Grand Total</b>					<b>31,242,517</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
03/24/2017	205.5	27.3	203.5	130.1	208.9	82.0	221.6	84.1	212.7	67.6	241.9	77.8	248.5	122.1
03/25/2017	204.5	27.3	210.6	135.0	208.8	53.9	217.1	81.8	211.1	55.5	211.3	71.7	208.4	87.1
03/26/2017	208.1	31.5	207.5	111.4	212.5	54.4	227.3	91.1	220.0	67.7	236.9	91.2	241.4	109.8
03/27/2017	209.7	32.1	214.4	148.3	219.3	62.5	219.4	85.8	210.1	56.8	226.9	100.0	231.7	106.4
03/28/2017	208.8	36.7	213.2	142.4	226.9	65.5	226.7	92.1	219.2	70.1	241.4	113.9	242.3	117.8
03/29/2017	211.7	35.0	212.9	147.3	221.8	60.2	224.0	91.0	218.5	70.3	237.2	115.4	239.2	114.6
03/30/2017	208.4	34.1	214.9	122.9	222.6	70.9	224.6	91.4	217.9	71.9	241.7	129.0	237.9	117.1
03/31/2017	207.8	35.1	214.1	114.2	223.7	74.2	228.1	91.6	220.1	70.7	247.9	102.8	250.3	147.6
04/01/2017	205.1	31.9	204.2	117.8	212.2	62.9	216.3	86.3	212.9	65.2	237.3	112.6	241.4	157.5
04/02/2017	204.5	28.7	209.7	122.8	217.8	68.9	217.8	93.3	213.0	61.8	229.3	102.8	231.7	149.7
04/03/2017	204.5	28.7	212.4	136.6	219.5	67.0	218.7	90.1	212.2	65.4	233.4	103.2	232.0	117.7
04/04/2017	207.0	31.6	204.6	109.8	217.8	65.9	225.6	88.6	218.2	69.7	236.7	82.9	234.5	128.8
04/05/2017	205.6	31.5	210.8	114.9	216.1	63.4	220.4	89.2	213.8	66.3	241.5	77.4	241.1	138.5
04/06/2017	199.3	27.2	205.9	92.6	214.6	63.0	217.4	82.8	209.3	64.2	230.2	58.3	227.2	127.9

**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
03/24/2017	24.9	20.1	---	72.6	178.9	91.0	168.7	38.9	182.9	100.0	184.5	129.1
03/25/2017	24.9	20.1	---	72.2	172.3	85.5	167.2	52.3	176.2	92.5	179.3	123.8
03/26/2017	24.9	20.1	---	71.8	167.6	80.5	165.7	57.9	173.6	90.1	175.3	119.8
03/27/2017	24.8	20.0	---	71.5	161.5	75.3	160.8	47.7	168.3	85.1	171.0	119.0
03/28/2017	24.8	20.0	---	71.4	161.5	75.1	150.3	24.1	159.8	77.0	159.8	109.4
03/29/2017	24.8	20.0	---	71.0	152.9	80.2	143.0	34.9	153.3	71.7	157.9	106.6
03/30/2017	25.0	20.2	---	73.5	162.0	82.1	150.8	53.9	160.5	82.2	163.6	107.4
03/31/2017	25.0	20.1	---	74.1	167.7	80.2	169.0	54.9	180.6	112.7	182.3	126.1
04/01/2017	25.0	20.2	---	74.1	158.8	86.8	161.5	51.0	171.8	93.1	174.3	120.0
04/02/2017	25.0	20.2	---	72.5	155.8	84.4	151.0	42.4	156.1	77.4	158.4	104.7
04/03/2017	25.1	20.2	---	73.5	153.8	82.4	150.1	48.1	155.8	77.1	158.9	105.1
04/04/2017	24.8	19.9	---	73.1	150.1	78.7	146.0	41.6	151.8	73.1	157.4	103.8
04/05/2017	24.9	20.0	---	71.6	144.7	73.8	140.4	47.6	142.9	64.5	145.9	93.2
04/06/2017	24.9	19.9	---	66.8	140.5	69.7	139.0	50.4	141.6	63.5	146.8	93.2

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

Date	McNary		John Day		The Dalles		Bonneville		PH1	PH2
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill		
03/24/2017	460.3	262.4	435.8	178.9	427.1	269.0	459.3	237.2	99.2	110.6
03/25/2017	435.9	235.2	433.5	172.5	425.5	269.0	459.6	223.6	108.5	115.1
03/26/2017	417.9	216.2	427.2	166.4	419.9	260.7	453.6	225.5	98.2	117.5
03/27/2017	418.4	225.2	421.0	181.1	410.6	254.5	449.1	226.3	105.1	105.3
03/28/2017	410.2	222.6	427.8	191.9	426.2	266.6	446.8	242.8	100.9	90.6
03/29/2017	417.9	230.3	424.8	188.9	422.0	261.5	443.0	235.5	102.8	92.3
03/30/2017	412.4	216.9	418.2	180.6	411.0	254.3	440.5	235.3	95.0	97.8
03/31/2017	421.1	222.4	420.5	148.5	409.8	254.3	439.7	221.1	100.1	106.1
04/01/2017	434.1	286.1	425.0	146.4	415.0	251.5	442.0	247.7	72.6	109.3
04/02/2017	410.2	264.2	445.8	170.2	435.3	272.9	448.8	252.9	71.3	112.2
04/03/2017	393.2	247.6	428.8	156.5	420.6	286.8	445.3	255.5	70.7	106.6
04/04/2017	407.5	262.2	427.3	155.0	417.3	289.6	439.7	248.8	71.8	106.7
04/05/2017	384.1	244.2	424.4	176.3	413.0	240.7	435.3	244.6	69.5	108.7
04/06/2017	383.8	263.1	403.8	154.4	379.3	201.0	420.4	223.7	73.8	110.5

## 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>											
	03/30/17	Chinook + Steelhead	100	3	3	3.00%	0.00%	3	0	0	0
	04/06/17	Chinook + Steelhead	103	2	2	1.94%	0.00%	2	0	0	0
<b>Little Goose Dam</b>											
<b>Lower Monumental Dam</b>											
	04/06/17	Chinook + Steelhead	100	0	0	0.00%	0.00%	0	0	0	0
<b>McNary Dam</b>											
<b>Bonneville Dam</b>											
<b>Rock Island Dam</b>											

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.

## 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>#</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>				
3/24	111.3	111.4	111.4	24	---	---	---	0	104.2	104.3	104.4	24	116.1	116.2	116.4	24	120.0	120.4	120.6	24
3/25	111.3	111.3	111.5	24	---	---	---	0	104.4	104.6	104.8	24	116.3	116.5	116.7	22	115.6	116.2	118.1	23
3/26	111.3	111.4	111.5	24	---	---	---	0	105.1	105.3	105.4	24	119.1	120.0	120.2	24	115.4	115.9	116.1	24
3/27	113.0	114.4	114.6	24	---	---	---	0	105.0	105.2	105.4	24	119.7	119.9	120.4	24	116.2	116.8	117.3	24
3/28	114.3	114.4	114.5	24	---	---	---	0	105.0	105.1	105.3	24	123.2	124.4	125.8	24	117.6	117.9	118.1	24
3/29	114.2	114.2	114.3	8	---	---	---	0	106.1	106.4	106.6	24	123.1	124.4	124.9	24	119.9	121.5	123.2	24
3/30	---	---	---	0	---	---	---	0	106.1	106.3	106.5	24	121.5	122.7	123.8	24	122.6	123.0	123.4	24
3/31	---	---	---	0	---	---	---	0	105.8	106.5	108.1	24	122.1	123.4	124.0	24	118.9	119.5	121.4	24
4/1	---	---	---	0	---	---	---	0	106.7	107.1	107.6	24	119.8	120.2	121.3	24	122.0	123.2	123.4	24
4/2	---	---	---	0	---	---	---	0	106.2	106.3	106.5	24	120.3	120.5	120.7	22	119.9	121.0	123.0	24
4/3	---	---	---	0	---	---	---	0	106.2	106.5	106.7	24	119.9	119.9	120.2	10	118.5	119.0	119.2	24
4/4	---	---	---	0	---	---	---	0	107.4	107.9	108.3	24	---	---	---	0	118.8	119.2	119.4	24
4/5	---	---	---	0	---	---	---	0	108.4	109.1	109.3	24	---	---	---	0	118.8	119.9	121.1	24
4/6	---	---	---	0	---	---	---	0	110.2	110.7	111.1	23	---	---	---	0	120.7	121.2	121.9	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>#</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>				
3/24	117.1	117.4	117.9	24	117.8	118.1	118.6	24	126.0	128.9	134.9	24	122.9	124.0	125.9	23	126.9	127.1	127.6	21
3/25	117.1	117.4	118.1	23	116.8	116.9	117.2	24	121.6	122.6	123.9	24	124.6	126.0	127.8	24	126.9	127.4	127.8	20
3/26	116.7	117.3	118.1	24	116.1	116.2	116.6	24	121.5	122.8	123.7	24	122.1	122.8	123.6	24	127.3	127.7	128.2	22
3/27	117.6	117.9	118.1	24	115.8	116.3	116.9	22	121.2	122.3	123.5	22	121.0	122.2	122.9	24	126.5	127.4	128.6	23
3/28	117.5	117.9	118.1	24	116.7	117.1	117.2	24	122.0	122.9	123.5	24	120.2	120.9	121.5	24	126.9	127.5	127.9	22
3/29	117.8	118.0	118.1	24	117.8	118.5	118.7	24	122.5	123.2	124.1	24	122.3	123.0	123.6	24	127.5	127.9	128.4	23
3/30	117.1	117.6	118.5	24	117.8	118.1	118.5	24	123.4	124.4	125.8	24	121.7	122.7	123.1	24	127.1	127.8	128.4	22
3/31	116.7	117.0	117.7	24	117.7	118.0	118.3	24	123.7	124.7	125.5	24	121.9	122.5	123.0	24	127.1	127.6	128.3	22
4/1	116.7	117.2	117.8	24	118.2	118.8	119.2	24	122.9	123.5	124.4	24	123.9	124.3	125.0	24	127.0	127.6	128.4	20
4/2	116.8	117.1	117.4	24	118.1	118.4	119.1	24	123.4	123.7	124.1	24	121.6	122.0	122.6	24	126.7	126.8	127.2	20
4/3	117.5	118.3	118.7	24	116.9	117.5	118.1	24	122.4	123.6	126.4	24	122.5	123.2	123.7	24	126.7	127.1	127.6	20
4/4	116.6	117.1	117.7	24	117.5	117.7	117.9	24	123.0	124.4	126.0	24	122.4	123.3	124.9	24	126.9	127.7	127.9	24
4/5	116.7	117.2	118.3	24	117.7	118.0	118.4	24	123.0	124.2	125.3	24	123.1	123.8	124.4	23	126.8	127.5	128.2	21
4/6	116.3	116.6	116.9	23	118.2	118.5	118.9	22	123.5	124.9	127.1	22	124.0	124.5	125.1	23	126.4	127.2	128.4	21

### 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>#</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>				
3/24	121.7	122.3	122.6	23	125.0	125.5	126.1	20	119.6	120.5	120.8	24	121.5	123.0	125.3	24	119.7	120.6	120.9	24
3/25	123.2	123.9	125.2	23	125.1	125.6	126.6	20	120.8	121.2	121.6	24	122.0	124.6	126.7	24	119.9	121.4	122.5	24
3/26	122.5	122.9	124.1	23	124.9	125.1	125.8	20	122.2	122.7	123.0	24	123.7	123.9	124.2	24	120.5	121.4	121.8	24
3/27	121.9	122.5	124.2	23	124.6	125.5	126.3	23	122.5	122.9	123.3	24	125.0	127.0	129.4	24	121.1	121.3	121.8	24
3/28	121.2	122.1	122.5	23	124.6	124.9	125.4	20	121.4	121.6	121.9	24	125.1	125.3	126.7	16	123.5	124.3	126.0	24
3/29	122.4	123.0	123.6	24	125.7	126.1	126.5	23	122.8	123.2	123.4	24	124.8	124.8	125.0	8	124.7	125.7	126.9	24
3/30	121.8	122.3	122.5	23	125.2	125.6	125.9	20	---	---	---	0	---	---	---	0	---	---	---	0
3/31	121.7	122.6	123.4	24	125.6	126.4	127.6	19	---	---	---	0	---	---	---	0	---	---	---	0
4/1	122.7	123.2	124.0	22	126.7	127.1	127.5	19	---	---	---	0	---	---	---	0	---	---	---	0
4/2	121.6	121.9	122.3	22	126.1	126.4	126.8	20	---	---	---	0	---	---	---	0	---	---	---	0
4/3	121.9	122.3	123.2	22	126.1	126.8	127.4	20	---	---	---	0	---	---	---	0	---	---	---	0
4/4	122.1	122.4	122.8	24	125.4	125.6	126.0	22	---	---	---	0	---	---	---	0	---	---	---	0
4/5	123.1	123.5	123.9	22	125.9	126.1	126.8	19	---	---	---	0	---	---	---	0	---	---	---	0
4/6	123.0	123.7	124.6	22	125.8	126.2	126.7	19	---	---	---	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>Clrwr-Peck</u>			#	<u>Anatone</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>		
	Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High	
3/24	122.1	123.3	124.3	24	---	---	---	0	125.7	125.9	126.1	24	110.2	110.5	110.6	24	107.0	107.2	107.4	24
3/25	119.9	120.4	121.0	24	---	---	---	0	125.5	125.6	125.9	24	110.6	110.9	111.2	24	106.8	107.3	107.5	24
3/26	121.7	122.2	122.3	24	---	---	---	0	125.9	126.1	126.2	24	111.3	111.8	111.9	24	107.3	107.6	107.7	24
3/27	121.3	121.9	122.3	24	---	---	---	0	125.7	125.9	126.0	24	111.2	111.4	111.6	24	106.9	107.1	107.3	24
3/28	122.3	122.9	123.3	24	---	---	---	0	125.4	125.5	125.6	24	111.3	111.7	111.9	24	106.9	107.4	107.5	24
3/29	123.1	123.4	123.6	24	---	---	---	0	125.6	125.7	125.8	24	112.0	112.2	112.3	24	107.6	107.7	107.9	24
3/30	---	---	---	0	---	---	---	0	124.7	125.5	125.8	24	110.5	111.0	111.7	24	106.1	106.3	107.0	24
3/31	---	---	---	0	---	---	---	0	123.3	123.5	123.7	24	110.4	111.1	111.3	24	106.6	107.4	107.9	24
4/1	---	---	---	0	---	---	---	0	123.5	123.7	123.8	24	111.1	111.5	111.6	24	107.3	107.8	108.0	24
4/2	---	---	---	0	---	---	---	0	123.6	123.7	123.7	24	111.2	111.4	111.6	24	107.4	107.7	108.0	24
4/3	---	---	---	0	---	---	---	0	123.5	123.7	123.9	24	111.4	111.8	112.2	24	107.4	107.9	108.2	24
4/4	---	---	---	0	---	---	---	0	124.6	125.8	126.6	24	112.3	113.5	114.3	24	108.0	108.8	109.2	24
4/5	---	---	---	0	---	---	---	0	127.0	127.2	127.3	24	114.1	114.6	115.0	24	108.8	109.4	109.9	24
4/6	---	---	---	0	---	---	---	0	127.2	127.3	127.7	23	114.4	114.6	114.8	23	108.7	108.9	109.3	23

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

Date	<u>Clrwr-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>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>		
	Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High	
3/24	107.0	107.3	107.5	24	107.9	108.2	108.4	24	126.5	127.5	128.5	24	123.5	124.4	125.4	24	120.0	120.3	120.6	24
3/25	107.3	107.8	108.3	24	107.3	107.4	107.6	24	126.3	126.4	126.5	24	121.4	122.0	123.0	24	121.7	122.8	122.9	24
3/26	107.7	108.2	108.5	24	108.1	108.5	108.7	24	126.2	126.6	126.8	24	121.0	121.3	121.5	24	122.8	123.1	123.2	24
3/27	107.5	107.9	108.5	24	107.7	108.1	108.5	24	126.2	126.3	126.4	24	119.8	120.4	121.2	24	120.3	122.7	123.0	24
3/28	107.3	107.9	108.4	24	106.9	107.1	107.4	24	126.0	127.0	127.5	24	117.3	117.6	118.1	24	116.8	117.0	117.5	24
3/29	108.0	108.3	108.5	24	108.5	109.0	109.4	24	125.7	127.0	127.8	24	119.0	119.7	120.1	24	118.2	119.1	119.3	24
3/30	107.0	107.3	107.9	24	108.7	109.1	109.4	24	126.1	128.1	130.5	24	118.9	119.3	119.7	24	121.3	121.5	121.7	24
3/31	107.0	108.0	108.7	24	106.8	107.1	107.5	24	126.9	127.8	129.5	24	118.5	119.1	119.8	24	121.5	121.7	122.9	24
4/1	107.5	108.0	108.4	24	107.9	108.5	108.8	24	128.1	129.1	129.4	24	120.6	120.8	121.1	24	120.8	121.3	121.5	24
4/2	107.6	108.1	108.4	24	108.2	108.4	108.7	24	127.1	127.2	127.4	24	119.5	119.8	120.2	24	118.7	119.3	119.4	24
4/3	107.7	108.4	109.1	24	107.7	107.9	108.1	24	127.1	127.3	127.6	24	118.9	119.3	119.9	24	119.8	120.8	122.8	24
4/4	108.2	109.1	109.9	24	107.9	108.4	108.7	24	126.8	127.4	127.7	24	120.0	120.3	120.8	24	119.0	119.8	122.4	24
4/5	109.8	110.5	111.2	24	109.1	109.6	110.1	24	125.4	125.5	125.7	24	121.6	122.0	122.5	24	120.2	121.4	122.3	24
4/6	109.8	110.1	110.3	23	110.5	110.7	111.4	23	123.8	124.2	125.7	23	122.6	122.7	123.2	23	121.0	121.3	121.5	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>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>		
	Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High		Avg	Avg	High	
3/24	123.8	125.6	126.6	24	125.7	126.1	126.8	24	125.0	125.9	126.4	24	128.5	128.6	128.9	24	---	---	---	0
3/25	120.2	120.5	120.8	24	125.3	125.7	126.3	24	121.8	122.1	122.6	24	127.0	127.8	128.6	24	---	---	---	0
3/26	122.4	123.4	123.6	24	124.5	124.7	125.5	24	121.8	122.0	122.1	24	125.9	125.9	126.0	24	---	---	---	0
3/27	121.8	122.6	123.5	24	124.1	124.8	125.2	24	120.7	121.4	121.9	24	126.0	126.8	129.0	24	---	---	---	0
3/28	118.5	120.0	120.4	24	122.7	123.7	125.2	24	118.6	118.8	119.1	24	124.0	125.7	129.5	24	---	---	---	0
3/29	117.0	117.4	117.5	24	122.3	123.3	125.7	24	119.5	120.0	120.3	24	123.7	126.0	126.4	24	---	---	---	0
3/30	117.5	117.9	118.6	24	123.0	123.7	124.8	24	118.3	119.2	119.9	24	123.1	123.7	123.9	24	---	---	---	0
3/31	120.6	121.6	122.1	24	127.8	129.8	133.1	24	118.7	119.8	120.6	24	126.4	127.6	127.8	24	---	---	---	0
4/1	122.0	122.3	122.6	24	125.9	126.7	127.4	24	124.5	125.9	127.3	24	125.7	125.9	126.1	24	---	---	---	0
4/2	120.0	120.8	121.3	24	122.7	123.6	124.6	24	121.4	122.0	122.6	24	123.0	123.7	125.4	24	---	---	---	0
4/3	118.0	118.5	118.9	24	122.8	123.9	124.5	24	119.5	119.7	119.9	24	122.9	123.5	123.7	24	---	---	---	0
4/4	120.2	121.1	121.6	24	121.7	122.4	122.6	24	119.7	120.1	120.4	24	122.9	123.7	123.9	24	---	---	---	0
4/5	120.9	121.4	122.0	24	121.0	121.3	122.0	24	120.7	121.0	121.2	24	121.0	121.8	122.4	24	---	---	---	0
4/6	122.4	123.5	124.2	23	121.1	121.4	121.7	23	120.8	121.0	121.3	23	121.0	121.2	121.4	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>#</u>	<u>24 h</u>	<u>12 h</u>		<u>#</u>	<u>24h</u>	<u>12h</u>		<u>#</u>	<u>24h</u>	<u>12h</u>		<u>#</u>				
	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr				
3/24	115.4	117.2	117.9	24	123.7	124.0	124.5	24	119.8	120.0	120.2	24	123.9	124.5	125.2	24	119.3	120.1	121.5	24
3/25	117.7	118.7	119.2	24	123.0	123.3	123.7	24	120.2	120.9	121.3	24	122.9	123.0	123.2	24	118.6	119.1	119.4	24
3/26	118.7	118.9	119.2	24	122.3	122.6	122.9	24	121.3	121.4	121.4	24	122.7	123.2	123.6	24	119.6	119.8	119.9	24
3/27	116.9	117.7	118.4	24	123.4	124.2	124.4	24	120.0	120.7	121.1	24	123.2	124.0	124.8	24	118.3	118.7	119.1	24
3/28	115.3	116.0	116.3	24	123.8	124.1	124.4	24	117.8	118.0	118.5	24	124.3	125.5	126.9	24	118.7	119.6	121.2	24
3/29	117.0	117.9	119.0	24	124.8	125.2	125.5	24	117.3	117.4	117.5	24	123.9	124.7	125.2	24	119.0	119.5	120.9	24
3/30	117.8	118.3	118.9	24	123.4	123.7	124.0	24	116.3	116.5	117.0	24	122.6	123.4	125.3	24	116.2	116.7	118.4	24
3/31	116.0	117.0	117.4	24	124.2	124.5	124.7	24	116.8	117.4	117.6	24	120.7	121.2	121.7	24	116.2	117.0	117.9	24
4/1	118.1	118.8	119.1	24	127.6	128.6	128.8	24	117.6	118.1	118.2	24	120.3	120.6	121.4	24	115.8	116.3	116.6	24
4/2	117.4	117.7	118.3	24	126.8	127.1	128.0	24	115.7	116.1	116.7	24	121.9	122.1	122.8	24	114.8	115.6	116.2	24
4/3	116.1	116.6	116.9	24	125.3	126.3	126.5	24	117.1	118.1	119.2	24	121.4	121.9	122.3	24	116.4	117.2	117.7	24
4/4	116.2	116.5	116.9	24	123.9	124.5	124.8	24	120.2	121.0	121.4	24	121.6	122.4	124.4	24	117.6	118.4	118.9	24
4/5	117.3	118.0	118.3	24	123.1	123.3	123.5	24	122.9	123.8	124.7	24	123.4	124.3	124.6	24	120.6	121.6	122.2	24
4/6	118.6	119.0	119.4	23	124.0	124.3	125.1	22	124.8	125.0	125.3	23	121.9	122.1	122.3	23	121.7	122.1	122.5	22

### 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>#</u>	<u>24 h</u>	<u>12 h</u>		<u>#</u>	<u>24h</u>	<u>12h</u>		<u>#</u>	<u>24h</u>	<u>12h</u>		<u>#</u>				
	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr	Avg	Avg	High	hr				
3/24	122.0	122.7	123.8	24	123.3	123.6	123.8	24	125.2	125.6	125.7	24	123.4	123.9	124.2	24	126.0	126.3	126.6	24
3/25	121.3	121.6	122.1	24	121.8	122.3	122.6	24	123.8	124.2	124.5	24	123.0	123.1	123.3	24	125.8	125.9	126.1	24
3/26	122.0	122.4	123.0	24	123.0	123.1	123.3	24	124.8	124.9	125.0	24	123.3	123.6	123.9	24	125.7	125.8	126.0	24
3/27	121.1	121.5	121.7	24	121.5	122.2	122.8	24	123.4	123.8	124.3	24	122.2	122.4	122.6	24	125.4	125.5	125.8	24
3/28	121.5	122.0	122.6	24	121.3	122.4	123.0	24	124.1	124.7	125.1	24	123.0	123.9	124.8	24	125.9	126.3	127.2	24
3/29	122.0	122.5	123.0	24	123.2	123.4	123.6	24	124.9	125.4	125.9	24	124.4	124.8	125.1	24	125.8	126.2	127.5	24
3/30	119.7	120.3	121.5	24	119.5	120.3	121.9	24	123.1	123.6	124.0	24	122.1	122.4	122.9	24	125.4	126.0	131.4	24
3/31	120.4	121.1	121.8	24	118.9	119.6	120.3	24	122.0	122.4	122.8	24	121.9	122.2	122.4	24	124.3	124.5	124.6	24
4/1	120.1	120.9	121.5	24	120.8	121.3	121.5	24	125.1	125.6	125.7	24	122.7	123.7	124.1	24	125.9	126.1	126.4	24
4/2	118.4	119.0	119.7	24	117.9	118.4	119.3	24	123.9	124.2	124.6	24	122.7	123.0	123.3	24	125.7	125.9	126.3	24
4/3	120.2	121.0	121.5	24	120.0	121.2	122.1	24	125.6	126.1	126.4	24	123.6	125.1	125.5	24	126.4	126.5	126.8	24
4/4	121.7	122.7	124.3	24	122.0	122.4	122.8	24	126.4	126.6	126.9	24	123.7	124.0	125.0	24	126.2	126.4	126.5	24
4/5	123.1	123.8	124.4	24	123.2	124.2	124.5	24	127.3	127.7	128.1	24	124.4	125.6	126.7	24	126.1	126.6	126.8	24
4/6	124.5	125.2	126.0	23	125.1	125.9	126.7	23	127.2	127.5	127.7	23	125.7	126.7	128.0	23	125.3	125.7	125.8	23

## Two-Week Summary of Passage Indices

Source: Fish Passage Center

Updated: 4/7/2017 11:01

## Two-Week Summary of Passage Indices

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

See Sampling Comments: <http://www.fpc.org/currentDaily/smpcomments.htm>For clip information see: <http://www.fpc.org/CurrentDaily/catch.htm>For sockeye and yearling chinook (Snake only) race information see: <http://www.fpc.org/smoltqueries/currentsmppsubmitdata.asp>

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)
03/24/2017	---	---	---	---	---	---	---	---	---	---	323
03/25/2017	---	---	---	---	---	---	---	---	---	---	262
03/26/2017	---	---	---	---	9,561	---	---	---	---	---	136
03/27/2017 *	252	91	---	---	9,522	---	---	---	---	---	206
03/28/2017 *	707	137	276	---	4,162	---	---	---	---	---	409
03/29/2017	609	123	177	---	6,470	---	---	---	---	---	413
03/30/2017 *	533	110	---	---	9,958	---	---	---	---	---	224
03/31/2017 *	1,760	113	---	---	10,061	---	---	---	---	---	436
04/01/2017 *	1,664	85	195	---	16,302	---	---	8	---	---	1,137
04/02/2017	---	---	270	---	12,048	1,426	1,256	15	---	3,675	785
04/03/2017	3,434	---	925	---	12,399	---	---	4	---	---	1,063
04/04/2017 *	322	---	938	---	11,016	4,424	1,394	20	---	4,498	1,500
04/05/2017 *	1,490	---	324	---	8,195	---	---	14	---	---	1,190
04/06/2017 *	144	---	188	---	11,366	7,682	---	6	---	3,668	1,219
04/07/2017	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>	<b>10,915</b>	<b>659</b>	<b>3,293</b>	<b>0</b>	<b>121,060</b>	<b>13,532</b>	<b>2,650</b>	<b>67</b>	<b>0</b>	<b>11,841</b>	<b>9,303</b>
<b># Days:</b>	<b>10</b>	<b>6</b>	<b>8</b>	<b>0</b>	<b>12</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>3</b>	<b>14</b>
<b>Average:</b>	<b>1,092</b>	<b>110</b>	<b>412</b>	<b>0</b>	<b>10,088</b>	<b>4,511</b>	<b>1,325</b>	<b>11</b>	<b>0</b>	<b>3,947</b>	<b>665</b>
<b>YTD</b>	<b>12,317</b>	<b>1,272</b>	<b>3,293</b>	<b>8</b>	<b>121,060</b>	<b>13,532</b>	<b>2,650</b>	<b>67</b>	<b>0</b>	<b>11,841</b>	<b>13,039</b>

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)
03/24/2017	---	---	---	---	---	---	---	---	---	---	3,209
03/25/2017	---	---	---	---	---	---	---	---	---	---	3,178
03/26/2017	---	---	---	---	409	---	---	---	---	---	1,494
03/27/2017 *	0	0	---	---	0	---	---	---	---	---	2,038
03/28/2017 *	0	0	0	---	378	---	---	---	---	---	3,859
03/29/2017	0	0	0	---	185	---	---	---	---	---	4,105
03/30/2017 *	0	0	---	---	105	---	---	---	---	---	2,581
03/31/2017 *	0	0	---	---	0	---	---	---	---	---	2,704
04/01/2017 *	0	0	0	---	0	---	---	113	---	---	3,270
04/02/2017	---	---	0	---	0	0	419	120	---	258	3,533
04/03/2017	0	---	0	---	0	---	---	50	---	---	1,833
04/04/2017 *	0	---	0	---	216	0	199	37	---	233	4,058
04/05/2017 *	0	---	0	---	0	---	---	39	---	---	3,150
04/06/2017 *	0	---	0	---	51	160	---	54	---	500	3,051
04/07/2017	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,344</b>	<b>160</b>	<b>618</b>	<b>413</b>	<b>0</b>	<b>991</b>	<b>42,063</b>
<b># Days:</b>	<b>10</b>	<b>6</b>	<b>8</b>	<b>0</b>	<b>12</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>3</b>	<b>14</b>
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>112</b>	<b>53</b>	<b>309</b>	<b>69</b>	<b>0</b>	<b>330</b>	<b>3,005</b>
<b>YTD</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,344</b>	<b>160</b>	<b>618</b>	<b>413</b>	<b>0</b>	<b>991</b>	<b>107,129</b>

## Two-Week Summary of Passage Indices

<b>COMBINED COHO</b>											
	WTB	IMN	GRN	LEW	LGR	LGS	LMN	RIS	MCN	JDA	BO2
Date	(Coll)	(Coll)	(Coll)	(Coll)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)
03/24/2017	---	---	---	---	---	---	---	---	---	---	20
03/25/2017	---	---	---	---	---	---	---	---	---	---	60
03/26/2017	---	---	---	---	0	---	---	---	---	---	58
03/27/2017 *	0	0	---	---	190	---	---	---	---	---	19
03/28/2017 *	0	0	18	---	0	---	---	---	---	---	45
03/29/2017	0	0	32	---	0	---	---	---	---	---	49
03/30/2017 *	0	0	---	---	0	---	---	---	---	---	135
03/31/2017 *	0	0	---	---	104	---	---	---	---	---	218
04/01/2017 *	0	0	33	---	395	---	---	0	---	---	1,990
04/02/2017	---	---	36	---	442	0	0	0	---	31	2,316
04/03/2017	0	---	14	---	109	---	---	0	---	---	3,208
04/04/2017 *	0	---	85	---	324	0	0	0	---	78	5,615
04/05/2017 *	0	---	81	---	0	---	---	0	---	---	4,397
04/06/2017 *	0	---	38	---	0	160	---	0	---	0	4,991
04/07/2017	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>337</b>	<b>0</b>	<b>1,564</b>	<b>160</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>109</b>	<b>23,121</b>
<b># Days:</b>	<b>10</b>	<b>6</b>	<b>8</b>	<b>0</b>	<b>12</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>3</b>	<b>14</b>
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>42</b>	<b>0</b>	<b>130</b>	<b>53</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>36</b>	<b>1,652</b>
<b>YTD</b>	<b>0</b>	<b>0</b>	<b>337</b>	<b>0</b>	<b>1,564</b>	<b>160</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>109</b>	<b>23,757</b>

<b>COMBINED STEELHEAD</b>											
	WTB	IMN	GRN	LEW	LGR	LGS	LMN	RIS	MCN	JDA	BO2
Date	(Coll)	(Coll)	(Coll)	(Coll)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)	(INDEX)
03/24/2017	---	---	---	---	---	---	---	---	---	---	20
03/25/2017	---	---	---	---	---	---	---	---	---	---	0
03/26/2017	---	---	---	---	117,876	---	---	---	---	---	0
03/27/2017 *	3	29	---	---	102,458	---	---	---	---	---	19
03/28/2017 *	10	29	71	---	36,320	---	---	---	---	---	0
03/29/2017	3	41	36	---	7,949	---	---	---	---	---	49
03/30/2017 *	4	32	---	---	10,167	---	---	---	---	---	22
03/31/2017 *	21	41	---	---	14,707	---	---	---	---	---	44
04/01/2017 *	23	27	120	---	35,272	---	---	2	---	---	102
04/02/2017	---	---	103	---	19,344	17,686	20,096	2	---	31,142	412
04/03/2017	76	---	199	---	15,118	---	---	2	---	---	690
04/04/2017 *	37	---	261	---	5,184	6,186	9,557	2	---	16,208	654
04/05/2017 *	62	---	614	---	5,031	---	---	0	---	---	859
04/06/2017 *	9	---	322	---	8,971	6,711	---	2	---	8,337	997
04/07/2017	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>	<b>248</b>	<b>199</b>	<b>1,726</b>	<b>0</b>	<b>378,397</b>	<b>30,583</b>	<b>29,653</b>	<b>10</b>	<b>0</b>	<b>55,687</b>	<b>3,868</b>
<b># Days:</b>	<b>10</b>	<b>6</b>	<b>8</b>	<b>0</b>	<b>12</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>3</b>	<b>14</b>
<b>Average:</b>	<b>25</b>	<b>33</b>	<b>216</b>	<b>0</b>	<b>31,533</b>	<b>10,194</b>	<b>14,827</b>	<b>2</b>	<b>0</b>	<b>18,562</b>	<b>276</b>
<b>YTD</b>	<b>250</b>	<b>226</b>	<b>1,726</b>	<b>1</b>	<b>378,397</b>	<b>30,583</b>	<b>29,653</b>	<b>10</b>	<b>0</b>	<b>55,687</b>	<b>3,950</b>

## Two-Week Summary of Passage Indices

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)
03/24/2017	---	---	---	---	---	---	---	---	---	---	20
03/25/2017	---	---	---	---	---	---	---	---	---	---	40
03/26/2017	---	---	---	---	136	---	---	---	---	---	0
03/27/2017 *	0	0	---	---	381	---	---	---	---	---	0
03/28/2017 *	0	0	0	---	378	---	---	---	---	---	136
03/29/2017	0	0	0	---	0	---	---	---	---	---	73
03/30/2017 *	0	0	---	---	105	---	---	---	---	---	180
03/31/2017 *	0	0	---	---	0	---	---	---	---	---	262
04/01/2017 *	0	0	0	---	99	---	---	0	---	---	244
04/02/2017	---	---	0	---	0	1	0	0	---	31	314
04/03/2017	0	---	0	---	109	---	---	0	---	---	501
04/04/2017 *	0	---	0	---	216	442	0	2	---	78	409
04/05/2017 *	0	---	0	---	52	---	---	2	---	---	282
04/06/2017 *	0	---	0	---	459	0	---	4	---	42	442
04/07/2017	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,935</b>	<b>443</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>151</b>	<b>2,903</b>
<b># Days:</b>	<b>10</b>	<b>6</b>	<b>8</b>	<b>0</b>	<b>12</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>3</b>	<b>14</b>
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>161</b>	<b>148</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>50</b>	<b>207</b>
<b>YTD</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,935</b>	<b>443</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>151</b>	<b>3,324</b>

COMBINED LAMPREY JUVENILES											
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)
03/24/2017	---	---	---	---	---	---	---	---	---	---	785
03/25/2017	---	---	---	---	---	---	---	---	---	---	600
03/26/2017	---	---	---	---	6	---	---	---	---	---	475
03/27/2017 *	0	0	---	---	2	---	---	---	---	---	470
03/28/2017 *	0	0	1	---	0	---	---	---	---	---	750
03/29/2017	0	0	1	---	1	---	---	---	---	---	975
03/30/2017 *	0	0	---	---	0	---	---	---	---	---	800
03/31/2017 *	0	0	---	---	0	---	---	---	---	---	1,090
04/01/2017 *	0	0	0	---	0	---	---	0	---	---	1,320
04/02/2017	---	---	1	---	0	0	0	3	---	2,460	610
04/03/2017	0	---	1	---	0	---	---	2	---	---	385
04/04/2017 *	0	---	0	---	3	0	0	0	---	1,550	307
04/05/2017 *	0	---	0	---	0	---	---	1	---	---	257
04/06/2017 *	0	---	0	---	0	0	---	0	---	1,375	100
04/07/2017	---	---	---	---	---	---	---	---	---	---	---
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>5,385</b>	<b>8,924</b>
<b># Days:</b>	<b>10</b>	<b>6</b>	<b>8</b>	<b>0</b>	<b>12</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>3</b>	<b>14</b>
<b>Average:</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1,795</b>	<b>637</b>
<b>YTD</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>5,385</b>	<b>31,159</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.

Three classes of fish counts are shown in these tables:

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

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

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

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

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

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

4/7/17 11:02 AM

		03/24/17	TO	04/07/17			
		Species					
Site	Data	CH0	CH1	CO	ST	SO	Grand Total
<b>LGR</b>	Sum of NumberCollected	683	59,169	750	191,909	969	253,480
	Sum of NumberBarged	0	0	0	0	0	0
	Sum of NumberBypassed	680	59,164	750	191,893	967	253,454
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	3	5	0	16	2	26
	Sum of FacilityMorts	0	0	0	0	0	0
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	3	5	0	16	2	26
<b>LGS</b>	Sum of NumberCollected	100	8,812	100	20,800	301	30,113
	Sum of NumberBarged	0	0	0	0	0	0
	Sum of NumberBypassed	100	8,800	100	20,799	299	30,098
	Sum of Numbertrucked	0	0	0	0	0	0
	Sum of SampleMorts	0	0	0	1	1	2
	Sum of FacilityMorts	0	12	0	0	1	13
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	0	12	0	1	2	15
<b>LMN</b>	Sum of NumberCollected	300	1,300		14,400		16,000
	Sum of NumberBarged	0	0		0		0
	Sum of NumberBypassed	300	1,300		14,400		16,000
	Sum of Numbertrucked	0	0		0		0
	Sum of SampleMorts	0	0		0		0
	Sum of FacilityMorts	0	0		0		0
	Sum of ResearchMorts	0	0		0		0
	Sum of TotalProjectMorts	0	0		0		0
Total Sum of NumberCollected		1,083	69,281	850	227,109	1,270	299,593
Total Sum of NumberBarged		0	0	0	0	0	0
Total Sum of NumberBypassed		1,080	69,264	850	227,092	1,266	299,552
Total Sum of Numbertrucked		0	0	0	0	0	0
Total Sum of SampleMorts		3	5	0	17	3	28
Total Sum of FacilityMorts		0	12	0	0	1	13
Total Sum of ResearchMorts		0	0	0	0	0	0
Total Sum of TotalProjectMorts		3	17	0	17	4	41

### YTD Transportation Summary

Source: Fish Passage Center

Updated:

4/7/17 11:02 AM

TO: 04/07/17

		Species					
Site	Data	CH0	CH1	CO	SO	ST	Grand Total
<b>LGR</b>	Sum of NumberCollected	683	59,169	750	969	191,909	253,480
	Sum of NumberBarged	0	0	0	0	0	0
	Sum of NumberBypassed	680	59,164	750	967	191,893	253,454
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	3	5	0	2	16	26
	Sum of FacilityMorts	0	0	0	0	0	0
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	3	5	0	2	16	26
<b>LGS</b>	Sum of NumberCollected	100	8,812	100	301	20,800	30,113
	Sum of NumberBarged	0	0	0	0	0	0
	Sum of NumberBypassed	100	8,800	100	299	20,799	30,098
	Sum of NumberTrucked	0	0	0	0	0	0
	Sum of SampleMorts	0	0	0	1	1	2
	Sum of FacilityMorts	0	12	0	1	0	13
	Sum of ResearchMorts	0	0	0	0	0	0
	Sum of TotalProjectMorts	0	12	0	2	1	15
<b>LMN</b>	Sum of NumberCollected	300	1,300			14,400	16,000
	Sum of NumberBarged	0	0			0	0
	Sum of NumberBypassed	300	1,300			14,400	16,000
	Sum of NumberTrucked	0	0			0	0
	Sum of SampleMorts	0	0			0	0
	Sum of FacilityMorts	0	0			0	0
	Sum of ResearchMorts	0	0			0	0
	Sum of TotalProjectMorts	0	0			0	0
Total Sum of NumberCollected		1,083	69,281	850	1,270	227,109	299,593
Total Sum of NumberBarged		0	0	0	0	0	0
Total Sum of NumberBypassed		1,080	69,264	850	1,266	227,092	299,552
Total Sum of NumberTrucked		0	0	0	0	0	0
Total Sum of SampleMorts		3	5	0	3	17	28
Total Sum of FacilityMorts		0	12	0	1	0	13
Total Sum of ResearchMorts		0	0	0	0	0	0
Total Sum of TotalProjectMorts		3	17	0	4	17	41



**Cumulative Adult Passage at Mainstem Dams Through: 04/06**

dam	enddate	Spring Chinook						Summer Chinook						Fall Chinook					
		2017		2016		10-Yr Avg.		2017		2016		10-Yr Avg.		2017		2016		10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	04/05	38	0	706	8	766	0	0	0	0	0	0	0	0	0	0	0	0	0
TDA	04/05	17	0	201	2	205	0	0	0	0	0	0	0	0	0	0	0	0	0
JDA	04/05	2	2	91	1	99	6	0	0	0	0	0	0	0	0	0	0	0	0
MCN	04/05	3	-2	22	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0
IHR	04/05	0	0	14	1	12	0	0	0	0	0	0	0	0	0	0	0	0	0
LMN	04/05	0	0	14	-1	5	0	0	0	0	0	0	0	0	0	0	0	0	0
LGS	04/05	0	0	9	1	4	1	0	0	0	0	0	0	0	0	0	0	0	0
LGR	04/05	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRD		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WAN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RRH		0	0	0	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	04/04	0	0	225	0	136	0	0	0	0	0	0	0	0	0	0	0	0	0

DAM	ENDDATE	Coho						Sockeye			Steelhead						Lamprey		
		2017		2016		10-Yr Avg.		2017	2016	10-Yr Avg.	10-Yr		2017	2016	10-Yr Avg.	2017	2016	10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack				Unclipped	Unclipped							
BON	04/05	0	0	0	0	0	0	0	1	0	1889	2989	2658	642	1300	964	0	-1	0
TDA	04/05	0	0	0	0	0	0	0	0	0	1127	94	1843	377	63	751	0	0	0
JDA	04/05	0	0	0	0	0	1	0	0	0	127	111	3782	72	66	1325	0	0	-1
MCN	04/05	0	0	0	0	1	0	0	0	0	2056	134	5195	506	85	1482	0	1	0
IHR	04/05	0	0	0	0	0	0	0	0	0	308	305	3821	149	179	842	0	0	0
LMN	04/05	-1	0	0	0	0	0	0	0	0	464	290	5862	192	170	1541	0	0	0
LGS	04/05	0	0	0	0	0	0	0	0	0	421	2291	2651	148	1168	1283	0	0	0
LGR	04/05	0	0	0	0	0	0	0	0	0	6104	4314	6174	2357	2269	2077	0	0	0
PRD		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WAN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RRH		0	0	0	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	04/04	0	0	0	0	0	0	0	0	0	492	4749	4282	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.

