



## Fish Passage Center

# Weekly Report #18-05

April 6, 2018

### This Week's Highlights

#### Dworshak Operations

Similar to 2017, Unit #3 at Dworshak Dam is out of service for rehabilitation through at least the early summer period. Unit #3 is the largest of the three units at Dworshak Dam, in terms of outflow capacity. Therefore, flows through the powerhouse are limited to 4.5-4.8 Kcfs during this rehabilitation work. Any outflow beyond the constrained powerhouse capacity at Dworshak must be spilled; creating concerns over Total Dissolved Gas supersaturation (TDG) in the river environment below Dworshak Dam and, subsequently, at Dworshak Hatchery as the water supply to the hatchery comes from downstream of Dworshak Dam. Although Dworshak Hatchery has been outfitted with TDG degassing columns (i.e., degassers) which significantly reduce TDG in hatchery supply water, there is still much concern over very high discharges and spill levels at Dworshak that will create elevated levels of TDG below the Dam and, subsequently, elevated TDG levels at the hatchery.

Over the last month, the Official Water Supply (calculated by USACE) at Dworshak has increased from 2.85 Maf in February to 3.1 Maf in March. At the March 7 TMT call, USACE stated their March Final forecast of 3.1 Maf, would necessitate an April 15<sup>th</sup> draft to the bottom of the active storage at Dworshak (1,445') and require outflows to remain near 16 Kcfs with the potential to go higher in April. At the March 14 TMT call, the fisheries managers requested a reduction in outflows to 14-15 Kcfs for the remainder of March, in order to reduce TDG below the project and at Dworshak NFH. Following a discussion at a special TMT call on March 16<sup>th</sup>, a decision was made to reduce outflows at Dworshak to 14 Kcfs and continue these outflows through March 28<sup>th</sup> when outflows would be further reduced to 12 Kcfs for up to three days to facilitate releases from Dworshak NFH and Clearwater Hatchery. At the TMT Meeting on March 21<sup>st</sup>, it was agreed to maintain the operation agreed to last week. Early last week (Monday afternoon) outflows were reduced at

Dworshak to 8.5 Kcfs, due to less than expected inflows. At the TMT meeting held this week, it was decided to increase Dworshak slightly from 8.5 Kcfs to 10 Kcfs. The COE plans to maintain 10 Kcfs outflows until the refill operation is reached, which is expected to occur within the next week.

#### Water Supply

Precipitation throughout the Columbia Basin has varied between 68% and 209% of average at individual sub-basins over the first few days of April. Precipitation above The Dalles has been 104% of average over April. Over the 2018 water year, precipitation has ranged between 90% and 120% of average.

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

Location	Water Year 2018 April 1-3, 2018		Water Year 2018 October 1, 2017 to April 3, 2018	
	Observed (inches)	% Average	Observed (inches)	% Average
Columbia Above Coulee	0.38	141	24.4	105
Snowpack within the Columbia Basin has been variable. Average snowpack in the Columbia River for basins above the Snake River confluence is 130% of average, for Snake River Basins the average snowpack is 87% of average, and for lower Columbia Basins between	0.21	98	13.2	94
Columbia Above The Dalles	0.23	104	17.0	98
Kootenai	0.43	158	24.4	107
Clark Fork	0.34	145	17.4	112
Flathead	0.62	209	25.0	120
Pend Oreille River Basin above Waneta Dam	0.43	167	21.8	112
Salmon River Basin	0.28	104	17.1	98
Upper Snake Tributaries	0.41	167	15.4	98
Clearwater	0.55	156	29.9	114
Willamette River above Portland	0.37	68	45.2	90

McNary and Bonneville Dam average snowpack is 83% 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 103,337 Kaf (118% of average).

**Table 2. April 5 ESP Runoff Volume Forecasts for various reservoirs within the Columbia and Snake River Basins.**

Location	April 5, 2018 5-day QPF ESP	
	% Average (1981-2010)	Runoff Volume (Kaf)
The Dalles (Apr-Aug)	118	103,337
Grand Coulee (Apr-Aug)	120	68,335
Libby Res. Inflow, MT (Apr-Aug)	119 122*	6,991 7,189*
Hungry Horse Res. Inflow, MT (Apr-Aug)	152	2,945
Lower Granite Res. Inflow (Apr- July)	117	23,282
Brownlee Res. Inflow (Apr-July)	118	6,436
Dworshak Res. Inflow (Apr-July)	123 125*	2,985 3,040*

\* Denotes COE April Forecast

Grand Coulee Reservoir is at 1244.7 feet (4-5-18) and has drafted 5.3 feet over the last week. Outflows at Grand Coulee have ranged between 90.6 Kcfs and 123.0 Kcfs over the last week. The April 15<sup>th</sup> FC Elevation at Grand Coulee is 1240.5ft. (based on March Forecast).

The Libby Reservoir is currently at elevation 2357.7 feet (4-5-18) and has drafted 1.0 foot over the past week. Daily average outflows at Libby Dam have been reduced from 6.0 Kcfs to 4.0 Kcfs over the last week. The April 15<sup>th</sup> FC at Libby is 2358.3 ft. (based on March Forecast).

Hungry Horse is currently at an elevation of 3492.3 feet (4-5-18) and has drafted 4.0 feet last week. Outflows at Hungry Horse have been 6.9-7.8 Kcfs over the last week. The April 15<sup>th</sup> FC at Hungry Horse is 3486.5 ft. (based on March Forecast).

Dworshak is currently at an elevation of 1453.7 feet (4-5-18) and has drafted 2.7 feet over last week. Dworshak outflows have been increased slightly from 8.5 Kcfs to 10.0 Kcfs. The COE plans to maintain 10 Kcfs outflows until the refill operation is reached. The April 15<sup>th</sup> System FC Elevation at Dworshak is 1445.0 ft.

The Brownlee Reservoir was at an elevation of 2032.0 feet on April 5<sup>th</sup>, 2018. Outflows at Hells Canyon have ranged between 22.9 and 37.7 Kcfs over the last four days. The April 15<sup>th</sup> FC (based on March forecast) is 2031.6 ft.

### Spill

Flows in the Snake and Mid-Columbia rivers were moderate over the past week, with daily average flows ranging from approximately 55 to 75 Kcfs at Lower Granite Dam and approximately 170 to 225 Kcfs at McNary Dam.

The 2018 spill for fish passage program at the lower Snake River projects began just after midnight on April 3<sup>rd</sup>. Spill for fish passage is expected to begin at the Mid-Columbia River projects just after midnight on April 10<sup>th</sup>. In response to the order from the U.S. District Court of the District of Oregon, the 2018 Fish Operations Plan (FOP) specifies that spring spill operations on the Snake and Mid-Columbia rivers will be to spill to the 115%/120% total dissolved gas (TDG) caps at all eight projects. The COE will estimate spill caps for each project on a daily basis and projects will be operated to these estimated spill caps. Daily spill caps are published on the TMT website (<http://pweb.crohms.org/tmt/documents/ops/spill/caps/>). The daily spill caps at Snake River projects for the past week are summarized in Table 3.

**Table 3. Spring spill operations and estimated 115%/120% TDG spill caps at Snake River projects. Estimated spill caps are for most recent week of spill operations.**

Project	Spring Spill Level (Day/Night)	Estimated Spill Caps (4/3-4/5)
Lower Granite	Gas Cap/Gas Cap	45-49 Kcfs
Little Goose	Gas Cap/Gas Cap	42 Kcfs
Lower Monumental	Gas Cap/Gas Cap	40-46 Kcfs
Ice Harbor	Gas Cap/Gas Cap	90 Kcfs

Spill at Lower Granite Dam met the estimated 115%/120% spill cap levels this week. Daily average spill levels at Lower Granite ranged from 44.4-47.5 Kcfs this week. Spill at Little Goose Dam also met the estimated 115%/120% spill cap level, which was 42.0 Kcfs for all three days. Spill at Lower Monumental Dam also met the estimated 115%/120% spill cap levels this week. Daily average spill volumes at Lower Monumental Dam ranged from 40-43.9 Kcfs this week. Finally, spilling the estimated 115%/120% spill cap of 90 Kcfs at Ice Harbor Dam was not possible this week. Instead, spill at Ice Harbor was all flows in excess of powerhouse minimum requirements (~10 Kcfs). Daily average spill volumes at Ice Harbor Dam ranged from 59-69 Kcfs this week.

Although spill for fish passage isn't scheduled to begin in the Mid-Columbia River until April 10<sup>th</sup>, some "involuntary" spill occurred at McNary and The Dalles dams this week.

High total dissolved gas (TDG) supersaturation levels are occurring below Dworshak Dam on the Clearwater River, due to discharge in excess of hydraulic capacity for flood control operations. Daily average TDG levels in the Dworshak Dam tailrace have ranged from 115% to 122% this week. Consequently, due to these flood control operations, the TDG supersaturation levels are already in excess of 100% when the river water enters the mainstem Snake River hydrosystem. Daily average TDG levels at the Lower Granite Dam forebay monitor ranged from 102.5% to 105% this week.

Since the spring spill operation began on April 3<sup>rd</sup>, the tailwater TDG supersaturation (average of 12 highest hourly levels in a calendar day) has ranged from 117% to 119% at Lower Granite Dam, 117% to 118% at Little Goose Dam, 116% to 117% at Lower Monumental Dam, and 115% to 116% at Ice Harbor Dam. Total dissolved gas supersaturation levels at the downstream forebays have all been below the 115% waiver limit, with one exception. The 12-hour average TDG at the Lower Monumental forebay monitor was 116% on April 5<sup>th</sup>. Total dissolved gas supersaturation levels in the Mid- and Upper Columbia have generally been below 110% this week.

**Note:** The State of Oregon TDG waiver only requires compliance with 120% TDG in the tailrace, while the State of Washington requires compliance with both a 115% TDG forebay requirement and a 120% tailrace TDG requirement. The State of Oregon and the State of Washington also use different methodologies to

estimate the 12-hour average TDG. For Oregon, the 12-hour average is based on the 12 highest hourly TDG measurements in a single calendar day (not necessarily consecutive). For Washington, the 12-hour average is based on 12-hour rolling averages. The highest of the rolling averages is what is reported as the 12-hour average for a given day. The location of a TDG monitor will dictate which of these methodologies is used for compliance monitoring. The Washington methodology will apply to all the lower Snake River projects, as well as the middle Columbia River forebay monitors. On any given day the compliance of the tailrace monitors at the middle Columbia River projects will be determined using either the Washington or Oregon methodology, whichever is the most restrictive, and spill will be decreased if needed.

Gas bubble trauma monitoring in smolts took place over the past week at Lower Granite Dam. No fish were observed with signs of GBT in the sample from Lower Granite. Gas bubble trauma monitoring at all other projects is expected to begin over the next week, pending sample size requirements can be met. The action criteria for interruption of the voluntary spill for fish passage program is defined as either 15% of examined fish showing signs of GBT in their non-paired fins, or 5% of the fish examined showing severe signs of GBT in their non-paired fins. Severe signs of GBT are defined as more than 25% of the surface area of the fin is occluded by gas bubbles, which corresponds to a rank of 3 or 4.

### 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

Smolt Monitoring Program (SMP) activities continued at Bonneville, John Day, and Little Goose dams this week. Sampling at Lower Granite, Lower Monumental, McNary, and Rock Island dams began this week. Sampling at the Snake, Grande Ronde, Salmon, and Imnaha river traps also continued this week.

Yearling Chinook dominated the samples at Bonneville Dam (BON) this week. This week's daily average passage index for yearling Chinook was just over 7,000 per day, which is a large increase over last week's daily average passage index of 400 per day. Subyearling Chinook were the second most abundant

species in this week's samples at BON. Similar to past weeks, nearly all of the subyearling Chinook sampled at BON this week were fry. This week's daily average passage index for subyearling Chinook at BON was nearly 1,600 per day, which is a slight increase from last week's daily average of nearly 1,300 per day. Similar to recent weeks, coho fry, steelhead, and sockeye were also encountered in this week's samples but in relatively low numbers. Coho passage has increased over the past few days and, unlike previous weeks, most to the coho encountered in this week's samples were clipped smolts and not fry. Pacific lamprey macrophthalmia were encountered every day this week. This week's daily average collection for Pacific lamprey macrophthalmia was about 80 per day, which is a decrease from last week's daily average collection of about 115. Pacific lamprey ammocoetes were encountered in four of this week's samples. Collections on these four days ranged from 5 to 14 lamprey ammocoetes.

Similar to the last two years, sampling at John Day Dam (JDA) is every-other-day. Yearling Chinook continued to dominate the samples at JDA this week. However, yearling Chinook passage decreased this week when compared to the previous week. This week's daily average passage index for yearling Chinook was approximately 900 per day, whereas that for last week was about 2,200 per day. Steelhead, coho, sockeye, and subyearling Chinook were also encountered in this week's samples. Nearly all of the subyearling Chinook collected at JDA so far this year have been fry. Pacific lamprey macrophthalmia were encountered in all three of this week's samples. This week's daily average collection for Pacific lamprey macrophthalmia was about 350, which is a decrease from last week's daily average collection of about 570 per day. No Pacific lamprey ammocoetes were encountered in this week's samples.

Sampling at McNary Dam (MCN) began on April 2<sup>nd</sup>, with the first sample being tallied and reported on April 3<sup>rd</sup>. Like JDA, sampling at MCN is every-other-day. Yearling Chinook dominated this week's samples at MCN. Steelhead were the second most abundant species in this week's samples. Sockeye, coho, and subyearling Chinook were also encountered in this week's samples but in relatively low numbers. All of the subyearling Chinook that were encountered this week were fry. Finally, Pacific lamprey macrophthalmia

were encountered in both of this week's samples while no ammocoetes were encountered.

Due to construction work on the Juvenile Bypass System (JBS), sampling at Lower Granite Dam (LGR) was delayed for about a week. Sampling at LGR began on April 1<sup>st</sup>, with the first sample being tallied and reported on April 2<sup>nd</sup>. Since this time, yearling Chinook have dominated the samples at LGR, with a daily average passage index of about 18,100 per day. Of the yearling Chinook collected this week, approximately 62% were of hatchery origin (i.e., clipped or CWT). Steelhead were the second most abundant species in this week's samples, with a daily average passage index of about 8,300 per day. Approximately 96% of the steelhead collected at LGR this week were of hatchery origin. Sockeye and subyearling Chinook were also encountered in this week's samples. The sockeye collected in this week's sample are likely kokanee from Dworshak reservoir, as Dworshak Dam has been spilling since January. All of the subyearling Chinook encountered in this week's samples were fry. Finally, one Pacific lamprey macrophthalmia was encountered in the sample from April 3<sup>rd</sup>. No ammocoetes have been encountered at LGR so far this year.

Similar to recent years, sampling at Little Goose Dam (LGS) will be every-other-day until the start of transportation, at which time sampling will change to every day. Sockeye and steelhead both dominated this week's samples at LGS. The daily average passage indices for these two species were 750 and 730 per day, respectively. Both of these daily average passage indices represent a substantial increase over last week's daily average passage indices, which were 15 for sockeye and 30 for steelhead. As with LGR, it is likely that the sockeye collected at LGS so far this year are actually kokanee from Dworshak reservoir. Yearling Chinook passage also increased this week at LGS. This week's daily average passage index was 330 per day, whereas that for last week was only 60 per day. Pacific lamprey macrophthalmia were encountered in all four of this week's samples. This week's daily average collection for lamprey macrophthalmia was 513 per day, which is mostly being driven by the estimated 2,016 that were collected on April 1<sup>st</sup>. Pacific lamprey ammocoetes were encountered in only one of this week's samples (April 1<sup>st</sup>).

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>. Sampling at LMN will be every-third-day through mid-April and then every-other-day until the start of transportation. Once transportation begins, sampling will be every day. Although sampling began on April 1<sup>st</sup>, no fish were collected in the first sample. The lack of fish in this first sample is most likely due to a combination of low fish abundance and a very low sample rate (1%) that was used on that day. The sample rate was increased to 10% for the April 5<sup>th</sup> sample, which resulted in sample counts more similar to what would have been expected. With a passage index of 9,200, yearling Chinook dominated the sample on April 5<sup>th</sup>. The only other species that was encountered in this sample was steelhead. The passage index of steelhead on April 5<sup>th</sup> was 124. No lamprey juveniles were encountered in this week's samples at LMN.

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, yearling Chinook, and steelhead were all encountered in this week's samples but in very low numbers. All of the subyearling Chinook that were collected this week were fry. Finally, one Pacific lamprey macrophthalmia was collected in each of three of this week's samples. No ammocoetes were collected this week.

The Snake River Trap at Lewiston, ID (LEW) is located at river kilometer 225 of the Snake River and is operated by the Idaho Department of Fish and Game. Sampling at the Snake River Trap was suspended on April 3<sup>rd</sup> and 4<sup>th</sup> this week in order minimize collections of hatchery yearling fall Chinook that were released above the trap. Collections resumed on April 5<sup>th</sup>. Subyearling Chinook fry, yearling Chinook, coho, and steelhead were all encountered in this week's samples, but in relatively low numbers. Of the 55 yearling Chinook that were collected this week, approximately 82% were of hatchery origin.

The Grande Ronde Trap (GRN) is located at river kilometer 002 of the Grande Ronde River and is operated by the Oregon Department of Fish and Wildlife. Yearling Chinook continued to dominate the samples at GRN this week. This week's daily average collection for yearling Chinook was nearly 570 fish per day, which is an increase from last week's daily average collection of about 200 per day. Of the yearling Chinook sampled this week, approximately 93% were of hatchery origin. Coho and steelhead

were also encountered in this week's samples, but in very low numbers. The coho collections are likely part of releases of approximately 500,000 hatchery coho juveniles into the Lostine River that began earlier this month.

The Salmon River Trap at Whitebird (WTB) is located at river kilometer 103 of the Salmon River and is operated by the Idaho Department of Fish and Game. Similar to recent years, sampling at WTB in 2018 will only occur during the weekdays. Yearling Chinook continue to dominate the collections at WTB. This week's daily average collection for yearling Chinook at WTB was 920 per day, which is an increase from last week's daily average collection of 280 per day. Of the yearling Chinook sampled this week, approximately 84% were of hatchery origin. The only other species that has been encountered at this trap this season is steelhead. A total of three steelhead have been collected at WTB so far this season.

The Imnaha River Trap (IMN) is located at river kilometer 007 of the Imnaha River and is operated by the Nez Perce Tribe. Sampling at the Imnaha River Trap is year round. For 2018, the FPC currently has data from IMN for the period of February 15<sup>th</sup> through April 3<sup>rd</sup>. Over the last week of available data (March 28-April 3), a total of 324 yearling Chinook and 908 steelhead were collected at the trap. All of the yearling Chinook collected over this period were unmarked. However, of the 908 steelhead collected over this period, approximately 98% were clipped. All of the clipped steelhead were encountered in the last two samples (April 2<sup>nd</sup> and April 3<sup>rd</sup>).

### **Hatchery Releases**

FPC has not received preliminary data from some hatcheries as of 04/06/18, therefore, this hatchery release schedule represents the most up to date accounting that are available, but should not be considered a finalized record of hatchery releases.

### **Snake River Zone:**

The Snake River Zone encompasses the Snake River and its tributaries from its confluence with the Columbia River to Hells Canyon Dam. Approximately 4.5 million spring and summer Chinook were scheduled to be released into this zone over the last week. Of these 55% are planned releases for the Clearwater River at Dworshak Hatchery (1.65 Million), and Clear

Creek (818,000). Another 27% were releases into the Salmon River and are expected to run through mid-May. The rest were scheduled to be released into the Grand Ronde River at Lookingglass Creek (250,000), Imnaha River (280k), and Tucannon River (211,000). Additionally, there were over 4 million summer steelhead planned for release as well. Approximately 51% were scheduled to be released into the Salmon River and Pahsimeroi Rivers, with 1.5 million being released volitionally through the end of the month. Finally, there were two releases of yearling fall Chinook to the Snake River over the last week, 160,000 at Captain John Acclimation pond, and another 275,000 at Lyons Ferry Hatchery.

In the next two weeks, approximately 1.8 million spring and summer Chinook are planned for release into this zone. The majority of these (60%) are being released into the Pahsimeroi River, a tributary of the Salmon. The remaining releases are scheduled for the Clearwater (55,000), Wallowa (250,000), and Grande Ronde Rivers (400,000). There will also be approximately 3 million summer steelhead planned for release over the next two weeks. Most of these will be into the Salmon River and its tributaries; Little Salmon (607,000), Yankee Fork (493,000), Pahsimeroi (808,000), and at the Sawtooth Hatchery (281,000). The Pahsimeroi release began on March 29<sup>th</sup> and is continuing through the middle of the April. The remaining fish are planned for release at Lolo and Newsome Creeks on the Clearwater (333,000), and the Wallowa (320,000), and Imnaha Rivers (215,000). Finally, there are two planned fall Chinook yearling releases planned for Big Canyon on the Clearwater (150,000), and Pittsburg landing on the Snake (150,000).

#### **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. Over the past week, there were approximately 2.7 million spring and summer Chinook scheduled for release into this zone. Of these, 36% were being released at Chelan Falls and Wells Hatchery, 34% were planned for the Wenatchee River and its tributaries, 16% into the Methow River and its tributaries, and the remaining fish were planned for release into the Similkameen River, a tributary of the Okanogan. There were also roughly half a million summer steelhead planned for release into this

zone over the past week into the Rocky Reach pool (210,400), Twisp (54,300), Okanogan (68,300), and Wenatchee Rivers (149,500).

Over the next two weeks approximately 2.7 million spring and summer Chinook are scheduled to be released into this zone. Of these, 37% are planned for a direct release from Wells Hatchery, 32% are scheduled for release into the Okanogan River, with the remainder being split between the Entiat (440,123) and Methow Rivers (405,000). Additionally, there is also nearly 1.4 million coho scheduled for release over the next two weeks. 67% of these are scheduled to be released into the Wenatchee River, and the other 33% are planned for release into the Methow River, all of which should begin on the 15<sup>th</sup> and run through the end of the month.

#### **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). Over the past week there were approximately 1.7 million spring and summer Chinook released into this zone. All of these were released into the Umatilla River at Thornhollow and Imeqes acclimation ponds. There was also one coho release into the Klickitat River of nearly 2.4 million fish. Finally, there were 440,000 summer steelhead that were planned for release over the past week into the Umatilla (100,000), and Touchet Rivers (159,000), as well as from Ringold Springs Hatchery (180,000).

Over the next two weeks, there are 2.6 million spring and summer Chinook planned for release. The majority will come from two releases into the Wind River (1.2 million), and the Little White Salmon (1.1 million), with a smaller release of 75,000 into Hood River. The remainder will be released into the Deschutes River (240,000) and its tributaries; Metolius (7500), Crooked River (10,000), and Wychus Creek (7,500). At Spring Creek Hatchery, 6 million fall Chinook are planned for release on April 9<sup>th</sup>.

Approximately 313,000 summer steelhead are scheduled to be released into the middle Columbia zone in the next two weeks. Of these, 150,000 will be into the Umatilla River at Minthorn acclimation pond, and another 163,000 are planned for the Deschutes River. In addition, there will be one release of 20,000 winter steelhead from Rock Creek on 4/15 that is scheduled to run through the middle of May. Finally,

there are nearly 900,000 juvenile coho planned for release into the Yakima River at three acclimation ponds; Holmes (232,000), Easton (175,000), and Prosser (460,000).

### **Lower Columbia Zone:**

The Lower Columbia Zone is defined as the Columbia River and its tributaries below Bonneville Dam. Over the past week approximately one million spring Chinook were planned for release into this zone. Of these, only 66,000 were released into the Sandy River, with the rest being released into the Columbia River at Tongue Point (250,000), Cathlamet Channel (250,000), and Youngs Bay (400,000). There were also approximately 630,000 summer steelhead released into this zone, with 440,000 into the Willamette and its tributaries, and the remainder divided between the Lewis (65,000), Kalama (91,500), and Elochoman Rivers (30,000). Winter steelhead releases totaled 390,000 amongst five release sites: Salmon Creek (40,000), Beaver Creek (120,000), Kalama Falls Hatchery (45,000), the Washougal River (85,000), and the Eagle Creek Hatchery on the Clackamas (100,000). Finally, there were also 820,000 juvenile coho released into the Lower Columbia at Grays River, Kalama Falls, and Lewis River Hatcheries, as well as two releases into the Columbia below Bonneville Dam.

Over the next two weeks there is one planned release of fall Chinook into the lower Columbia of 1.6 million Tule's at Tanner Creek. Two spring Chinook releases are also planned for Tongue Point on the Columbia (200,000) and Dexter Pond on the Willamette (234,000). In addition, another 1.7 million coho are also planned for release in this zone over the next two weeks. A large proportion of these will be released into Youngs Bay (825,000), with smaller releases into Tanner Creek (102,000), Cedar Creek (200,000), Blind Slough (400,000), and the Klaskanine River (200,000).

Approximately one million summer steelhead are scheduled to be released into the Lower Columbia zone in the next two weeks. Of these, roughly 58% will be released into the Cowlitz River. The remaining releases are scheduled for the Clackamas River (150,000), Lewis River (10,000), Sandy River (75,000), Toutle River (20,000), Washougal River (12,000), and McKenzie River (108,000). Scheduled winter steelhead releases total roughly 1.25 million fish in this zone over the next two weeks. Approximately 50% of these will be released into the Cowlitz River starting on the

15<sup>th</sup> and running through the middle of next month. The remaining releases are split between the Kalama (84,000), Lewis (247,000), Klaskanine (40,000), and Sandy Rivers (160,000), as well as two smaller releases at Big Creek Hatchery (60,000), and Gnat Creek Hatchery (40,000). F

### **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 1/1/2018 through 3/31/2018), 22 adult Chinook and 1,666 adult steelhead were counted. Of the steelhead counted 675 were unclipped steelhead. In 2017 for the same time frame, 16 adult Chinook and 1,666 adult steelhead were counted. Of the steelhead counted in 2017, 544 were unclipped steelhead.

The direct counts at Bonneville Dam showed 1 to 6 adult spring Chinook passing over the project this past week, with a cumulative total of 44 for both direct and video counts (through April 5). There were 6 more fish in this year's count when compared to the 2017 count, while this year's count was about 5.8% of the ten-year average. Adult steelhead direct counts ranged from 24 to 68 this week, with a cumulative total of 1,854 for both direct and video counts through April 5<sup>th</sup>. This is 98.1% of the 2017 count and 72.7% of the ten-year average.

The Willamette Falls cumulative steelhead count from January 1<sup>st</sup> through April 2<sup>nd</sup> was 1,066. The 2018 Willamette Falls winter steelhead count was about two times greater than the 2017 count of 210, while this year's count was about 28.8% of the 10-year average count of 3,706. This year's Lower Granite steelhead count of 2,542 had 3,562 fewer fish than the 2017 count of 6,104 and 3,406 fewer fish than the 10-year average count of 5,948.

Between March 2<sup>nd</sup> and April 5<sup>th</sup>, a total of 17

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:	3/24/2018		to	04/06/18					
Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone
Colville Tribe	Wells Hatchery	ST	SU	2018	68,300	04-01-18	04-01-18	Okanogan River	Okanogan River	UCOL
<b>Colville Tribe Total</b>					68,300					
Douglas County PUD	Methow Hatchery	CH1	SP	2018	30,698	04-01-18	04-01-18	Twisp River	Methow River	UCOL
Douglas County PUD	Methow Hatchery	CH1	SP	2018	64,000	04-01-18	04-01-18	Chewuch Acclim Pond	Methow River	UCOL
Douglas County PUD	Methow Hatchery	CH1	SP	2018	124,973	04-01-18	04-01-18	Methow Hatchery	Methow River	UCOL
Douglas County PUD	Methow Hatchery	CH1	SU	2018	215,000	04-01-18	05-01-18	Carlton Acclim Pond	Methow River	UCOL
Douglas County PUD	Wells Hatchery	CH1	SU	2018	356,300	04-01-18	04-01-18	Wells Hatchery	Rocky Reach Pool	UCOL
Douglas County PUD	Wells Hatchery	ST	SU	2018	54,300	04-01-18	04-01-18	Twisp Acclim Pond	Methow River	UCOL
Douglas County PUD	Wells Hatchery	ST	SU	2018	210,400	04-01-18	04-01-18	Wells Hatchery	Rocky Reach Pool	UCOL
<b>Douglas County PUD Total</b>					1,055,671					
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2018	544,340	03-26-18	03-27-18	N Fk Clearwater River	Clearwater River M F	SNAK
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2018	818,207	03-19-18	04-04-18	Clear Creek	Clearwater River M F	SNAK
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2018	1,277,096	03-26-18	03-30-18	Red River	S Fk Clearwater River	SNAK
Idaho Dept. of Fish and Game	Clearwater Hatchery	ST	SU	2018	233,972	04-02-18	04-03-18	S Fk Clearwater River	Clearwater River M F	SNAK
Idaho Dept. of Fish and Game	Clearwater Hatchery	ST	SU	2018	541,123	04-03-18	04-06-18	S Fk Clearwater River	Clearwater River M F	SNAK
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2018	93,778	04-02-18	04-02-18	Pahsimeroi River	Pahsimeroi River	SNAK
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2018	156,339	04-03-18	04-04-18	Pahsimeroi River	Pahsimeroi River	SNAK
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2018	407,487	04-04-18	04-10-18	Little Salmon River	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	McCall Hatchery	CH1	SU	2018	156,500	04-02-18	05-20-18	S Fk Salmon River	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	McCall Hatchery	CH1	SU	2018	969,500	04-02-18	05-05-18	S Fk Salmon River	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2018	808,000	03-29-18	04-13-18	Pahsimeroi River	Pahsimeroi River	SNAK
Idaho Dept. of Fish and Game	Sawtooth Hatchery	CH1	SP	2018	169,395	03-30-18	03-30-18	Sawtooth Hatchery	Salmon River (ID)	SNAK
Idaho Dept. of Fish and Game	Sawtooth Hatchery	CH1	SP	2018	1,938,255	03-28-18	03-28-18	Sawtooth Hatchery	Salmon River (ID)	SNAK
<b>Idaho Dept. of Fish and Game Total</b>					8,113,992					
Nez Perce Tribe	Lyons Ferry Hatchery	CH1	FA	2018	160,000	04-02-18	04-02-18	Cpt John Acclim Pond	Snake River	SNAK
Nez Perce Tribe	McCall Hatchery	CH1	SU	2018	103,500	03-29-18	04-01-18	Johnson Cr Idaho	South Fork Salmon River	SNAK
<b>Nez Perce Tribe Total</b>					263,500					
Oregon Dept. of Fish and Wildlife	Clackamas Hatchery	CH1	SP	2018	66,000	04-06-18	04-06-18	Bull Run Acclimation	Sandy River	LCOL
Oregon Dept. of Fish and Wildlife	Clackamas Hatchery	ST	WI	2018	100,000	03-31-18	03-31-18	Eagle Creek Hatchery	Eagle Creek	LCOL
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CH1	SP	2018	250,000	03-31-18	03-31-18	Tongue Pt	Col R Bel. Bon Dam	LCOL
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CH1	SP	2018	400,000	03-31-18	03-31-18	Youngs Bay	Youngs River	LCOL
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2018	215,000	04-01-18	04-20-18	Little Sheep Creek	Imnaha River	SNAK
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2018	320,000	04-01-18	04-01-18	Wallowa Acclim Pond	Wallowa River	SNAK
Oregon Dept. of Fish and Wildlife	Lookingglass Hatchery	CH1	SP	2018	250,000	04-01-18	04-01-18	Lookingglass Creek	Grande Ronde River	SNAK
Oregon Dept. of Fish and Wildlife	Lookingglass Hatchery	CH1	SP	2018	280,000	04-01-18	04-01-18	Imnaha Acclim Pond	Imnaha River	SNAK
Oregon Dept. of Fish and Wildlife	Roaring River Hatchery	ST	SU	2018	96,000	04-01-18	04-01-18	Willamette River	Willamette River	LCOL
Oregon Dept. of Fish and Wildlife	South Santiam Hatchery	ST	SU	2018	55,000	03-31-18	03-31-18	Minto Pond	Santiam River	LCOL
Oregon Dept. of Fish and Wildlife	South Santiam Hatchery	ST	SU	2018	161,500	04-03-18	04-03-18	South Santiam Hatchery	Santiam River	LCOL
Oregon Dept. of Fish and Wildlife	Umatilla Hatchery	ST	SU	2018	100,000	04-06-18	04-06-18	Pendelton Acclim Pond	Umatilla River	MCOL
Oregon Dept. of Fish and Wildlife	Willamette Hatchery	CH1	SP	2018	234,000	03-24-18	03-24-18	Dexter Pond	Willamette River	LCOL
Oregon Dept. of Fish and Wildlife	Willamette Hatchery	ST	SU	2018	61,000	03-31-18	03-31-18	Dexter Pond	Willamette River	LCOL
Oregon Dept. of Fish and Wildlife	Willamette Hatchery	ST	SU	2018	66,000	03-31-18	03-31-18	Minto Pond	Santiam River	LCOL
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2018	7,500	03-25-18	03-25-18	Metolius River	Deschutes River	MCOL
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2018	7,500	03-25-18	03-25-18	Wychus Creek	Deschutes River	MCOL
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2018	10,000	03-25-18	03-25-18	Crooked River (OR)	Deschutes River	MCOL
<b>Oregon Dept. of Fish and Wildlife Total</b>					2,679,500					
U.S. Fish and Wildlife Service	Dworshak NFH	CH1	SP	2018	1,648,668	04-02-18	04-03-18	Dworshak Hatchery	Clearwater River M F	SNAK
U.S. Fish and Wildlife Service	Dworshak NFH	ST	SU	2018	353,626	04-02-18	04-02-18	Clear Creek	Clearwater River M F	SNAK
U.S. Fish and Wildlife Service	Hagerman NFH	ST	SU	2018	1,477,066	04-02-18	04-30-18	S Fk Salmon River	Salmon River (ID)	SNAK
U.S. Fish and Wildlife Service	Warm Springs NFH	CH1	SP	2018	487,446	03-29-18	03-29-18	Warm Springs Hatchery	Deschutes River	MCOL
<b>U.S. Fish and Wildlife Service Total</b>					3,966,806					
Umatilla Tribe	Carson NFH	CH1	SP	2018	246,484	03-28-18	03-28-18	Wind River	Wind River	MCOL
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2018	150,000	04-01-18	04-01-18	Thornhollow Acclim Pond	Umatilla River	MCOL
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2018	159,114	04-06-18	04-06-18	Imeques Acclim Pond	Umatilla River	MCOL
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2018	220,000	04-01-18	04-01-18	Thornhollow Acclim Pond	Umatilla River	MCOL
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2018	440,000	04-01-18	04-01-18	Imeques Acclim Pond	Umatilla River	MCOL
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2018	500,000	04-06-18	04-06-18	Imeques Acclim Pond	Umatilla River	MCOL
Umatilla Tribe	Umatilla Hatchery	CH1	SU	2018	212,400	04-05-18	04-05-18	Thornhollow Acclim Pond	Umatilla River	MCOL
<b>Umatilla Tribe Total</b>					1,927,998					
Washington Dept. of Fish and Wildlife	Beaver Creek Hatchery	ST	SU	2018	30,000	04-01-18	05-01-18	Beaver Creek	Elochoman River	LCOL
Washington Dept. of Fish and Wildlife	Beaver Creek Hatchery	ST	WI	2018	120,000	04-01-18	05-18-18	Beaver Creek	Elochoman River	LCOL
Washington Dept. of Fish and Wildlife	Chelan Hatchery	CH1	SU	2018	604,500	04-01-18	04-01-18	Chelan Falls	Rocky Reach Pool	UCOL
Washington Dept. of Fish and Wildlife	Chiwawa Hatchery	CH1	SP	2018	158,500	04-01-18	04-01-18	Chiwawa Hatchery	Wenatchee River	UCOL
Washington Dept. of Fish and Wildlife	Chiwawa Hatchery	CH1	SP	2018	234,000	04-01-18	04-01-18	Nason Creek	Wenatchee River	UCOL
Washington Dept. of Fish and Wildlife	Chiwawa Hatchery	ST	SU	2018	149,500	04-01-18	04-01-18	Chiwawa Hatchery	Wenatchee River	UCOL

## Hatchery Releases Last Two Weeks

Washington Dept. of Fish and Wildlife	COOP	CH1	SU	2018	1,500	04-01-18	04-01-18	Chelan Falls	Rocky Reach Pool	UCOL
Washington Dept. of Fish and Wildlife	COOP	CO	NO	2018	30,800	04-01-18	05-01-18	Below Bonn Dam	Col R Bel. Bon Dam	LCOL
Washington Dept. of Fish and Wildlife	COOP	CO	NO	2018	39,000	04-01-18	04-01-18	Cathlamet Channel Net Pen	Col R Bel. Bon Dam	LCOL
Washington Dept. of Fish and Wildlife	Cowlitz Hatchery	CH1	SP	2018	250,000	04-01-18	05-01-18	Cathlamet Channel Net Pen	Col R Bel. Bon Dam	LCOL
Washington Dept. of Fish and Wildlife	Cowlitz Salmon	CH1	SP	2018	100,000	03-01-18	04-01-18	Cowlitz Hatchery	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Cowlitz Salmon	CH1	SP	2018	809,000	03-01-18	04-01-18	Cowlitz River	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Eastbank Hatchery	CH1	SU	2018	505,000	04-01-18	04-01-18	Dryden Acclim Pond	Wenatchee River	UCOL
Washington Dept. of Fish and Wildlife	Grays River Hatchery	CO	NO	2018	295,000	04-01-18	04-01-18	Grays River Hatchery	Grays River	LCOL
Washington Dept. of Fish and Wildlife	Kalama Falls Hatchery	CO	NO	2018	305,000	04-01-18	05-01-18	Kalama Falls Hatchery	Kalama River	LCOL
Washington Dept. of Fish and Wildlife	Kalama Falls Hatchery	ST	SU	2018	91,500	04-01-18	04-01-18	Kalama Falls Hatchery	Kalama River	LCOL
Washington Dept. of Fish and Wildlife	Kalama Falls Hatchery	ST	WI	2018	45,500	04-01-18	04-01-18	Kalama Falls Hatchery	Kalama River	LCOL
Washington Dept. of Fish and Wildlife	Lewis River Hatchery	CO	SO	2018	150,000	04-01-18	05-01-18	Lewis River Hatchery	Lewis River	LCOL
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	CH1	FA	2018	274,845	04-01-18	04-01-18	Lyons Ferry Hatchery	Snake River	SNAK
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2018	50,000	04-01-18	04-01-18	Tucannon River	Tucannon River	SNAK
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2018	59,000	04-01-18	04-01-18	Dayton Acclim Pond	Touchet River	MCOL
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2018	100,000	04-01-18	04-01-18	Dayton Acclim Pond	Touchet River	MCOL
Washington Dept. of Fish and Wildlife	Lyons Ferry Hatchery	ST	SU	2018	225,000	04-01-18	04-01-18	Cottonwood Acclim Pond	Grande Ronde River	SNAK
Washington Dept. of Fish and Wildlife	Merwin Hatchery	ST	SU	2018	65,000	04-01-18	05-01-18	Echo Net Pens	Lewis River	LCOL
Washington Dept. of Fish and Wildlife	Ringold Springs Hatchery	ST	SU	2018	180,000	04-05-18	04-13-18	Ringold Springs Hatchery	McNary Pool	MCOL
Washington Dept. of Fish and Wildlife	Similkameen Hatchery	CH1	SU	2018	380,000	04-01-18	04-01-18	Similkameen River	Okanogan River	UCOL
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	WI	2018	40,000	04-01-18	05-01-18	Salmon Creek (WA)	Col R Bel. Bon Dam	LCOL
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	WI	2018	85,000	04-01-18	05-01-18	Washougal River	Washougal River	LCOL
Washington Dept. of Fish and Wildlife	Tucannon Hatchery	CH1	SP	2018	211,400	04-01-18	04-30-18	Curl Lake Acclim Pond	Tucannon River	SNAK
Washington Dept. of Fish and Wildlife	Tucannon Hatchery	ST	SU	2018	50,000	04-01-18	04-01-18	Tucannon River	Tucannon River	SNAK
Washington Dept. of Fish and Wildlife	Washougal Hatchery	CO	NO	2018	2,366,000	04-01-18	04-01-18	Klickitat River	Klickitat River	MCOL
<b>Washington Dept. of Fish and Wildlife Total</b>					<b>8,005,045</b>					
Yakama Tribe	Klickitat Hatchery	CH1	SP	2018	600,000	03-26-18	03-26-18	Klickitat Hatchery	Klickitat River	MCOL
<b>Yakama Tribe Total</b>					<b>600,000</b>					
<b>Grand Total</b>					<b>26,680,812</b>					

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

## Hatchery Releases Next Two Weeks

### Hatchery Release Summary

	From:	4/7/2018		to	4/20/2018						
Agency	Hatchery	Species	Race	MiqYr	NumRel	RelStart	RelEnd	RelSite	RelRiver	Zone	
Colville Tribe	Chief Joseph Hatchery	CH1	SP	2018	202,000	04-15-18	04-15-18		Okanogan River	UCOL	
Colville Tribe	Chief Joseph Hatchery	CH1	SP	2018	556,000	04-15-18	04-15-18	Chief Joseph Hatchery	Wells Pool		
Colville Tribe	Chief Joseph Hatchery	CH1	SU	2018	303,000	04-15-18	04-15-18		Okanogan River	UCOL	
Colville Tribe	Chief Joseph Hatchery	CH1	SU	2018	380,000	04-15-18	04-15-18	Similkameen Acclim Pd	Okanogan River		UCOL
Colville Tribe	Chief Joseph Hatchery	CH1	SU	2018	464,000	04-15-18	04-15-18	Chief Joseph Hatchery	Wells Pool		
<b>Colville Tribe Total</b>					<b>1,905,000</b>						
Idaho Dept. of Fish and Game	Clearwater Hatchery	ST	SU	2018	131,564	04-09-18	04-10-18	Newsome Creek	S Fk Clearwater River	RNAK	
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2018	196,779	04-19-18	04-23-18	Yankee Fk (Salmon R)	Salmon River (ID)		RNAK
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2018	281,893	04-11-18	04-13-18	Sawtooth Hatchery	Salmon River (ID)	RNAK	
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2018	296,925	04-16-18	04-18-18	Yankee Fk (Salmon R)	Salmon River (ID)		RNAK
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2018	407,487	04-04-18	04-10-18	Little Salmon River	Salmon River (ID)	RNAK	
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2018	200,000	04-16-18	04-19-18	Little Salmon River	Salmon River (ID)	RNAK	
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2018	808,000	03-29-18	04-13-18	Pahsimeroi River	Pahsimeroi River	RNAK	
Idaho Dept. of Fish and Game	Pahsimeroi Hatchery	CH1	SU	2018	66,650	04-16-18	04-24-18	Pahsimeroi River	Pahsimeroi River	RNAK	
Idaho Dept. of Fish and Game	Pahsimeroi Hatchery	CH1	SU	2018	991,775	04-16-18	04-24-18	Pahsimeroi River	Pahsimeroi River	RNAK	
<b>Idaho Dept. of Fish and Game Total</b>					<b>3,381,073</b>						
Nez Perce Tribe	Dworshak NFH	ST	SU	2018	202,238	04-16-18	04-16-18	Lolo Creek	Clearwater River M F	RNAK	
Nez Perce Tribe	Lookingglass Hatchery	CH1	SP	2018	250,000	04-20-18	04-20-18	Lostine Accim Pond	Wallowa River	RNAK	
Nez Perce Tribe	Lyons Ferry Hatchery	CH1	FA	2018	150,000	04-10-18	04-10-18	Big Canyon (Clearwater River)	Clearwater River M F	RNAK	
Nez Perce Tribe	Lyons Ferry Hatchery	CH1	FA	2018	150,000	04-12-18	04-12-18	Pittsburg Landing Acclim Pond	Snake River	RNAK	
<b>Nez Perce Tribe Total</b>					<b>752,238</b>						
Oregon Dept. of Fish and Wildlife	Big Creek Hatchery	ST	WI	2018	60,000	04-07-18	04-07-18	Big Creek Hatchery	Big Creek		LCOL
Oregon Dept. of Fish and Wildlife	Bonneville Hatchery	CH0	FA	2018	1,600,000	04-18-18	04-18-18	Tanner Creek	Tanner Creek		LCOL
Oregon Dept. of Fish and Wildlife	Bonneville Hatchery	CO	UN	2018	400,000	04-14-18	04-14-18	Blind Slough	Col R Bel. Bon Dam		LCOL
Oregon Dept. of Fish and Wildlife	Bonneville Hatchery	CO	UN	2018	825,000	04-14-18	04-14-18	Youngs Bay	Youngs River		LCOL
Oregon Dept. of Fish and Wildlife	Bonneville Hatchery	ST	SU	2018	25,000	04-11-18	04-11-18	Clackamas River	Clackamas River		LCOL
Oregon Dept. of Fish and Wildlife	Clackamas Hatchery	ST	SU	2018	125,000	04-07-18	04-07-18	Clackamas Hatchery	Clackamas River		LCOL
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CH1	SP	2018	200,000	04-20-18	04-20-18	Tongue Pt	Col R Bel. Bon Dam		LCOL
Oregon Dept. of Fish and Wildlife	Clatsop County Fisheries	CO	UN	2018	200,000	04-14-18	04-14-18	Clackamas River	Clackamas River		LCOL
Oregon Dept. of Fish and Wildlife	Enhancement Program	CH1	SP	2018	55,000	04-07-18	04-07-18	Clear Creek	Clearwater River M F	RNAK	
Oregon Dept. of Fish and Wildlife	Gnat Creek Hatchery	ST	WI	2018	40,000	04-07-18	04-07-18	Gnat Creek Hatchery	Col R Bel. Bon Dam		LCOL
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2018	215,000	04-01-18	04-20-18	Little Sheep Creek	Imnaha River		RNAK
Oregon Dept. of Fish and Wildlife	Irrigon Hatchery Complex	ST	SU	2018	320,000	04-15-18	04-15-18	Big Canyon Acclim.Pd (Grande Ronde)	Wallowa River		RNAK
Oregon Dept. of Fish and Wildlife	Klaskanine Hatchery	ST	WI	2018	40,000	04-14-18	04-14-18	Klaskanine Hatchery	Klaskanine River		LCOL
Oregon Dept. of Fish and Wildlife	Leaburg Hatchery	ST	SU	2018	108,000	04-07-18	04-07-18	McKenzie River	Willamette River		LCOL
Oregon Dept. of Fish and Wildlife	Opal Springs Hatchery	ST	SU	2018	1,000	04-15-18	04-15-18	Crooked River (OR)	Deschutes River		MCOL
Oregon Dept. of Fish and Wildlife	Round Butte Hatchery	CH1	SP	2018	240,000	04-14-18	04-14-18	Deschutes River	Deschutes River		MCOL
Oregon Dept. of Fish and Wildlife	Round Butte Hatchery	ST	SU	2018	162,000	04-07-18	04-07-18	Deschutes River	Deschutes River		MCOL
Oregon Dept. of Fish and Wildlife	Sandy Hatchery	CO	UN	2018	200,000	04-14-18	04-14-18	Cedar Creek (Sandy R)	Sandy River		LCOL
Oregon Dept. of Fish and Wildlife	Sandy Hatchery	ST	SU	2018	75,000	04-18-18	04-18-18	Cedar Creek (Sandy R)	Sandy River		LCOL
Oregon Dept. of Fish and Wildlife	Sandy Hatchery	ST	SU	2018	75,000	04-18-18	04-18-18	Cedar Creek (Sandy R)	Sandy River		LCOL
Oregon Dept. of Fish and Wildlife	Sandy Hatchery	ST	WI	2018	160,000	04-13-18	04-13-18	Cedar Creek (Sandy R)	Sandy River		LCOL
Oregon Dept. of Fish and Wildlife	Willamette Hatchery	CH1	SP	2018	234,000	04-14-18	04-14-18	Dexter Pond	Willamette River		LCOL
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2018	7,500	04-15-18	04-15-18	Metolius River	Deschutes River		MCOL
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2018	7,500	04-15-18	04-15-18	Wychus Creek	Deschutes River		MCOL
Oregon Dept. of Fish and Wildlife	Wizard Falls Hatchery	CH1	SP	2018	10,000	04-15-18	04-15-18	Crooked River (OR)	Deschutes River		MCOL
<b>Oregon Dept. of Fish and Wildlife Total</b>					<b>5,385,000</b>						
U.S. Fish and Wildlife Service	Carson NFH	CH1	SP	2018	1,193,064	04-10-18	04-10-18	Wind River	Wind River		MCOL
U.S. Fish and Wildlife Service	Entiat Hatchery	CH1	SU	2018	440,123	04-13-18	04-13-18	Entiat River	Entiat River		UCOL
U.S. Fish and Wildlife Service	Little White Salmon NFH	CH1	SP	2018	1,078,000	04-10-18	04-10-18	Little White Salmon Hatchery	Little White Salmon River		MCOL
U.S. Fish and Wildlife Service	Spring Creek NFH	CH0	FA	2018	6,000,000	04-09-18	04-09-18	Spring Creek Hatchery	Bonneville Pool		MCOL
U.S. Fish and Wildlife Service	Winthrop NFH	CH1	SP	2018	405,000	04-15-18	04-20-18	Methow River	Methow River		UCOL
<b>U.S. Fish and Wildlife Service Total</b>					<b>9,116,187</b>						
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2018	150,000	04-20-18	04-20-18	Catherine Cr Acclim Pond	Grande Ronde River		RNAK
Umatilla Tribe	Lookingglass Hatchery	CH1	SP	2018	250,000	04-15-18	04-15-18	Grande Ronde Acclim Pond	Grande Ronde River		RNAK

## Hatchery Releases Next Two Weeks

Umatilla Tribe	Umatilla Hatchery	ST	SU	2018	50,000	04-20-18	04-20-18	Minthorn Acclimation Pond	Umatilla River	MCOL
Umatilla Tribe	Umatilla Hatchery	ST	SU	2018	50,000	04-20-18	04-20-18	Pendelton Acclim Pond	Umatilla River	MCOL
Umatilla Tribe	Umatilla Hatchery	ST	SU	2018	50,000	04-20-18	04-20-18	Pendelton Acclim Pond	Umatilla River	MCOL
<b>Umatilla Tribe Total</b>					<b>550,000</b>					
Warm Springs Tribe	Round Butte Hatchery	CH1	SP	2018	75,000	04-15-18	04-15-18	W Fk Hood River	Hood River	MCOL
<b>Warm Springs Tribe Total</b>					<b>75,000</b>					
Washington Dept. of Fish and Wildlife	COOP	CT	UN	2018	10,000	04-15-18	05-15-18	Cowlitz River	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Cowlitz Trout	CT	UN	2018	95,000	04-15-18	05-15-18	Blue Creek	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Cowlitz Trout	ST	SU	2018	620,000	04-15-18	05-15-18	Blue Creek	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Cowlitz Trout	ST	WI	2018	53,000	04-15-18	05-15-18	Cowlitz River	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Cowlitz Trout	ST	WI	2018	103,000	04-15-18	05-15-18	Blue Creek	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Cowlitz Trout	ST	WI	2018	470,000	04-15-18	05-15-18	Blue Creek	Cowlitz River	LCOL
Washington Dept. of Fish and Wildlife	Kalama Falls Hatchery	ST	WI	2018	84,000	04-15-18	05-15-18	Kalama Falls Hatchery	Kalama River	LCOL
Washington Dept. of Fish and Wildlife	Merwin Hatchery	ST	SU	2018	10,000	04-15-18	05-15-18	N Fk Lewis River	Lewis River	LCOL
Washington Dept. of Fish and Wildlife	Merwin Hatchery	ST	WI	2018	247,000	04-15-18	05-15-18	N Fk Lewis River	Lewis River	LCOL
Washington Dept. of Fish and Wildlife	Ringold Springs Hatchery	ST	SU	2018	180,000	04-05-18	04-13-18	Ringold Springs Hatchery	McNary Pool	MCOL
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	SU	2018	13,200	04-15-18	05-15-18	Washougal River	Washougal River	LCOL
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	SU	2018	20,000	04-15-18	05-15-18	S Fk Toutle River	Toutle River	LCOL
Washington Dept. of Fish and Wildlife	Skamania Hatchery	ST	WI	2018	20,000	04-15-18	05-15-18	Rock Cr (Stevenson)	Bonneville Pool	MCOL
<b>Washington Dept. of Fish and Wildlife Total</b>					<b>1,925,200</b>					
Yakama Tribe	Eagle Creek NFH	CO	UN	2018	174,880	04-15-18	04-15-18	Easton Pond	Yakima River	MCOL
Yakama Tribe	Eagle Creek NFH	CO	UN	2018	232,316	04-15-18	04-15-18	Holmes Pond	Yakima River	MCOL
Yakama Tribe	Leavenworth NFH	CO	UN	2018	74,798	04-15-18	04-30-18	Leavenworth Hatchery	Wenatchee River	UCOL
Yakama Tribe	Leavenworth NFH	CO	UN	2018	102,681	04-15-18	04-30-18	Tanner Creek	Tanner Creek	LCOL
Yakama Tribe	Leavenworth NFH	CO	UN	2018	128,426	04-15-18	04-30-18	Leavenworth Hatchery	Wenatchee River	UCOL
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2018	180,000	04-15-18	04-15-18	Prosser Acclim Pond	Yakima River	MCOL
Yakama Tribe	Prosser Acclim. Pond	CO	UN	2018	280,000	04-15-18	04-15-18	Prosser Acclim Pond	Yakima River	MCOL
Yakama Tribe	Willard Hatchery	CO	UN	2018	62,337	04-15-18	04-30-18	Winthrop Hatchery	Methow River	UCOL
Yakama Tribe	Willard Hatchery	CO	UN	2018	68,019	04-15-18	04-30-18	Methow River	Methow River	UCOL
Yakama Tribe	Willard Hatchery	CO	UN	2018	76,174	04-15-18	04-30-18	Twisp Acclim Pond	Methow River	UCOL
Yakama Tribe	Willard Hatchery	CO	UN	2018	76,232	04-15-18	04-30-18	Coulter Creek	Wenatchee River	UCOL
Yakama Tribe	Willard Hatchery	CO	UN	2018	95,514	04-15-18	04-30-18	Leavenworth Hatchery	Wenatchee River	UCOL
Yakama Tribe	Willard Hatchery	CO	UN	2018	99,103	04-15-18	04-30-18	Wenatchee River	Wenatchee River	UCOL
Yakama Tribe	Willard Hatchery	CO	UN	2018	113,613	04-15-18	04-30-18	Rolfings Acclim Pond	Wenatchee River	UCOL
Yakama Tribe	Willard Hatchery	CO	UN	2018	121,780	04-15-18	04-30-18	Butcher Creek Acclim. Pond	Wenatchee River	UCOL
Yakama Tribe	Willard Hatchery	CO	UN	2018	194,330	04-15-18	04-30-18	Leavenworth Hatchery	Wenatchee River	UCOL
Yakama Tribe	Winthrop NFH	CO	UN	2018	249,529	04-15-18	04-30-18	Winthrop Hatchery	Methow River	UCOL
<b>Yakama Tribe Total</b>					<b>2,329,732</b>					
<b>Grand Total</b>					<b>25,419,430</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
03/23/2018	120.9	0.0	119.7	0.0	121.0	4.9	111.0	0.0	116.6	7.7	118.0	0.0	111.6	0.0
03/24/2018	109.2	0.0	112.6	0.0	118.3	3.4	119.5	0.0	125.9	9.2	102.5	0.0	98.6	0.0
03/25/2018	93.1	0.0	95.3	0.0	108.6	0.0	106.8	0.0	113.0	0.5	111.5	0.0	106.6	0.0
03/26/2018	105.9	0.0	112.0	0.0	105.4	5.8	103.1	0.0	107.6	0.0	128.4	0.0	125.4	0.0
03/27/2018	87.1	0.0	89.0	0.0	97.3	0.0	103.9	0.0	110.5	1.3	117.4	0.0	120.8	2.5
03/28/2018	82.6	0.0	81.7	0.0	86.0	0.0	83.8	0.0	87.5	0.0	109.4	0.0	111.6	0.0
03/29/2018	98.6	0.0	97.3	0.0	96.1	0.0	96.6	0.0	101.4	0.0	124.0	0.0	124.5	0.0
03/30/2018	90.6	0.0	94.1	0.0	85.6	2.5	90.2	0.0	94.4	0.0	88.8	0.3	86.2	0.0
03/31/2018	108.1	0.0	107.1	0.0	113.5	5.7	112.7	0.0	117.6	0.0	107.6	0.0	104.4	0.0
04/01/2018	92.5	0.0	93.3	0.0	101.6	0.0	99.9	0.0	106.2	0.0	112.1	0.0	110.8	0.0
04/02/2018	123.0	0.0	115.5	0.0	111.5	1.2	103.6	0.0	108.2	1.1	122.4	0.0	121.4	0.0
04/03/2018	113.1	0.0	124.1	0.0	136.3	10.2	137.6	0.0	142.4	25.1	132.4	0.0	127.6	0.8
04/04/2018	112.2	0.0	106.7	0.0	118.5	0.0	113.9	0.0	119.3	16.2	137.7	0.0	135.7	0.0
04/05/2018	111.7	0.0	117.5	0.0	113.7	0.0	113.5	0.0	119.2	8.8	142.4	0.0	138.9	0.0

**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
03/23/2018	13.9	9.4	---	---	68.0	0.0	69.9	0.0	70.0	1.4	67.8	12.6
03/24/2018	14.0	9.5	---	---	70.9	0.0	69.8	0.0	73.7	4.8	74.1	18.9
03/25/2018	13.9	9.4	---	---	65.9	6.9	60.8	0.0	67.5	0.1	70.3	14.9
03/26/2018	11.1	6.7	---	---	61.4	6.9	65.4	0.0	63.9	2.4	63.3	14.8
03/27/2018	8.4	4.2	---	---	57.5	6.9	57.7	0.0	60.4	0.0	62.2	13.0
03/28/2018	8.4	4.2	---	---	56.1	6.8	61.5	0.0	64.7	0.0	65.3	12.9
03/29/2018	8.4	4.2	---	---	55.3	6.8	59.7	0.1	60.7	0.0	60.7	2.9
03/30/2018	8.4	4.2	---	---	58.7	6.8	63.3	0.0	64.6	0.0	63.7	6.1
03/31/2018	8.4	4.2	---	---	56.5	6.8	63.3	0.0	67.8	0.0	72.8	14.8
04/01/2018	8.4	4.2	---	---	57.4	6.8	59.7	0.0	62.4	0.0	64.0	9.8
04/02/2018	8.4	4.9	---	---	59.6	6.8	59.9	0.0	62.7	0.1	62.1	8.1
04/03/2018	8.4	4.8	---	---	62.1	44.4	61.8	42.0	62.1	40.0	69.2	58.8
04/04/2018	10.0	5.7	---	---	68.5	45.5	67.9	42.2	68.5	40.9	72.3	61.8
04/05/2018	9.9	5.7	---	---	74.9	47.5	72.8	42.2	73.3	43.9	78.7	68.6

**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		
03/23/2018	172.7	0.0	190.8	19.8	189.2	0.0	208.9	1.2	105.0	95.2
03/24/2018	170.3	0.0	190.5	19.3	185.2	0.0	212.6	1.3	107.5	96.5
03/25/2018	182.7	0.0	187.0	15.1	181.5	0.0	186.4	1.2	83.2	94.5
03/26/2018	187.6	0.0	188.2	22.6	182.4	0.0	194.8	1.2	92.4	93.8
03/27/2018	190.5	0.0	194.0	28.2	186.9	0.0	204.0	0.9	101.7	94.1
03/28/2018	184.7	0.0	183.2	12.3	180.9	0.0	198.0	3.6	91.0	96.0
03/29/2018	184.1	0.0	188.5	17.7	186.5	0.0	204.5	1.2	91.9	104.0
03/30/2018	171.1	0.0	172.9	3.9	171.2	0.0	186.7	1.4	78.1	99.7
03/31/2018	169.9	0.0	181.4	0.0	175.7	0.0	192.9	1.5	79.2	104.8
04/01/2018	169.7	0.0	183.9	0.0	175.6	14.8	192.8	1.2	82.1	102.1
04/02/2018	179.5	20.1	176.6	0.0	174.2	14.8	191.5	1.3	78.2	104.6
04/03/2018	190.6	31.8	204.2	0.0	197.4	40.4	211.4	1.3	81.7	120.9
04/04/2018	213.6	57.6	199.1	0.0	190.0	30.7	207.7	1.4	87.6	111.3
04/05/2018	225.9	60.6	213.3	0.0	206.0	43.4	224.6	1.3	89.2	126.7



FISH PASSAGE CENTER

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

Date 4/6/2018 7:15:08 AM

Page 1 of 4

**Total Dissolved Gas Data at Upper Columbia Sites**

Hungry H. Dnst				Boundary				Grand Coulee				Grand C. Tlwr				Chief Joseph				Chief J. Dnst				Date	
Date	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	Date
03/23									102.5	102.6	102.8	15	102.0	102.4	103.0	24	102.4	102.5	103.0	16	101.5	101.8	102.1	24	03/23
03/24									102.8	103.0	103.1	24	102.4	102.8	103.3	24	102.5	102.7	103.3	24	101.8	102.1	102.8	24	03/24
03/25									102.3	102.5	102.8	24	102.2	102.6	103.4	24	102.0	102.1	102.4	18	101.3	101.7	102.6	24	03/25
03/26									101.8	101.9	101.9	24	101.5	101.9	102.4	24	101.5	101.5	102.1	17	100.8	100.9	101.2	24	03/26
03/27									102.2	102.4	102.6	24	101.7	102.3	103.1	24	102.0	102.5	103.0	24	101.5	102.0	102.7	24	03/27
03/28									102.0	102.2	102.3	24	101.9	102.5	103.4	24	102.3	103.1	104.6	24	101.8	102.4	103.2	24	03/28
03/29									102.2	102.5	102.7	23	101.7	102.3	103.1	23	102.4	102.8	103.7	22	101.8	102.3	103.0	23	03/29
03/30									103.0	103.2	103.4	24	102.9	103.6	104.2	24	103.3	103.8	104.5	24	102.7	103.2	103.8	24	03/30
03/31									102.6	102.9	103.0	24	102.2	102.7	103.0	24	103.3	103.7	104.0	24	102.5	102.9	103.3	24	03/31
04/01									104.3	104.8	105.0	24	103.9	104.8	105.4	24	104.5	105.0	105.5	22	103.9	104.7	105.5	24	04/01
04/02									103.9	104.3	104.6	24	103.2	103.7	104.0	24	104.2	104.5	104.9	21	103.5	103.8	104.2	24	04/02
04/03									103.5	103.7	103.9	24	102.6	103.0	103.3	24	103.6	103.8	104.0	18	102.7	103.0	103.2	24	04/03
04/04									103.3	103.4	103.6	24	102.6	102.8	103.1	24	103.4	103.6	103.8	24	102.7	102.9	103.2	24	04/04
04/05									103.7	104.0	104.3	23	102.9	103.2	103.4	23	103.2	103.3	103.5	23	102.4	102.7	102.9	23	04/05

**Total Dissolved Gas Data at Upper Columbia Sites**

Wells				Wells Dwnstrm				Rocky Reach				Rocky R. Tlwr				Rock Island				Rock I. Tlwr				Date	
Date	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	Date
03/23	101.4	101.6	102.0	24	102.6	103.5	104.6	24	102.3	102.5	102.6	24	103.4	103.6	103.9	23	101.7	102.0	102.4	24	103.2	104.5	107.4	23	03/23
03/24	101.6	101.8	102.3	24	102.5	103.4	105.8	24	103.0	103.3	103.9	24	103.7	104.2	105.0	23	102.1	102.3	102.4	23	104.0	105.0	106.4	22	03/24
03/25	101.1	101.4	101.9	24	101.3	101.7	102.4	24	102.9	103.2	103.8	24	103.6	104.3	105.0	22	102.5	102.7	103.1	22	102.5	102.8	104.4	22	03/25
03/26	100.9	101.2	101.5	24	102.2	103.7	111.7	24	101.9	102.2	102.8	24	103.1	103.5	104.2	20	101.7	101.8	102.0	23	101.6	101.6	101.7	18	03/26
03/27	101.4	101.8	102.2	24	102.3	103.3	109.9	24	101.7	102.0	102.3	24	102.7	102.9	103.1	22	101.5	101.8	102.1	23	101.7	102.0	104.5	21	03/27
03/28	101.4	101.9	102.4	24	101.6	102.3	102.8	24	102.4	103.2	104.1	24	103.0	103.7	105.5	23	101.5	101.7	101.9	24	101.5	101.6	101.7	22	03/28
03/29	101.9	102.4	102.6	23	102.0	102.6	102.8	23	103.5	103.8	104.3	23	104.4	105.0	106.0	21	103.2	103.9	104.4	21	103.0	103.7	104.3	21	03/29
03/30	102.9	103.3	103.7	24	103.9	105.1	109.1	24	103.0	103.2	103.2	24	103.6	103.9	104.4	21	103.0	103.3	103.6	24	103.0	103.3	103.6	21	03/30
03/31	102.4	102.9	103.0	24	105.0	106.9	112.3	24	103.0	103.3	103.6	24	103.9	104.3	104.8	22	102.4	102.9	103.2	24	102.5	102.7	103.2	20	03/31
04/01	103.9	104.6	104.9	24	104.0	104.8	105.2	24	105.8	106.7	107.6	24	106.2	106.8	108.6	22	104.1	104.9	105.7	22	104.1	104.6	105.4	20	04/01
04/02	103.3	103.6	103.8	24	103.6	104.0	104.6	24	105.5	106.4	107.6	24	106.1	107.1	108.4	22	105.3	105.7	106.0	22	105.4	105.8	106.3	22	04/02
04/03	102.8	103.1	103.2	24	105.2	107.2	109.4	24	103.6	103.8	104.1	24	104.3	104.6	104.9	22	103.3	103.6	104.0	24	107.1	109.0	112.0	21	04/03
04/04	102.7	102.8	103.0	24	102.9	103.2	103.4	24	104.6	105.6	107.0	23	105.3	106.0	107.7	20	103.1	103.5	104.3	22	105.7	107.1	109.9	20	04/04
04/05	102.9	103.1	103.2	23	103.0	103.3	103.5	23	105.3	105.9	106.9	23	105.8	106.4	107.7	20	105.4	105.8	106.3	21	106.5	107.5	109.0	20	04/05

FISH PASSAGE CENTER

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

Date 4/6/2018 7:15:08 AM

Page 2 of 4

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

Wanapum				Wanapum Tlwr				Priest Rapids				Priest R. Dnstr				Pasco				Date	
Date	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	Date
03/23	103.4	103.7	104.0	24	103.3	103.4	103.8	24	103.5	103.7	103.9	24	103.2	103.6	103.8	24					03/23
03/24	103.6	103.8	104.1	24	103.3	103.4	103.6	24	103.3	103.5	103.6	24	103.0	103.1	103.2	24					03/24
03/25	102.7	102.8	103.1	24	102.5	102.7	103.0	24	102.6	102.9	103.5	24	102.4	102.6	102.8	24					03/25
03/26	102.6	102.8	103.0	24	102.3	102.5	102.7	24	101.8	102.0	102.3	24	101.6	101.7	101.8	24					03/26
03/27	102.8	103.0	103.2	24	102.6	102.8	102.9	24	102.5	103.0	103.2	24	102.5	103.3	104.5	24					03/27
03/28	102.5	102.7	102.9	24	102.4	102.6	102.9	24	102.5	102.8	103.1	24	102.4	102.6	103.0	24					03/28
03/29	102.7	103.2	103.5	24	102.4	102.8	103.1	24	102.4	103.0	103.6	24	102.2	102.6	102.9	24					03/29
03/30	103.3	103.4	103.5	24	103.2	103.3	103.8	24	103.2	103.5	103.7	24	103.1	103.4	103.7	24					03/30
03/31	103.0	103.5	104.0	24	102.6	102.9	103.3	24	102.9	103.4	103.7	24	102.8	103.2	103.4	24					03/31
04/01	105.1	105.6	105.9	24	104.9	105.4	105.7	24	104.2	104.7	104.9	24	104.2	104.7	105.0	24					04/01
04/02	103.5	104.0	104.6	24	103.6	104.0	104.8	24	103.4	103.8	104.0	24	103.7	104.0	104.2	24					04/02
04/03	103.3	103.8	104.3	24	102.9	103.3	103.7	24	102.9	103.2	103.5	24	102.9	103.2	103.7	24					04/03
04/04	104.5	105.2	105.8	24	104.4	104.9	105.1	24	103.3	103.6	104.1	24	103.4	103.7	104.2	24					04/04
04/05	106.6	107.3	107.6	24	106.0	106.6	106.9	24	105.0	105.3	105.5	24	104.9	105.2	105.5	24					04/05

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

Dworshak				Clrwr Peck				Anatone				Clrwr-Lewiston				Lower Granite				Lower G. Tlwr				Date	
Date	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	Date
03/23	123.4	123.5	123.7	24	110.6	110.8	111.1	24	101.5	102.1	102.6	24	105.3	106.1	106.9	24				0	103.9	104.1	104.3	24	03/23
03/24	123.7	123.8	123.9	24	110.6	110.9	111.3	24	102.0	102.5	103.4	24	105.7	106.4	107.4	24	104.2	104.5	105.0	24	103.6	104.0	104.3	24	03/24
03/25	123.2	123.4	123.6	24	110.7	111.2	111.6	24	101.6	102.3	103.1	24	105.7	106.8	107.7	24	102.6	102.9	103.4	24	105.9	106.4	108.6	24	03/25
03/26	118.3	122.5	123.1	24	108.6	110.5	110.9	24	101.7	102.4	103.0	24	105.8	106.9	107.8	24	102.2	102.3	102.5	24	105.7	106.0	106.4	24	03/26
03/27	113.8	114.0	114.3	24	105.6	106.0	106.3	24	102.1	102.6	103.1	24	103.3	104.0	104.6	24	102.4	102.6	102.8	24	106.0	106.2	106.5	24	03/27
03/28	113.9	114.1	114.4	24	105.8	106.4	107.0	24	102.1	102.8	103.5	24	103.6	104.9	106.0	24	102.5	102.6	102.7	24	105.7	106.0	107.6	24	03/28
03/29	113.9	114.2	114.6	23	105.7	106.5	107.2	23	102.2	103.0	103.7	23	103.6	105.1	106.2	23	102.9	103.4	103.9	23	106.0	106.5	107.6	23	03/29
03/30	114.5	114.8	115.0	24	106.1	106.4	106.6	24	102.5	103.1	104.0	24	103.9	104.9	105.9	24	104.0	104.1	104.3	24	106.3	106.6	106.8	24	03/30
03/31	114.5	114.8	115.3	24	106.1	106.8	107.4	24	102.2	102.8	103.2	24	103.6	104.9	105.8	24	103.3	103.5	103.8	24	105.9	106.3	106.6	24	03/31
04/01	115.0	115.3	115.6	24	105.9	106.2	106.6	24	102.4	102.9	103.3	24	103.3	104.1	104.6	24	104.4	104.8	105.0	24	106.4	106.9	107.2	24	04/01
04/02	118.1	121.9	124.4	24	106.2	107.5	108.7	24	101.7	102.1	102.5	24	102.9	103.7	104.1	24	103.9	104.4	105.0	24	106.0	106.3	107.5	24	04/02
04/03	117.8	121.5	124.5	24	106.8	108.8	110.6	24	102.3	103.4	104.0	24	104.0	105.5	105.9	24	102.9	103.0	103.1	24	116.6	117.2	117.4	24	04/03
04/04	117.6	117.8	118.0	24	107.5	108.0	108.4	24	103.6	104.9	105.3	24	104.4	105.3	106.1	24	102.4	102.6	102.9	24	117.6	118.1	118.8	24	04/04
04/05	118.0	118.3	118.4	23	107.3	107.5	107.8	23	104.9	105.3	105.6	23	104.3	104.8	105.4	23	102.3	102.5	102.7	23	118.4	118.6	118.8	23	04/05



FISH PASSAGE CENTER

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

Date 4/6/2018 7:15:08 AM

Page 3 of 4

**Total Dissolved Gas Data at Lower Snake Sites**

Little Goose				L. Goose Tlwr				Lower Mon.				Lwr. Mon. Tlwr				Ice Harbor				Tlwtr Ice Harbor				Date	
Date	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	Date
03/23				0	102.3	102.4	102.6	24				0	104.3	105.8	108.5	24				0	107.2	108.4	109.1	24	03/23
03/24				0	102.3	102.5	102.7	24				0	108.4	108.5	108.6	24				0	109.6	110.4	111.1	24	03/24
03/25				0	101.8	101.9	102.0	24				0	102.2	102.6	107.9	24				0	107.8	108.2	110.4	24	03/25
03/26				0	101.4	101.5	101.6	24				0	103.0	105.0	109.9	24				0	107.0	107.2	107.4	24	03/26
03/27				0	101.7	102.0	102.2	24				0	102.5	103.9	111.3	24	101.8	101.9	102.0	22	106.4	107.3	110.6	24	03/27
03/28				0	101.9	102.2	102.4	24				0	101.5	101.7	101.9	24	101.7	102.1	102.4	24	106.3	107.7	111.6	24	03/28
03/29	104.1	104.1	104.8	8	102.9	103.4	104.0	22	102.9	102.9	105.1	12	101.9	102.4	102.7	23	102.0	102.3	102.6	23	102.8	104.1	105.9	23	03/29
03/30	104.6	105.0	105.1	24	104.6	104.9	105.1	24	103.0	103.3	103.4	24	102.7	103.0	103.1	24	102.9	103.0	103.1	24	104.2	106.2	106.5	24	03/30
03/31	104.6	104.9	105.2	24	104.8	105.1	105.3	24	103.2	103.6	104.1	24	103.1	103.4	103.7	24	102.8	103.1	103.3	24	107.3	107.6	108.0	24	03/31
04/01	106.2	106.7	106.9	24	106.2	106.6	106.7	24	104.9	105.3	105.5	24	104.7	105.2	105.4	24	103.9	104.2	104.3	24	106.9	107.2	107.6	24	04/01
04/02	105.7	106.2	107.0	24	105.6	106.1	106.7	24	104.5	104.8	105.4	24	104.3	104.5	105.0	24	103.3	103.5	103.9	24	105.2	106.7	109.9	24	04/02
04/03	104.7	104.8	104.9	24	116.9	117.7	118.0	24	104.1	104.3	104.5	24	115.1	115.7	116.0	24	103.1	103.5	103.7	24	114.1	115.0	115.2	24	04/03
04/04	104.3	104.5	104.6	24	117.0	117.1	117.5	24	104.3	104.5	104.7	24	115.9	116.3	116.5	24	103.7	103.9	104.5	24	114.8	115.3	115.5	24	04/04
04/05	104.5	104.7	105.0	23	117.0	117.1	117.4	23	112.1	115.1	116.8	23	116.6	116.9	117.0	23	109.9	112.0	113.5	23	115.4	115.5	115.7	23	04/05

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

McNary-Wash.				Tlwtr McNary				John Day				Tlwtr John Day				The Dalles				Dnstr T. Dalles				Date	
Date	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	Date
03/23	103.2	103.4	103.5	24	103.8	104.4	105.3	24	104.2	104.5	104.9	24	110.1	110.4	110.6	24	105.4	105.6	106.0	24	105.1	105.3	105.5	24	03/23
03/24	103.2	103.4	103.6	24	103.0	103.4	103.6	24	104.5	104.6	104.9	24	109.8	110.0	110.3	24	104.6	104.8	105.2	24	104.0	104.2	104.5	24	03/24
03/25	102.8	103.0	103.1	24	102.2	102.6	102.8	24	103.7	103.9	104.2	24	108.4	109.7	109.9	24	104.1	104.3	104.5	24	103.5	103.7	104.0	24	03/25
03/26	102.0	102.2	102.5	24	101.5	101.8	102.3	24	102.7	102.8	103.0	24	109.6	111.7	112.0	24	103.0	103.3	103.5	24	102.5	102.7	102.9	24	03/26
03/27	102.3	102.5	102.7	24	101.3	101.6	102.4	24	102.5	102.6	102.8	24	110.4	113.2	113.9	24	103.6	104.1	104.3	24	103.0	103.7	103.9	24	03/27
03/28	102.2	102.4	102.7	24	102.2	102.7	103.0	24	102.2	102.4	102.5	24	106.0	108.6	110.8	24	103.5	104.0	104.2	24	103.2	103.8	104.2	24	03/28
03/29	102.6	103.1	103.9	23	101.9	102.2	102.4	23	102.3	102.6	102.9	23	108.4	110.5	112.3	23	102.9	103.4	103.5	23	102.3	102.9	103.3	23	03/29
03/30	104.5	104.8	105.0	24	102.4	102.6	103.1	24	102.7	102.8	102.8	24	103.9	105.5	106.2	24	104.0	104.4	104.6	24	103.3	103.8	104.2	24	03/30
03/31	104.8	105.3	105.9	24	102.5	103.0	103.3	24	102.7	103.0	103.4	24	102.1	102.5	102.6	24	102.9	103.0	103.2	24	102.1	102.2	102.4	24	03/31
04/01	105.1	105.3	105.5	24	103.7	103.9	104.3	24	103.9	104.2	104.4	24	103.1	103.4	103.7	24	103.5	103.6	103.7	24	103.7	104.1	104.3	24	04/01
04/02	103.5	103.9	104.7	24	104.2	104.8	106.0	24	103.2	103.6	106.6	24	102.4	102.5	102.8	24	102.3	102.6	103.2	24	103.2	103.4	103.5	24	04/02
04/03	103.0	103.2	103.6	24	106.8	107.5	108.9	24	102.8	103.2	103.5	24	102.5	102.9	103.2	24	102.4	102.8	103.0	24	105.3	106.8	108.7	24	04/03
04/04	103.1	103.3	103.8	24	107.7	108.1	109.1	24	103.0	103.2	103.4	24	102.7	102.8	103.0	24	102.9	103.1	103.3	24	104.9	105.4	105.7	24	04/04
04/05	104.6	105.1	105.5	23	111.8	112.4	113.0	23	103.6	103.8	104.1	23	103.4	103.7	104.0	23	103.5	103.6	103.8	23	106.7	107.3	107.5	23	04/05

FISH PASSAGE CENTER

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

Date 4/6/2018 7:15:09 AM

Page 4 of 4

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

Date	Bonneville				Warrendale				Camas\Washug.				Cascade Isld.				Date
	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	24 h Avg	12 h Avg	High	# Hr	
03/23	106.2	106.4	106.8	24	106.4	106.6	106.7	24	105.8	106.2	106.3	24	107.6	108.1	108.5	24	03/23
03/24	106.1	106.3	106.9	24	106.2	106.4	106.6	24	105.5	105.9	106.2	24	107.6	108.1	108.4	24	03/24
03/25	104.6	105.0	105.4	24	105.0	105.3	105.7	24	105.0	105.3	105.7	24	107.5	108.1	108.6	24	03/25
03/26	103.3	103.5	103.8	24	104.1	104.3	104.5	24	103.8	104.0	104.4	24	107.6	107.9	108.2	24	03/26
03/27	103.1	103.2	103.4	24	103.6	103.7	103.8	24	103.5	103.8	104.1	24	106.7	107.1	107.5	24	03/27
03/28	102.7	103.1	103.2	24	103.7	104.2	105.2	24	103.8	104.6	105.3	24	110.8	114.7	122.4	24	03/28
03/29	103.9	104.3	104.6	23	104.6	105.2	105.7	23	104.6	105.7	106.5	23	110.4	111.0	111.5	23	03/29
03/30	103.9	104.2	104.4	24	104.7	105.0	105.3	24	105.3	106.0	106.5	24	111.1	111.4	111.5	24	03/30
03/31	104.0	104.4	105.0	24	104.7	105.3	105.8	24	105.0	106.0	106.7	24	111.4	111.7	112.3	24	03/31
04/01	104.7	104.9	105.1	24	104.8	105.0	105.1	24	104.8	105.3	105.7	24	110.8	111.3	112.0	24	04/01
04/02	102.7	103.2	103.8	24	103.3	103.6	103.9	24	103.7	104.2	104.7	24	110.9	111.5	112.0	24	04/02
04/03	103.8	104.3	104.6	24	104.1	104.4	105.0	19	103.7	104.8	105.4	24	110.2	110.9	111.3	24	04/03
04/04	104.8	105.5	106.8	24	105.2	105.7	106.0	24	104.7	105.5	106.0	24	109.7	110.3	110.6	24	04/04
04/05	107.1	107.3	107.4	23	107.4	107.8	108.0	23	106.0	106.9	107.4	23	110.9	111.4	111.7	23	04/05

Hours used in calculating values:

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

FISH PASSAGE CENTER

## Smolt Monitoring Program Two Week Passage Index Report

Date 4/6/2018 7:17:28 AM

Page 1 of 7

### COMBINED YEARLING CHINOOK

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (Index)	LGS (Index)	LMN (Index)	RIS (Index)	MCN (Index)	JDA (Index)	BO2 (Index)
03/23/2018	176	37	38	0						3,263	232
03/24/2018			214	2		30					275
03/25/2018		139	264	3						2,127	292
03/26/2018	706	164	194	5		74					302
03/27/2018	193	63	130	1						1,842	435
03/28/2018	167	45	224	3		70					494
03/29/2018	153	32	297	0						1,434	779
03/30/2018	176	24	330	2		57					2,922
03/31/2018		20	146	2						795	8,961
04/01/2018		43	217	2		474		0			15,049
04/02/2018	803	55	239	1	7,444		0	1		930	6,796
04/03/2018	1,967	105	1,408		16,594	523		1	234		6,532
04/04/2018	100		243			31,696		1		970	4,888
04/05/2018	806		1,377	48	16,791	267	9,209	3	1,172		3,915
04/06/2018											
<b>Total:</b>	5,247	727	5,321	69	72,525	1,495	9,209	6	1,406	11,361	51,872
<b># Days:</b>	10	11	14	12	4	7	2	5	2	7	14
<b>Average:</b>	525	66	380	6	18,131	214	4,605	1	703	1,623	3,705
<b>YTD:</b>	9,331	1,052	5,904	111	72,525	1,652	9,209	6	1,406	25,281	52,439

Number of hours sampled:

- No data available or no sample conducted

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

FISH PASSAGE CENTER

## Smolt Monitoring Program Two Week Passage Index Report

Date 4/6/2018 7:17:28 AM

Page 2 of 7

### COMBINED SUBYEARLING CHINOOK

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (Index)	LGS (Index)	LMN (Index)	RIS (Index)	MCN (Index)	JDA (Index)	BO2 (Index)
03/23/2018	0	0	0	1						25	1,600
03/24/2018			0	1		0					1,882
03/25/2018		0	0	5						0	1,730
03/26/2018	0	0	0	1		0					943
03/27/2018	0	0	0	1						12	922
03/28/2018	0	0	0	2		0					1,172
03/29/2018	0	0	0	3						0	720
03/30/2018	0	0	0	0		0					955
03/31/2018		0	0	1						0	1,404
04/01/2018		0	0	3		0		12			1,307
04/02/2018	0	0	0	0	45		0	6		10	1,168
04/03/2018	0	0	0		85	0		5	10		2,051
04/04/2018	0		0		380			9		10	2,312
04/05/2018	0		0	1	0	0	0	4	23		1,957
04/06/2018											
Total:	0	0	0	19	510	0	0	36	33	57	20,123
# Days:	10	11	14	12	4	7	2	5	2	7	14
Average:	0	0	0	2	128	0	0	7	17	8	1,437
YTD:	0	0	1	27	510	0	0	40	33	268	42,712

Number of hours sampled:

- No data available or no sample conducted

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

FISH PASSAGE CENTER

## Smolt Monitoring Program Two Week Passage Index Report

Date 4/6/2018 7:17:28 AM

Page 3 of 7

### COMBINED COHO

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (Index)	LGS (Index)	LMN (Index)	RIS (Index)	MCN (Index)	JDA (Index)	BO2 (Index)
03/23/2018	0	0	1	0						12	21
03/24/2018			2	0		0					11
03/25/2018		0	0	0						11	42
03/26/2018	0	0	0	0		0					9
03/27/2018	0	0	1	0						23	0
03/28/2018	0	0	1	0		0					21
03/29/2018	0	0	0	8						33	10
03/30/2018	0	0	0	13		0					19
03/31/2018		0	1	5						40	26
04/01/2018		0	0	6		0		0			114
04/02/2018	0	0	0	3	0		0	0		70	71
04/03/2018	0	0	8		0	0		0	86		172
04/04/2018	0	0	0		0			0		70	360
04/05/2018	0	0	0	3	0	0	0	0	86		705
04/06/2018											
<b>Total:</b>	0	0	14	38	0	0	0	0	172	259	1,581
<b># Days:</b>	10	11	14	12	4	7	2	5	2	7	14
<b>Average:</b>	0	0	1	3	0	0	0	0	86	37	113
<b>YTD:</b>	0	0	47	39	0	1	0	0	258	312	2,276

Number of hours sampled:

- No data available or no sample conducted

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

FISH PASSAGE CENTER

## Smolt Monitoring Program Two Week Passage Index Report

Date 4/6/2018 7:17:28 AM

Page 4 of 7

### COMBINED STEELHEAD

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (Index)	LGS (Index)	LMN (Index)	RIS (Index)	MCN (Index)	JDA (Index)	BO2 (Index)
03/23/2018	0	5	1	0						25	21
03/24/2018			1	4		18					0
03/25/2018		17	1	3						22	0
03/26/2018	0	20	1	7		30					27
03/27/2018	0	10	0	4						70	32
03/28/2018	0	8	0	6		42					21
03/29/2018	0	2	0	22						89	30
03/30/2018	1	1	0	8		109					37
03/31/2018		2	1	11						81	53
04/01/2018		1	0	9		684		0			69
04/02/2018	1	18	1	14	3,790		0	0		80	35
04/03/2018	0	876	0		5,701	1,369		0	105		111
04/04/2018	1		3		19,359			1		190	160
04/05/2018	0		2	17	4,404	757	124	0	213		71
04/06/2018											
Total:	3	960	11	105	33,254	3,009	124	1	318	557	667
# Days:	10	11	14	12	4	7	2	5	2	7	14
Average:	0	87	1	9	8,314	430	62	0	159	80	48
YTD:	4	983	21	116	33,254	3,164	124	1	318	722	678

Number of hours sampled:

- No data available or no sample conducted

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

FISH PASSAGE CENTER

## Smolt Monitoring Program Two Week Passage Index Report

Date 4/6/2018 7:17:28 AM

Page 5 of 7

### COMBINED SOCKEYE

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR (Index)	LGS (Index)	LMN (Index)	RIS (Index)	MCN (Index)	JDA (Index)	BO2 (Index)
03/23/2018	0	0	0	0						0	0
03/24/2018			0	0		17					0
03/25/2018		0	0	0						0	0
03/26/2018	0	0	0	0		9					0
03/27/2018	0	0	0	0						0	0
03/28/2018	0	0	0	0		19					0
03/29/2018	0	0	0	0						0	10
03/30/2018	0	0	0	0		22					0
03/31/2018		0	0	0						0	0
04/01/2018		0	0	0		2,816		0			0
04/02/2018	0	0	0	0	373		0	0		0	0
04/03/2018	0	0	0	0	766	101		0	5		0
04/04/2018	0	0	0	0	1,139			0		10	0
04/05/2018	0	0	0	0	688	87	0	0	11		35
04/06/2018											
Total:	0	0	0	0	2,966	3,071	0	0	16	10	45
# Days:	0	0	0	0	742	439	0	0	8	1	3
Average:	0	0	0	0	742	439	0	0	8	1	3
YTD:	0	0	0	0	2,966	3,163	0	0	27	10	57

Number of hours sampled:

- No data available or no sample conducted

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

FISH PASSAGE CENTER

## Smolt Monitoring Program Two Week Passage Index Report

Date 4/6/2018 7:17:28 AM

Page 6 of 7

### COMBINED LAMPREY JUVENILES

Date	WTB (Coll)	IMN (Coll)	GRN (Coll)	LEW (Coll)	LGR* (Sample)	LGS (Coll)	LMN (Coll)	RIS (Coll)	MCN (Coll)	JDA (Coll)	BO2 (Coll)
03/23/2018	0	0	0	0						690	70
03/24/2018			0	0		34					100
03/25/2018		0	0	0						570	95
03/26/2018	0	0	0	0		15					100
03/27/2018	0	0	0	0						740	165
03/28/2018	0	0	0	0		4					170
03/29/2018	0	0	0	0						300	105
03/30/2018	0	0	0	0		19					125
03/31/2018		0	0	0						240	95
04/01/2018		0	0	0		2,421		0			100
04/02/2018	0	0	0	0	0		0	1		460	80
04/03/2018	0	0	0		1	20		0	8		43
04/04/2018	0		0		0			1		360	103
04/05/2018	0		0	0	0	2	0	1	28		80
04/06/2018											
Total:	0	0	0	0	1	2,515	0	3	36	3,360	1,431
# Days:	10	11	14	12	4	12	2	5	2	10	19
Average:	0	0	0	0	0	210	0	1	18	336	75
YTD:			3		1	2,614		3	36	33,270	2,981

- No data available or no sample conducted

- Juvenile lamprey can escape the sample tank at LGR which would lead to unreliable estimates of collection. Therefore, only sample counts are provided in this report.

Number of hours sampled:

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



FISH PASSAGE CENTER

## Smolt Monitoring Program Two Week Passage Index Report

Date 4/6/2018 7:17:28 AM

Page 7 of 7

### Smolt Monitoring Program Sites and Agency Collaborations:

- WTB (Collection) - Salmon River Trap at Whitebird : Collection Counts
- IMN (Collection) - Imnaha River Trap : Collection Counts
- GRN (Collection) - Grande Ronde River Trap : Collection Counts
- LEW (Collection) = Snake River Trap at Lewiston : Collection Counts
- LGR (Index) - Lower Granite Dam Bypass Collection System : Passage Index Counts
- LGS (Index) - Little Goose Bypass Collection System : Passage Index Counts
- LMN (Index) - Lower Monumental Dam Bypass Collection System : Passage Index Counts
- RIS (Index) - Rock Island Dam Second Powerhouse Bypass Trap : Passage Index Counts
- MCN (Index) - McNary Dam Bypass Collection System : Passage Index Counts
- JDA (Index) - John Day Dam Bypass Collection System : Passage Index Counts
- BO2 (Index) - Bonneville Dam Second Powerhouse Bypass Collection System : Passage Index Counts

- No data available or no sample conducted

### Number of hours sampled:

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

### Important Information About this Report:

- For clip information see: <http://www.fpc.org/currentdaily/smpcomments.htm>
- Three classes of fish counts are shown in these tables:
  - Sample counts (Samp) are provided for juvenile lamprey at LGR. See note below for details.
  - Collection counts (Coll), which account for sample rates but are not adjusted for flow;
  - Passage indices (INDEX), which are collection counts divided by the proportion of water passing through the sampled powerhouse.
- Passage indices are not population estimates, but are used to adjust collection counts for daily fluctuations in the site's or project's operations. Equations for passage index are provided below for each site.
  - LGR, LGS, LMN, MCN, JDA (Index) = Lower Granite Dam Bypass Collection System : Passage Index Counts  $\text{Passage Index} = \text{Collection Counts} / (\text{Powerhouse Flow} / (\text{Powerhouse Flow} + \text{Spill}))$
  - RIS, BO2 (Index) = Rock Island Dam Second Powerhouse Bypass Trap : Passage Index Counts  $\text{Passage Index} = \text{Collection Counts} / (\text{Powerhouse 2 Flow} / (\text{Powerhouse 1 \& 2 Flow} + \text{Spill}))$
- Combined lamprey juvenile collection counts are provided for all sites. Combined lamprey juveniles is a combination of pacific lamprey ammocoetes, brook lamprey ammocoetes, unknown lamprey ammocoetes, pacific lamprey macrophthalmia, and unidentified lamprey species.
- Most samples occur over a 24-hr period that spans two calendar days. In this report, the date shown corresponds with the sample end date.

FISH PASSAGE CENTER

## Two Week Transportation Summary Report

### 3/23/2018 12:00:00 AM TO 4/6/2018 12:00:00 AM

Date 4/6/2018 7:18:03 AM

Page 1 of 2

#### Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	200	32,730	0	1,420	14,070	62,490
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	199	32,727	0	1,420	14,070	62,486
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	1	3	0	0	0	4
Sum of Facility Morts	0	0	0	0	0	0
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	1	3	0	0	0	4

#### Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	0	1,233	0	2,999	2,289	8,810
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	0	1,230	0	2,994	2,289	8,802
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	0	3	0	3	0	6
Sum of Facility Morts	0	0	0	2	0	2
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	0	3	0	5	0	8

FISH PASSAGE CENTER

## Two Week Transportation Summary Report

### 3/23/2018 12:00:00 AM TO 4/6/2018 12:00:00 AM

Date 4/6/2018 7:18:03 AM

Page 2 of 2

#### Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	0	3,710	0	0	50	3,810
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	0	3,710	0	0	50	3,810
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	0	0	0	0	0	0
Sum of Facility Morts	0	0	0	0	0	0
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	0	0	0	0	0	0

#### Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	200	37,673	0	4,419	16,409	75,110
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	199	37,667	0	4,414	16,409	75,098
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	1	6	0	3	0	10
Sum of Facility Morts	0	0	0	2	0	2
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	1	6	0	5	0	12

FISH PASSAGE CENTER

## YTD Transportation Summary Report

Date 4/6/2018 7:17:40 AM

Page 1 of 2

### Lower Granite Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	200	32730	0	1420	14070	62490
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	199	32727	0	1420	14070	62486
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	1	3	0	0	0	4
Sum of Facility Morts	0	0	0	0	0	0
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	1	3	0	0	0	4

### Little Goose Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	0	1390	1	3091	2444	9370
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	0	1383	1	3084	2444	9356
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	0	6	0	4	0	10
Sum of Facility Morts	0	1	0	3	0	4
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	0	7	0	7	0	14

FISH PASSAGE CENTER

## YTD Transportation Summary Report

Date 4/6/2018 7:17:40 AM

Page 2 of 2

### Lower Monumental Dam

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	0	3710	0	0	50	3810
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	0	3710	0	0	50	3810
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	0	0	0	0	0	0
Sum of Facility Morts	0	0	0	0	0	0
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	0	0	0	0	0	0

### Total

Data	Chinook Subyearlings	Chinook Yearlings	Coho	Sockeye	Steelhead	Grand Total
Sum of Number Collected	200	37830	1	4511	16564	75670
Sum of Number Barged	0	0	0	0	0	0
Sum of Number Bypassed	199	37820	1	4504	16564	75652
Sum of Number Trucked	0	0	0	0	0	0
Sum of Sample Morts	1	9	0	4	0	14
Sum of Facility Morts	0	1	0	3	0	4
Sum of Reseach Morts	0	0	0	0	0	0
Sum of Total Project Mort	1	10	0	7	0	18

**Cumulative Adult Passage at Mainstem Dams Through: 04/05**

dam	enddate	Spring Chinook						Summer Chinook						Fall Chinook					
		2018		2017		10-Yr Avg.		2018		2017		10-Yr Avg.		2018		2017		10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	04/05	44	2	38	0	758	0	0	0	0	0	0	0	0	0	0	0	0	0
TDA	04/05	17	0	18	0	188	0	0	0	0	0	0	0	0	0	0	0	0	0
JDA	04/04	15	-1	1	1	84	7	0	0	0	0	0	0	0	0	0	0	0	0
MCN	04/04	1	0	2	-2	26	0	0	0	0	0	0	0	0	0	0	0	0	0
IHR	04/05	5	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0
LMN	04/04	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
LGS	04/05	1	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0
LGR	04/05	0	0	1	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	04/02	17	0	0	0	89	0	0	0	0	0	0	0	0	0	0	0	0	0

DAM	ENDDATE	Coho						Sockeye			Steelhead						Lamprey				
		2018		2017		10-Yr Avg.		10-Yr		10-Yr			Unclipped		Unclipped		10-Yr		10-Yr		
		Adult	Jack	Adult	Jack	Adult	Jack	2018	2017	Avg.	2018	2017	Avg.	2018	2017	Avg.	2018	2017	Avg.	2018	2017
BON	04/05	1	-1	0	0	0	0	0	0	0	1854	1889	2551	761	642	934	0	0	0		
TDA	04/05	4	0	0	0	0	0	0	0	0	66	1333	1377	24	447	614	0	0	0		
JDA	04/04	0	0	0	0	0	1	0	0	0	258	104	2678	104	59	1049	0	0	-1		
MCN	04/04	0	0	0	0	1	0	0	0	0	210	2017	2927	95	488	1022	0	0	0		
IHR	04/05	-1	0	0	0	0	0	0	0	0	757	308	2508	248	149	788	2	0	0		
LMN	04/04	0	0	0	0	0	0	0	0	0	73	411	5724	29	165	1486	0	0	0		
LGS	04/05	0	0	0	0	0	0	0	0	0	94	421	2625	20	148	1274	0	0	0		
LGR	04/05	0	0	0	0	0	0	0	0	0	2542	6104	5948	583	2357	2161	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	04/02	0	2	117	117	0	0	0	0	0	1066	510	3706	998	503	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.