



# Fish Passage Center

## Weekly Report #15–1

March 20, 2015

### Summary of Events

#### Water Supply

Precipitation throughout the Columbia Basin has varied between 15% and 163% of average at individual sub-basins over March. Precipitation above The Dalles has been 73% of average over March. Over the 2015 water year, precipitation has ranged between 65% and 111% of average.

**Table 1. Summary of March precipitation and cumulative October through March 18, 2015, precipitation with respect to average (1971–2000) at select locations within the Columbia and Snake River Basins.**

Location	Water Year 2015 March 1–18, 2015		Water Year 2015 October 1, 2014 to March 18, 2015	
	Observed (inches)	% Average	Observed (inches)	% Average
	Columbia Above Coulee	2.14	118	22.8
Snake River Above Ice Harbor	0.50	37	10.4	81
Columbia Above The Dalles	1.10	73	14.8	91
Kootenai	2.89	162	23.5	110
Clark Fork	0.91	64	13.5	92
Flathead	3.13	163	22.1	111
Pend Oreille River Basin above Waneta Dam	2.05	119	18.5	101
Salmon River Basin	0.71	42	13.6	85
Upper Snake Tributaries	0.25	15	9.8	65
Clearwater	1.83	77	23.1	94
Willamette River above Portland	2.78	66	40.1	87

Snowpack within the Columbia Basin has been below average. Average snowpack in the Columbia River for basins above the Snake River confluence is 64% of average. For Snake River Basins the average snowpack is 63% of average. And for lower Columbia Basins between McNary and Bonneville Dam snowpack is 13% of average.

Table 2 displays the March 19<sup>th</sup> ESP runoff volume forecasts for multiple reservoirs along with the March COE forecasts at Libby and Dworshak. The March 19<sup>th</sup> ESP forecast at The Dalles between April and August is 72,305 Kaf (83% of average).

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

Location	March 19, 2015, 5-day QPF ESP	
	% Average (1981–2010)	Runoff Volume (Kaf)
The Dalles (Apr–Aug)	83	72,305
Grand Coulee (Apr–Aug)	89	50,328
Libby Res. Inflow, MT (Apr–Aug)	91 97*	5,379 5,683*
Hungry Horse Res. Inflow, MT (Apr–Aug)	85	1,639
Lower Granite Res. Inflow (Apr–July)	74	14,590
Brownlee Res. Inflow (Apr–July)	64	3,497
Dworshak Res. Inflow (Apr–July)	72 74*	1,742 1,815*

\* Denotes COE March Forecast

Grand Coulee Reservoir is at 1,253.7 feet (3-19-15) and has drafted 0.5 feet over the last week. Outflows at Grand Coulee have ranged between 95.9 and 125.0 Kcfs over the last week. The end of March FC Elevation is 1,283.3 feet at Grand Coulee. Grand Coulee has drafted below flood control (1,255 ft) for drum gate maintenance.

The Libby Reservoir is currently at elevation 2,415.0 feet (3-19-15) and has refilled 2.2 feet over the previous week. Daily average outflows at Libby Dam have been 4.0–4.1 Kcfs over the last week. The end of March FC Elevation at Libby is 2,433.8 feet (based on March forecast).

Hungry Horse is currently at an elevation of 3,538.1 feet (3-19-15) and refilled 4.6 feet over the last week. Outflows at Hungry Horse have been increased from 2.5 to 5.0 Kcfs over the last week. The end of March FC Elevation at Hungry Horse is 3,540.4 feet.

Dworshak is currently at an elevation of 1,577.9 feet (3-19-15) and refilled 9.9 feet over the last week. Outflows have been to 1.5 Kcfs over the last week. The end of March System FC elevation at Dworshak (based on March forecast) is 1,577.7 feet. The COE plans to operate above the end of March FC elevation at Dworshak.

The Brownlee Reservoir was at an elevation of 2,054.0 feet on March 19, 2015, and has refilled 2.6 feet over the last week. The end of March FC Elevation is 2,071.8 feet at Brownlee. Outflow from Hells Canyon is being managed to a minimum of 9.2 Kcfs for fall Chinook spawning (with daily fluctuations to meet energy demand). Over the last 4 days flows have ranged between 9.6 and 15.0 Kcfs.

### Smolt Monitoring

Smolt monitoring activities began at Bonneville Dam on March 3<sup>rd</sup>, with the first sample worked up on March 4<sup>th</sup>. SMP traps in the Snake River basin (Snake, Grande Ronde, and Salmon River traps) began sampling the first week of March while the Imnaha Trap has been sampling since early 2015.

Bonneville Dam is the only SMP bypass facility that has sampled so far this season. Subyearling Chinook have made up the majority of the salmonids sampled at Bonneville so far this year. Of all the subyearling Chinook sampled so far this year, approximately 99.4% have been fry. Over the past week the daily average passage index for subyearling Chinook was nearly 1,200 per day. This week's daily average passage indices for yearling Chinook and coho at BON were about 52 and 73 per day, respectively. Small numbers of sockeye and steelhead juveniles have been sampled at BON since sampling began. Both Pacific lamprey ammocoetes and macrophthalmia have been collected at BON already this year. One Pacific lamprey ammocoete was sampled on March 4<sup>th</sup>. Pacific lamprey ammocoetes have been encountered every day this year. The daily average

collection for Pacific lamprey macrophthalmia for this week was 65 per day.

The Grande Ronde Trap is operated by the Oregon Department of Fish and Wildlife and is located at river kilometer 2 in the Grande Ronde River. Sampling at the Grande Ronde Trap began on March 3<sup>rd</sup> with the first sample worked up on March 4<sup>th</sup>. Since sampling began at this trap, only subyearling Chinook fry and yearling Chinook have been collected and in very low numbers.

The Salmon River Trap is located at river kilometer 103 and is operated by Idaho Department of Fish and Game. Sampling at the Salmon River Trap began on March 2<sup>nd</sup>, with the first sample being worked up on March 3<sup>rd</sup>. Sampling at the Salmon River Trap in 2015 has been modified from what has occurred in the past several years. Sampling at this trap will only occur during the weekdays. Although sampling at this trap began on March 2<sup>nd</sup>, the first salmonid wasn't encountered until the sample on March 12<sup>th</sup>. Since this time, only yearling Chinook have been collected at this trap. The daily average collection this week has averaged about 516 per day, which is a substantial increase from last week. This increase in yearling Chinook collections this week is partially due to the start of hatchery releases above the trap, as the first clipped yearling Chinook began arriving at the trap on March 16<sup>th</sup>.

The Snake River Trap is located at river kilometer 225 and is operated by Idaho Department of Fish and Game. Sampling at the Snake River Trap began on March 3<sup>rd</sup>, with the first sample being worked up on March 4<sup>th</sup>. The first salmonid wasn't encountered until the sample on March 6<sup>th</sup>. Since this time, subyearling Chinook fry, yearling Chinook, and steelhead have all been collected at the Snake River Trap, but in relatively low numbers.

The Imnaha River Trap is located at river kilometer 7 and is operated by the Nez Perce Tribe. Sampling at the Imnaha River Trap is year-round, but data are provided to the Fish Passage Center only from mid-March through mid-July. Due to the remote nature of the trap, the Nez Perce Tribe is able to send collection data to the FPC only periodically. Therefore, data for the Imnaha Trap may be several days behind. To date, we have not received any data from the Imnaha River

Trap for the 2015 sampling season.

In the next few weeks more SMP sites will begin reporting data. Lower Granite Dam will begin sampling on March 25<sup>th</sup>, with the first sample being worked up on March 26<sup>th</sup>. Other SMP bypass facilities will begin sampling the first week of April.

## Hatchery Release

**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. To date, the Fish Passage Center has not received complete preliminary hatchery release data from the Nez Perce Tribe for 2015 releases. Therefore, release estimates discussed for this zone are likely to be underestimates, as they do not include all releases conducted by the tribe. Release data from the Nez Perce Tribe will be entered into our database as soon as we receive them.

To date, approximately 3.93 million yearling spring Chinook juveniles have been released into this zone through March 20<sup>th</sup>. Of these, about 64% were scheduled for release from Rapid River Hatchery into the Little Salmon River. The release from Rapid River Hatchery began on March 16<sup>th</sup> and is expected to run through the end of April. Rapid River Hatchery was also scheduled to release about 100,000 yearling spring Chinook to the Little Salmon River at Pinehurst Bridge and 300,000 yearling spring Chinook into the Snake River this week, just below Hells Canyon Dam. Approximately 1.03 million (26%) of the yearling spring Chinook released into this zone so far this year were released into the Clearwater River and its tributaries. These Clearwater River releases began as early as March 11<sup>th</sup>.

There are several releases of yearling spring Chinook juveniles scheduled to take place over the next 2 weeks. In all, these releases will total about 3.3 million spring Chinook juveniles. All of these yearling spring Chinook juveniles are scheduled to be released into the Clearwater River and its tributaries. Approximately 2.6 million yearling summer Chinook are also scheduled for release into this zone over the next 2 weeks. Of these, approximately 43% are scheduled for release from McCall Hatchery on the

Salmon River and 32% are scheduled for release from Pahsimeroi Hatchery into the Pahsimeroi River. A small portion (5%) is scheduled for release into Johnson Creek, a tributary of the South Fork Salmon River. The remaining 20% of the summer Chinook releases anticipated over the next 2 weeks are scheduled for release into the Lochsa River, a tributary of the Clearwater River. This is the fifth year of yearling summer Chinook releases into the Clearwater River basin. These Clearwater summer Chinook are 50% adipose clipped and 50% unclipped (with coded-wire-tags). Finally, about 1.68 million summer steelhead are scheduled for release to this zone over the next 2 weeks. Of these, about 49% are scheduled for release into the Pahsimeroi River, 17% are scheduled for release into the Salmon River, and 34% are scheduled for release into the Snake River below Hells Canyon Dam.

**Mid-Columbia Zone:** The Mid-Columbia Zone encompasses the area of the Columbia River and its tributaries from McNary Dam to Chief Joseph Dam. To date, the Fish Passage Center has not received complete preliminary hatchery release data from the Colville Tribe for 2015 releases. Therefore, release estimates discussed for this zone are likely underestimates, as they do not include all releases conducted by the tribe, including releases from the new Chief Joseph Hatchery. Release data from the Colville Tribe will be entered into our database as soon as we receive them.

Volitional releases of about 650,000 spring Chinook juveniles from Cle Elem Hatchery acclimation sites on the Yakima River were scheduled to begin on or around March 15<sup>th</sup>. These volitional releases are expected to run through mid-May. As in previous years, yearling spring Chinook released from Cle Elum Hatchery are marked with green, red, or orange Elastomer tags. There are two releases of juvenile salmonids scheduled for this zone over the next 2 weeks. The first is a release of about 250,000 yearling spring Chinook to the Walla Walla River. The second is a release of about 48,000 summer steelhead from the Twisp Acclimation Ponds on the Methow River.

**Lower Columbia Zone:** The Lower Columbia Zone is defined as the Columbia River and its tributaries from Bonneville Dam to McNary Dam. Nearly 560,000

yearling fall Chinook were released into the Umatilla River on February 27<sup>th</sup>. Klickitat Hatchery was scheduled to release about 600,000 yearling spring Chinook juveniles into the Klickitat River on or around March 3<sup>rd</sup>. Approximately 2.69 million coho juveniles were scheduled for release this week. Of these, about 93% were scheduled to be released into the Klickitat River while the remaining 7% were scheduled to be released into the Umatilla River. Finally, on March 6<sup>th</sup>, about 29,000 summer steelhead juveniles were released from Round Butte Hatchery into the Deschutes River.

Approximately 1.18 million yearling spring Chinook are scheduled for release to this zone over the next 2 weeks. Of these, about 69% are scheduled for release into the Umatilla River while the remaining 31% are scheduled for release into the Deschutes River.

### **Adult Passage**

Bonneville Dam uses video counts from January 1st through March 31st and direct counting after this period. Bonneville Dam counts adult salmon and steelhead year round. Lower Granite Dam uses video counts from March 1st through March 31st and direct counting after this period. Lower Granite Dam counts adult salmon and steelhead through December 30th 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 have to review the tapes. The FPC collects the adult count data from projects throughout the day, continuously updating our Adult Dam Count report linked on our homepage (<http://www.fpc.org/>). During the winter season at Bonneville Dam (from 1/1/2015 through 3/18/2015), 329 adult Chinook and 2,448 adult steelhead were counted. In 2014 for the same time frame, 10 adult Chinook and 1,451 adult steelhead were counted. The 2015 Bonneville Dam winter season count of adult steelhead was about 1.7 times greater than the 2014 count. The 2015 adult Chinook count had 319 more fish than the 2014 winter count.

At Willamette Falls Dam 1 adult spring Chinook has been counted so far this year. The Willamette Falls cumulative steelhead count from January 1st through March 19th is 3,022. The 2015 Willamette Falls winter

steelhead count was 1.3 times greater than the 2014 count of 2,299, while having 143 fewer fish than the 10-year average count of 3,165. This year's Lower Granite steelhead count of 3,653 was about 1.3 times greater than the 2014 count of 2,874 and about 1.7 times greater than the 10-year average count of 2,176.

The Lower Granite fish ladder was watered up on March 4, 2015. Typically, this ladder is functional by March 1st; however this year was delayed due to dive work being performed near the fishway exit (related to the Juvenile Bypass upgrades). The first full day of fish counts at Lower Granite was on March 5, 2015. Over the first 4 days after the ladder was opened, 623 steelhead passed the project. Over the last week, steelhead counts have been unusually large. Daily steelhead passage at Lower Granite on March 14 and 15 was 761 and 887, respectively. This year's peak steelhead counts at Lower Granite over March are the highest since 2003.

This winter, based on estimates made by the Technical Advisory Committee (TAC) for U.S. v. Oregon, the spring Chinook run for 2015 is expected to be 312,600. The TAC reported that 315,600 spring Chinook had returned to the river in 2014 (see U.S. v. Oregon, Technical Advisory Committee's December, 29, 2014, document Columbia River Mouth Fish Returns which displays 2014 actual and 2015 forecasts of spring Chinook, summer Chinook, sockeye, and steelhead counts from the Oregon and Washington Departments of Fish and Wildlife). This is available at: [http://wdfw.wa.gov/fishing/forecasts/columbia\\_river/2014-results\\_2015-expects.pdf](http://wdfw.wa.gov/fishing/forecasts/columbia_river/2014-results_2015-expects.pdf)

Between March 1st and March 19th, a total of 25 steelhead (and 0 other salmonid species) 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 Bonneville Corner Collector was opened at noon on March 10, 2015, for the passage of kelt steelhead. For the Bonneville Corner Collector to be opened in March, at least two kelts for two consecutive days (along with a cumulative total of twenty kelts) must be observed falling back over the JMF separator (2015 Fish Passage Plan Section 2.4.2.5.t.1).

## Hatchery Releases Last Two Weeks

### Hatchery Release Summary From: 3/7/2015 to 03/20/15

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2015	100,000	03-20-15	03-20-15	Pinehurst Bridge	Little Salmon River
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2015	300,000	03-16-15	03-19-15	Hells Canyon Dam	Snake River
Idaho Dept. of Fish and Game	Rapid River Hatchery	CH1	SP	2015	2,500,000	03-16-15	04-24-15	Rapid River Hatchery	Little Salmon River
<b>Idaho Dept. of Fish and Game Total</b>					<b>2,900,000</b>				
Nez Perce Tribe	Clearwater Hatchery	CH1	SP	2015	382,000	03-20-15	03-21-15	Selway River	Clearwater River M F
Nez Perce Tribe	Kooskia NFH	CH1	SP	2015	650,000	03-11-15	03-11-15	Kooskia Hatchery	Clearwater River M F
<b>Nez Perce Tribe Total</b>					<b>1,032,000</b>				
Umatilla Tribe	Cascade Hatchery	CO	UN	2015	192,000	03-20-15	03-20-15	Pendelton Acclim Pond	Umatilla River
<b>Umatilla Tribe Total</b>					<b>192,000</b>				
Washington Dept. of Fish and Wildlife	Washougal Hatchery	CO	NO	2015	2,500,000	03-20-15	03-31-15	Klickitat River	Klickitat River
<b>Washington Dept. of Fish and Wildlife Total</b>					<b>2,500,000</b>				
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2015	215,311	03-15-15	05-15-15	Easton Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2015	216,338	03-15-15	05-15-15	Clark Flat Acclim Pond	Yakima River
Yakama Tribe	Cle Elem Hatchery	CH1	SP	2015	217,163	03-15-15	05-15-15	Jack Creek Acclim Pond	Yakima River
<b>Yakama Tribe Total</b>					<b>648,812</b>				
<b>Grand Total</b>					<b>7,272,812</b>				

## Hatchery Releases Next Two Weeks

**Hatchery Release Summary**  
From: **3/21/2015** to **4/2/2015**

Agency	Hatchery	Species	Race	MigYr	NumRel	RelStart	RelEnd	RelSite	RelRiver
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2015	672,000	03-24-15	03-26-15	Kooskia Hatchery	Clearwater River M F
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SP	2015	1,090,000	03-25-15	04-01-15	Red River	S Fk Clearwater River
Idaho Dept. of Fish and Game	Clearwater Hatchery	CH1	SU	2015	528,000	03-31-15	04-03-15	Powell Acclim Pond	Lochsa River
Idaho Dept. of Fish and Game	Magic Valley Hatchery	ST	SU	2015	160,352	04-01-15	04-03-15	Salmon River (ID)	Salmon River (ID)
Idaho Dept. of Fish and Game	McCall Hatchery	CH1	SU	2015	254,900	04-01-15	04-04-15	Knox Bridge	Salmon River (ID)
Idaho Dept. of Fish and Game	McCall Hatchery	CH1	SU	2015	868,400	04-01-15	04-04-15	Knox Bridge	Salmon River (ID)
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2015	570,000	03-23-15	04-02-15	Hells Canyon Dam	Snake River
Idaho Dept. of Fish and Game	Niagara Springs	ST	SU	2015	820,000	04-02-15	04-21-15	Pahsimeroi River	Pahsimeroi River
Idaho Dept. of Fish and Game	Pahsimeroi Hatchery	CH1	SU	2015	199,520	04-01-15	04-14-15	Pahsimeroi Hatchery	Pahsimeroi River
Idaho Dept. of Fish and Game	Pahsimeroi Hatchery	CH1	SU	2015	631,100	04-01-15	04-14-15	Pahsimeroi Hatchery	Pahsimeroi River
<b>Idaho Dept. of Fish and Game Total</b>					<b>5,794,272</b>				
Nez Perce Tribe	McCall Hatchery	CH1	SU	2015	118,100	03-30-15	03-31-15	Johnson Cr Idaho	South Fork Salmon River
<b>Nez Perce Tribe Total</b>					<b>118,100</b>				
Oregon Dept. of Fish and Wildlife	Umatilla Hatchery	CH1	SP	2015	150,000	04-01-15	04-01-15	Corporation Guard Statu	Umatilla River
<b>Oregon Dept. of Fish and Wildlife Total</b>					<b>150,000</b>				
U.S. Fish and Wildlife Service	Dworshak NFH	CH1	SP	2015	1,548,650	03-31-15	04-24-15	Dworshak Hatchery	Clearwater River M F
U.S. Fish and Wildlife Service	Hagerman NFH	ST	SU	2015	128,900	03-31-15	04-03-15	Salmon River (ID)	Salmon River (ID)
U.S. Fish and Wildlife Service	Warm Springs NFH	CH1	SP	2015	370,000	03-30-15	03-31-15	Warm Springs Hatchery	Deschutes River
<b>U.S. Fish and Wildlife Service Total</b>					<b>2,047,550</b>				
Umatilla Tribe	Carson NFH	CH1	SP	2015	250,443	04-01-15	04-01-15	Walla Walla River	Walla Walla River
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2015	225,000	04-01-15	04-01-15	Thornhollow Acclim Pon	Umatilla River
Umatilla Tribe	Umatilla Hatchery	CH1	SP	2015	435,000	04-01-15	04-01-15	Imeqes Acclim Pond	Umatilla River
<b>Umatilla Tribe Total</b>					<b>910,443</b>				
Washington Dept. of Fish and Wildlife	Methow Hatchery	ST	SU	2015	48,000	04-01-15	04-30-15	Twisp Acclim Pond	Methow River
Washington Dept. of Fish and Wildlife	Washougal Hatchery	CO	NO	2015	2,500,000	03-20-15	03-31-15	Klickitat River	Klickitat River
<b>Washington Dept. of Fish and Wildlife Total</b>					<b>2,548,000</b>				
<b>Grand Total</b>					<b>11,568,365</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
03/06/2015	145.1	0.0	145.3	0.0	146.8	0.0	147.9	2.6	153.4	0.0	160.8	1.4	162.9	28.2
03/07/2015	139.7	0.0	151.9	0.0	153.4	0.0	153.9	6.4	158.5	0.0	162.1	6.8	163.0	41.4
03/08/2015	145.0	0.0	141.0	0.0	141.5	0.7	139.4	2.9	144.9	0.0	155.1	1.1	155.7	25.0
03/09/2015	121.3	0.0	121.6	0.0	129.1	5.6	137.3	7.1	145.5	0.0	156.6	0.8	162.5	27.2
03/10/2015	118.2	0.0	118.1	0.0	119.9	0.0	119.6	0.0	125.2	0.0	133.5	0.0	133.5	0.0
03/11/2015	125.8	0.0	129.3	11.8	126.2	0.0	122.3	0.0	128.4	0.0	130.7	0.0	130.1	0.0
03/12/2015	127.6	0.0	130.5	11.5	130.4	0.0	126.6	0.0	130.8	0.0	135.7	0.0	133.9	0.0
03/13/2015	125.0	0.0	136.0	8.4	135.1	0.0	129.9	0.0	136.9	0.0	145.7	0.0	141.6	0.0
03/14/2015	95.9	0.0	97.5	0.0	103.4	0.0	107.5	0.0	116.4	0.0	118.4	0.0	121.2	0.0
03/15/2015	110.0	0.0	112.7	0.0	116.3	3.0	111.2	6.3	124.4	0.0	124.0	9.9	121.4	20.1
03/16/2015	118.0	0.0	119.0	0.0	126.5	0.0	124.3	0.0	133.5	0.0	137.7	0.0	143.1	14.5
03/17/2015	112.0	0.0	114.4	0.0	125.5	0.0	125.1	0.0	134.1	0.0	113.7	0.0	123.6	0.0
03/18/2015	107.7	0.0	108.5	0.0	113.6	0.0	110.5	0.0	120.1	0.0	112.1	0.0	117.1	0.0
03/19/2015	123.3	0.0	125.4	0.0	125.9	0.0	123.6	0.0	131.1	0.0	115.5	2.6	117.2	0.0

**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
03/06/2015	1.5	0.0	---	13.3	31.1	0.0	30.0	0.0	31.5	0.0	32.1	0.0
03/07/2015	1.5	0.0	---	12.8	26.4	0.0	27.6	0.0	31.7	0.0	30.9	0.0
03/08/2015	1.5	0.0	---	11.5	26.2	0.0	25.4	0.0	25.0	0.0	26.8	0.0
03/09/2015	1.5	0.0	---	12.3	25.3	0.0	24.3	0.0	24.9	0.0	25.6	0.0
03/10/2015	1.5	0.0	---	12.1	28.0	0.0	28.0	0.0	29.2	0.0	30.7	0.0
03/11/2015	1.5	0.0	---	13.3	29.0	0.0	28.7	0.0	27.8	0.0	26.8	0.0
03/12/2015	1.5	0.0	---	11.5	29.7	0.0	29.8	2.3	32.8	0.0	36.1	0.0
03/13/2015	1.5	0.0	---	15.7	25.6	0.0	26.0	0.0	26.1	0.0	26.6	0.0
03/14/2015	1.5	0.0	---	10.1	29.5	0.0	29.2	0.0	30.3	0.0	28.7	0.0
03/15/2015	1.5	0.0	---	10.0	30.2	0.0	25.8	0.0	27.5	0.0	26.5	0.0
03/16/2015	1.5	0.0	---	12.0	41.5	0.0	37.2	0.0	37.1	0.0	35.8	0.0
03/17/2015	1.5	0.0	---	10.8	46.9	0.0	43.4	0.0	44.4	0.0	46.7	0.0
03/18/2015	1.5	0.0	---	10.7	49.4	0.0	47.3	0.0	49.1	0.0	47.9	0.0
03/19/2015	1.5	0.0	---	11.7	53.7	0.0	53.7	0.0	55.0	0.0	57.1	0.0

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

Date	McNary		John Day		The Dalles		Bonneville			
	Flow	Spill	Flow	Spill	Flow	Spill	Flow	Spill	PH1	PH2
03/06/2015	211.4	45.3	212.8	0.0	212.4	0.0	215.9	1.2	100.7	106.6
03/07/2015	200.0	25.2	193.0	0.0	190.0	0.0	214.6	1.2	98.1	107.9
03/08/2015	197.3	21.8	186.5	0.0	181.3	0.0	204.2	1.2	90.8	104.8
03/09/2015	184.9	9.4	170.3	0.0	177.0	0.0	190.0	1.2	92.6	89.1
03/10/2015	186.3	8.6	187.4	0.0	177.3	0.0	172.6	1.2	75.8	86.1
03/11/2015	166.0	0.1	172.8	0.0	167.3	0.0	181.5	1.2	80.1	88.2
03/12/2015	161.4	0.0	172.4	0.0	173.4	0.0	187.3	1.2	81.7	92.3
03/13/2015	166.7	0.0	167.4	0.0	166.7	0.0	189.7	1.2	77.3	99.1
03/14/2015	157.9	9.1	151.2	0.0	147.8	0.0	156.6	1.2	48.9	94.5
03/15/2015	141.6	9.1	135.1	0.0	132.3	0.0	145.9	1.2	37.3	95.3
03/16/2015	172.4	8.7	171.6	0.0	169.8	0.0	190.3	1.2	70.5	106.5
03/17/2015	169.1	5.0	175.9	0.0	176.2	0.0	194.3	1.2	82.5	98.6
03/18/2015	182.4	4.1	174.2	0.0	171.6	0.0	180.7	1.2	66.8	100.7
03/19/2015	201.4	0.0	206.3	0.0	202.4	0.0	212.0	1.2	93.3	105.4

## 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>					
	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High					
3/6	118.5	118.6	118.7	24	---	---	---	0	101.9	102.2	102.6	24	101.3	101.5	101.6	24	101.2	101.4	101.7	24
3/7	119.0	119.3	119.4	24	---	---	---	0	102.9	103.8	104.5	24	101.8	102.1	102.2	24	101.7	102.0	102.2	24
3/8	107.9	117.5	120.3	23	---	---	---	0	104.2	105.3	106.4	23	102.4	102.9	103.1	23	102.3	102.7	102.9	23
3/9	97.8	98.0	98.4	23	---	---	---	0	105.0	105.5	106.3	24	103.0	103.4	103.8	24	103.2	103.6	103.8	24
3/10	97.8	98.0	98.1	24	---	---	---	0	105.7	106.0	106.2	24	103.9	104.3	104.8	24	104.0	104.5	104.6	24
3/11	97.8	97.9	98.1	24	---	---	---	0	105.9	106.1	106.2	24	104.5	104.6	104.8	24	104.5	104.7	104.9	24
3/12	97.3	97.5	97.5	24	---	---	---	0	105.0	105.3	105.6	24	103.9	104.1	104.3	24	104.1	104.3	104.5	24
3/13	96.4	96.7	96.9	24	---	---	---	0	105.6	106.2	106.5	24	105.0	105.9	106.4	24	104.6	105.3	105.6	24
3/14	97.6	97.8	97.9	24	---	---	---	0	107.2	107.4	107.6	24	107.1	107.5	107.8	24	106.5	106.8	107.1	24
3/15	98.0	98.1	98.2	24	---	---	---	0	107.2	107.4	107.5	24	107.1	107.3	107.5	24	106.6	106.8	107.0	24
3/16	96.8	97.1	97.8	24	---	---	---	0	106.3	106.7	107.0	24	105.9	106.1	106.2	24	105.5	105.8	106.1	24
3/17	97.0	97.3	97.4	24	---	---	---	0	106.9	107.1	107.4	24	106.5	106.7	106.8	24	106.3	106.4	106.6	24
3/18	97.3	97.4	97.7	24	---	---	---	0	106.4	106.7	107.0	24	106.4	106.5	106.8	24	106.1	106.4	106.7	24
3/19	97.4	97.7	97.8	23	---	---	---	0	106.6	106.8	107.0	23	106.3	106.5	106.8	23	106.5	106.8	107.0	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>					
	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High					
3/6	---	---	---	0	100.5	100.6	100.8	19	101.1	101.3	101.7	19	101.8	102.1	102.3	24	103.9	104.8	105.9	24
3/7	---	---	---	0	101.3	101.5	101.9	16	101.9	102.1	103.0	16	101.9	102.2	102.4	24	104.3	106.3	109.6	24
3/8	---	---	---	0	101.9	102.0	102.6	15	102.3	102.5	103.4	15	102.3	102.8	103.2	23	104.1	104.6	106.0	23
3/9	---	---	---	0	102.7	102.7	103.4	13	104.8	105.0	107.8	13	103.2	103.6	103.8	24	106.7	109.1	112.7	24
3/10	---	---	---	0	103.2	103.6	103.9	22	103.6	104.2	104.6	22	104.6	105.6	106.2	24	104.6	105.4	106.1	24
3/11	---	---	---	0	103.6	103.7	104.1	17	104.0	104.2	104.7	17	104.4	104.9	105.7	24	104.4	104.8	105.4	24
3/12	---	---	---	0	103.3	103.4	103.7	14	103.7	103.8	104.4	14	102.9	103.1	103.6	24	103.1	103.4	103.5	24
3/13	---	---	---	0	104.2	104.6	105.3	18	104.7	105.1	105.5	18	103.6	104.2	104.9	24	104.0	104.6	105.3	24
3/14	---	---	---	0	106.0	106.0	107.1	13	106.5	106.5	107.6	13	105.8	106.0	106.1	24	105.8	106.0	106.4	24
3/15	---	---	---	0	105.4	105.5	105.7	18	106.5	106.9	110.0	18	106.1	106.3	106.4	24	108.5	110.7	113.2	24
3/16	---	---	---	0	104.2	104.3	104.6	15	104.6	104.8	105.0	15	104.5	104.8	105.3	24	105.1	105.5	106.5	24
3/17	106.3	106.6	107.2	24	105.2	105.4	105.7	18	105.6	105.9	106.2	18	105.4	105.5	105.7	24	105.8	105.9	106.2	24
3/18	106.4	106.9	108.1	24	105.2	105.4	105.8	20	105.7	106.0	106.6	20	104.8	105.1	105.2	24	105.2	105.4	105.6	24
3/19	106.3	106.6	107.1	23	105.7	106.1	106.5	23	106.1	106.6	107.0	23	105.4	105.6	105.9	23	105.8	106.0	106.3	23

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

Date	<u>Rock Island</u>			<u>Rock I. Tlwr</u>			<u>Wanapum</u>			<u>Wanapum Tlwr</u>			<u>Priest Rapids</u>							
	<u>24 h</u>	<u>12 h</u>	<u>#</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>					
	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High	Avg	Avg	High					
3/6	102.1	102.7	103.3	24	102.2	102.8	103.8	24	102.8	103.2	103.5	24	102.9	103.0	103.4	24	101.8	102.8	103.1	24
3/7	102.1	103.2	105.1	24	102.3	103.4	105.6	24	103.7	104.0	104.4	24	104.3	105.2	106.8	24	103.7	104.9	106.6	24
3/8	102.4	102.8	103.2	23	102.5	103.0	103.9	23	103.2	103.4	104.1	23	103.2	103.3	103.4	23	103.7	104.0	104.7	23
3/9	104.0	105.3	106.7	24	104.1	105.4	106.8	24	103.8	104.1	104.3	24	103.7	104.0	104.1	24	103.4	103.7	103.9	24
3/10	103.3	103.8	105.0	24	103.3	103.7	104.7	23	103.8	104.1	104.7	24	103.8	104.0	104.4	24	104.5	105.0	106.9	24
3/11	104.5	105.1	105.5	24	104.5	105.2	105.6	24	104.6	105.0	105.2	24	104.4	104.8	105.1	24	104.0	104.2	104.4	24
3/12	102.3	102.6	102.9	24	102.4	102.6	103.1	24	103.0	103.5	103.7	24	102.9	103.3	103.5	24	103.3	103.6	104.3	24
3/13	102.9	103.7	104.2	24	103.0	103.7	104.3	24	103.6	103.9	104.3	24	103.6	103.9	104.2	24	103.9	104.7	105.0	24
3/14	104.7	105.1	105.3	24	104.7	105.0	105.2	24	104.5	104.7	104.8	24	104.4	104.5	104.7	24	104.8	105.1	105.2	24
3/15	105.6	105.9	106.8	24	105.5	105.8	106.6	24	104.5	104.8	104.9	24	105.9	107.4	109.2	24	104.3	104.6	104.8	24
3/16	104.1	105.1	106.7	24	104.6	105.3	106.6	23	---	---	---	0	---	---	---	0	---	---	---	0
3/17	104.6	105.2	105.5	24	104.5	105.0	105.3	23	---	---	---	0	---	---	---	0	---	---	---	0
3/18	104.2	104.5	104.7	24	104.2	104.4	104.7	24	---	---	---	0	---	---	---	0	---	---	---	0
3/19	104.7	105.0	105.4	23	104.7	105.0	105.2	23	---	---	---	0	---	---	---	0	---	---	---	0



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

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

Date	<u>Priest R. Dnst</u>			<u>Pasco</u>			<u>Dworshak</u>			<u>Clwrtr-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	hr		Avg	Avg		High	hr		Avg	Avg		High	hr	Avg	Avg	High
3/6	105.3	107.1	109.5	24	---	---	---	0	101.1	101.7	102.9	24	---	---	---	0	---	---	---	0
3/7	107.1	109.5	111.9	24	---	---	---	0	101.7	102.4	103.5	24	---	---	---	0	---	---	---	0
3/8	106.5	109.0	111.8	23	---	---	---	0	101.9	102.6	103.9	23	---	---	---	0	---	---	---	0
3/9	107.2	109.7	110.9	24	---	---	---	0	102.2	103.0	104.2	24	---	---	---	0	---	---	---	0
3/10	104.0	104.2	104.4	24	---	---	---	0	102.6	103.4	104.5	24	---	---	---	0	---	---	---	0
3/11	103.6	103.7	103.8	24	---	---	---	0	102.3	102.8	103.4	24	---	---	---	0	---	---	---	0
3/12	103.0	103.2	103.5	24	---	---	---	0	101.7	102.4	103.4	24	---	---	---	0	---	---	---	0
3/13	103.6	104.3	104.5	24	---	---	---	0	102.0	102.9	103.9	24	---	---	---	0	---	---	---	0
3/14	104.5	104.7	104.9	24	---	---	---	0	102.3	102.6	103.1	24	---	---	---	0	---	---	---	0
3/15	106.0	108.0	111.0	24	---	---	---	0	102.4	102.7	103.1	24	---	---	---	0	---	---	---	0
3/16	---	---	---	0	---	---	---	0	104.1	105.9	106.9	24	---	---	---	0	---	---	---	0
3/17	---	---	---	0	---	---	---	0	105.7	106.2	106.7	24	---	---	---	0	---	---	---	0
3/18	---	---	---	0	---	---	---	0	103.3	104.6	105.2	24	101.3	101.3	101.7	10	---	---	---	0
3/19	---	---	---	0	---	---	---	0	102.3	103.2	104.3	23	101.2	101.9	102.6	23	---	---	---	0

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

Date	<u>Clwrtr-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	hr		Avg	Avg		High	hr		Avg	Avg		High	hr	Avg	Avg	High
3/6	---	---	---	0	---	---	---	0	100.0	100.3	100.8	24	---	---	---	0	101.6	102.1	102.6	24
3/7	---	---	---	0	---	---	---	0	100.6	101.0	101.7	24	---	---	---	0	102.2	102.7	103.0	24
3/8	---	---	---	0	---	---	---	0	101.0	101.3	101.5	23	---	---	---	0	103.3	103.9	104.3	23
3/9	---	---	---	0	---	---	---	0	101.5	101.9	102.2	24	---	---	---	0	104.4	104.8	105.4	24
3/10	---	---	---	0	---	---	---	0	102.3	102.7	102.9	24	---	---	---	0	104.6	105.2	105.6	24
3/11	---	---	---	0	---	---	---	0	102.5	102.7	103.2	24	---	---	---	0	104.3	104.6	104.9	24
3/12	---	---	---	0	---	---	---	0	101.8	101.9	102.6	24	---	---	---	0	106.0	109.6	135.5	24
3/13	---	---	---	0	---	---	---	0	102.7	103.3	103.6	20	---	---	---	0	102.6	103.5	103.7	24
3/14	---	---	---	0	---	---	---	0	103.4	103.6	103.8	24	---	---	---	0	103.8	104.0	104.1	24
3/15	---	---	---	0	---	---	---	0	103.1	103.3	103.5	24	---	---	---	0	103.6	104.0	104.3	24
3/16	---	---	---	0	---	---	---	0	101.8	101.9	102.2	24	103.4	103.5	103.7	14	102.7	103.2	103.3	23
3/17	100.4	100.4	101.0	8	102.6	102.6	102.7	11	102.3	102.5	102.9	24	103.7	104.0	104.3	24	103.2	103.3	103.7	24
3/18	100.7	101.5	102.9	24	101.8	102.1	102.4	24	101.7	101.9	102.2	24	103.3	103.7	104.2	24	102.8	103.0	103.3	24
3/19	101.2	102.4	103.5	23	101.0	101.2	101.4	23	100.9	101.0	101.2	23	103.5	103.7	103.8	23	103.3	103.7	103.9	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	hr		Avg	Avg		High	hr		Avg	Avg		High	hr	Avg	Avg	High
3/6	---	---	---	0	101.7	102.2	102.6	24	---	---	---	0	100.3	101.0	102.0	24	---	---	---	0
3/7	---	---	---	0	102.5	103.0	105.1	24	---	---	---	0	100.9	101.4	101.8	24	---	---	---	0
3/8	---	---	---	0	102.7	103.2	103.5	23	---	---	---	0	101.7	102.2	102.7	23	---	---	---	0
3/9	---	---	---	0	103.3	103.7	104.1	24	---	---	---	0	102.7	103.3	103.9	24	---	---	---	0
3/10	---	---	---	0	104.0	104.5	105.0	24	---	---	---	0	103.4	104.1	104.6	24	---	---	---	0
3/11	---	---	---	0	103.9	104.3	104.8	24	---	---	---	0	103.7	104.0	104.7	24	---	---	---	0
3/12	---	---	---	0	103.2	103.4	103.6	24	---	---	---	0	102.8	103.0	103.4	24	---	---	---	0
3/13	---	---	---	0	104.5	105.3	105.5	24	---	---	---	0	103.8	104.4	104.9	24	---	---	---	0
3/14	---	---	---	0	105.9	106.2	107.5	24	---	---	---	0	104.6	104.8	105.2	24	---	---	---	0
3/15	---	---	---	0	105.8	106.1	106.3	24	---	---	---	0	104.6	104.9	105.3	24	---	---	---	0
3/16	---	---	---	0	104.8	105.2	106.6	24	---	---	---	0	103.6	103.9	104.5	24	---	---	---	0
3/17	---	---	---	0	105.8	106.5	107.1	24	---	---	---	0	103.8	103.9	104.2	24	---	---	---	0
3/18	---	---	---	0	103.3	103.6	104.1	24	---	---	---	0	103.7	104.0	104.4	24	---	---	---	0
3/19	---	---	---	0	102.9	103.1	103.6	23	---	---	---	0	104.3	104.8	105.0	23	---	---	---	0

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

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

Date	<u>McNary-Wash</u>			<u>McNary Tlwr</u>			<u>John Day</u>			<u>John Day Tlwr</u>			<u>The Dalles</u>							
	<u>24 h</u>	<u>12 h</u>	#	<u>24 h</u>	<u>12 h</u>	#	<u>24h</u>	<u>12h</u>	#	<u>24h</u>	<u>12h</u>	#	<u>24h</u>	<u>12h</u>	#					
	Avg	Avg		High	Avg		Avg	High		Avg	Avg		High	Avg		AVG	High			
3/6	---	---	---	0	108.9	109.8	110.8	24	---	---	---	0	105.6	105.8	106.0	24	---	---	---	0
3/7	---	---	---	0	108.4	109.9	110.6	24	---	---	---	0	105.6	106.0	106.3	24	---	---	---	0
3/8	---	---	---	0	110.3	111.5	111.9	23	---	---	---	0	105.7	105.9	106.2	23	---	---	---	0
3/9	---	---	---	0	109.1	109.4	109.6	24	---	---	---	0	105.6	105.8	106.0	24	---	---	---	0
3/10	---	---	---	0	109.7	110.5	110.7	24	---	---	---	0	106.1	106.4	106.6	24	---	---	---	0
3/11	---	---	---	0	107.7	108.7	110.1	24	---	---	---	0	105.9	106.0	106.1	24	---	---	---	0
3/12	---	---	---	0	106.0	106.4	106.7	24	---	---	---	0	105.3	105.7	106.1	24	---	---	---	0
3/13	---	---	---	0	105.1	105.4	105.6	24	---	---	---	0	106.8	107.5	108.1	24	---	---	---	0
3/14	---	---	---	0	107.5	107.9	108.2	24	---	---	---	0	108.2	108.3	108.5	24	---	---	---	0
3/15	---	---	---	0	108.2	108.5	108.8	24	---	---	---	0	108.4	108.8	109.1	24	---	---	---	0
3/16	---	---	---	0	107.4	107.7	108.1	24	---	---	---	0	106.9	107.3	107.8	24	---	---	---	0
3/17	---	---	---	0	105.5	106.5	107.9	24	107.8	107.8	108.3	11	107.1	107.4	107.7	24	---	---	---	0
3/18	---	---	---	0	104.9	105.9	107.7	24	106.8	107.0	107.4	24	106.3	106.5	106.7	24	106.4	106.5	106.7	16
3/19	---	---	---	0	105.8	106.2	106.5	23	106.9	107.1	107.3	23	106.4	106.6	106.9	23	106.5	106.7	106.9	23

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

Date	<u>The Dalles Dnst</u>			<u>Bonneville</u>			<u>Warrendale</u>			<u>Camas\Washougal</u>			<u>Cascade Island</u>							
	<u>24 h</u>	<u>12 h</u>	#	<u>24 h</u>	<u>12 h</u>	#	<u>24h</u>	<u>12h</u>	#	<u>24h</u>	<u>12h</u>	#	<u>24h</u>	<u>12h</u>	#					
	Avg	Avg		High	Avg		Avg	High		Avg	Avg		High	Avg		AVG	High			
3/6	105.5	105.7	105.9	24	---	---	---	0	106.6	106.9	107.3	20	---	---	---	0	---	---	---	0
3/7	105.4	105.6	105.9	24	---	---	---	0	107.0	107.3	107.6	24	---	---	---	0	---	---	---	0
3/8	105.7	106.0	106.3	23	---	---	---	0	106.7	106.9	107.3	23	---	---	---	0	---	---	---	0
3/9	105.9	106.1	106.3	24	---	---	---	0	106.7	107.0	107.2	24	---	---	---	0	---	---	---	0
3/10	105.8	106.0	106.2	24	---	---	---	0	107.3	107.6	108.3	24	---	---	---	0	---	---	---	0
3/11	105.6	105.8	105.9	24	---	---	---	0	107.8	108.9	109.6	24	---	---	---	0	---	---	---	0
3/12	104.7	104.9	105.2	24	---	---	---	0	106.3	106.6	107.0	24	107.4	107.3	108.3	12	---	---	---	0
3/13	106.0	106.7	106.9	24	---	---	---	0	106.4	106.8	107.0	24	106.0	106.5	107.2	24	---	---	---	0
3/14	107.3	107.5	107.7	24	---	---	---	0	107.8	108.1	108.4	24	106.4	106.7	106.8	24	---	---	---	0
3/15	107.8	108.3	108.8	24	---	---	---	0	108.8	109.4	110.1	24	106.8	107.2	107.6	24	---	---	---	0
3/16	106.4	106.6	107.0	24	---	---	---	0	107.4	108.1	108.9	24	106.7	107.9	109.1	24	---	---	---	0
3/17	106.9	107.2	107.5	24	---	---	---	0	106.9	107.3	107.6	24	105.8	106.3	106.7	24	---	---	---	0
3/18	106.6	106.8	106.9	24	106.4	106.4	106.5	10	107.6	107.9	108.2	24	107.4	108.6	109.3	24	110.5	110.5	110.7	9
3/19	106.6	106.8	107.0	23	106.8	107.2	107.5	23	108.0	108.3	108.9	23	107.6	108.6	109.6	23	110.9	111.3	111.5	23







## Two-Week Summary of Passage Indices

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

Smolt indices, clipped & unclipped or combined, are presented in the following order: yearling chinook (chinook 1's), subyearling chinook (chinook 0's), steelhead, coho, sockeye, and lamprey juveniles. Two classes of fish counts are shown in these tables:  
Two classes of fish counts are shown in these tables:

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

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

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

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

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

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

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

### Definitions for Smolt Index Counts

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

IMN (Collection) = Imnaha River Trap : Collection Counts

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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.

**Cumulative Adult Passage at Mainstem Dams Through: 03/19**

DAM	END DATE	Spring Chinook						Summer Chinook						Fall Chinook					
		2015		2014		10-Yr Avg.		2015		2014		10-Yr Avg.		2015		2014		10-Yr Avg.	
		Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack
BON	03/18	329	2	10	1	31	0	0	0	0	0	0	0	0	0	0	0	0	0
TDA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JDA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MCN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IHR		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LMN	02/26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LGS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LGR	03/18	0	0	0	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	03/19	30	0	1	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0

DAM	END DATE	Coho						Sockeye			Steelhead						Lamprey		
		2015		2014		10-Yr Avg.		2015	2014	10-Yr Avg.	2015	2014	10-Yr Avg.	Wild 2015	Wild 2014	10-Yr Avg.	2015	2014	10-Yr Avg.
		Adult	Jack	Adult	Jack	Adult	Jack												
BON	03/18	0	0	5	-2	0	0	1	2	0	2448	1568	1451	1299	558	382	0	0	0
TDA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JDA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MCN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IHR		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LMN	02/26	0	0	0	0	0	0	0	0	0	1663	0	0	608	0	0	0	0	0
LGS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LGR	03/18	0	0	0	0	0	0	0	0	0	3653	2874	2176	1301	992	562	0	0	0
PRD		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WAN	10/08	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	03/19	1	0	9	0	0	0	0	0	0	3022	2299	3165	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.